



THE AFRICAN CAPACITY
BUILDING FOUNDATION

FONDATION POUR LE RENFORCEMENT
DES CAPACITES EN AFRIQUE

AFRICA CAPACITY INDICATORS 2012

CAPACITY DEVELOPMENT FOR AGRICULTURAL
TRANSFORMATION AND FOOD SECURITY





THE AFRICAN CAPACITY
BUILDING FOUNDATION

FONDATION POUR LE RENFORCEMENT
DES CAPACITES EN AFRIQUE

AFRICA CAPACITY INDICATORS 2012

CAPACITY DEVELOPMENT FOR AGRICULTURAL
TRANSFORMATION AND FOOD SECURITY



This Report is a product of the staff of the African Capacity Building Foundation (ACBF). The findings, interpretations, and conclusions expressed in this volume do not necessarily reflect the views of the ACBF Executive Board or Board of Governors.

ACBF does not guarantee the precision of the data included in this work. The boundaries, colors, and other information shown on any map in this work do not imply any judgment on the part of the Foundation concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying recording or otherwise, without prior written permission.

© 2012 The African Capacity Building Foundation
7th Floor, ZB Life Towers, Harare, Zimbabwe

Produced by the Knowledge & Learning Department
The African Capacity Building Foundation
First printing March 2012
All rights reserved

For additional information on project and program operations and other activities of the African Capacity Building Foundation, please visit our website at the following address: <http://www.acbf-pact.org>

Printed in South Africa by Colour King

ISBN: 978-1-77937-034-1

EAN: 9781779370341

Photo credits: ACBF photo database with the exception of Chapter 7 — which are courtesy of Rudo Nyangulu (Chapter 7 cover photo), and Frannie Léautier.

Foreword

In Africa, the challenges impacting on the agricultural sector growth are multi-faceted. They include but are not limited to, an over-dependence on rainfall, weak capacity to respond to shocks, political governance, choice of crops, changing needs and changing food habits due to globalization, land degradation, land renting and sale to foreign companies. All of these contribute to an unnecessary level of food insecurity. The aforementioned are exacerbated by the low level of commitment to the sector in terms of policy and physical and human investment, especially in Agricultural Research, Extension and Education. This is coupled with the ineffectiveness and inefficiency in the supply side of the Agricultural Knowledge and Information System (AKIS) – institutional and process – and the absence of an organized and structured demand side of AKIS – the farmers.

Although progress has been achieved in raising agricultural productivity, this has so far been insufficient, unstable and unequally distributed, resulting in Africa having the highest proportion of people who are hungry, undernourished or food insecure. Losses occur when grain decays or is infested by pests, fungi or microbes and physical losses are only part of the equation. The losses can also be economic, resulting from low prices and lack of access to markets for poor quality grain, or nutritional, arising from poor quality or contaminated food.

It's been almost a decade since African Heads of State gathered in Mozambique and pledged to apportion 10 per cent of their national budget to agriculture by 2008. While there has been some progress, the reality still exists that as of 2011 only eight countries – Burkina Faso, Ethiopia, Ghana, Guinea, Malawi, Mali, Niger and Senegal – had surpassed this target. The Comprehensive Africa Agriculture Development Programme (CAADP) also has an agricultural growth target of 6 per cent. Here again, we currently have only ten countries which have exceeded this target, namely, Angola, Burkina Faso, Eritrea, Ethiopia, Gambia, Guinea-Bissau, Nigeria, Republic of the Congo, Senegal and Tanzania.

For Africa to achieve the goals of CAADP and ultimately maximize its vast agricultural

potential the best investment is probably in human capital, through better-quality schooling, vocational training, as well as meaningful national and regional initiatives aimed at attracting the younger generation back to the land. There is also a need to invest in capacity development and entrepreneurship across the entire agricultural value-chain. To this end, regional approaches to value chain development have been advocated to address the relatively small geographic size and population of many African countries that have many sociocultural and agro-ecological similarities across borders. The 2006 African Food Security Summit, and the 2007 Declaration of *Nyéléni*, at the International Forum for Food Sovereignty at *Sélingué*, Mali, both focused on the importance of strategic commodities as entry points for a regional

approach to value chain development thus offering an opportunity to realize the benefits of this new vision to agricultural development and food sovereignty in Africa.

The vital role of agriculture in Africa's development is without question, but African agricultural policies are not yet a match for the weight of agriculture and its stakes. About 60% of the population in Africa is engaged in agriculture; and agriculture also contributes roughly 30% to GDP. Yet public expenditure is far less than 10% of global budget. The sector clearly accounts for the principal share of most African economies, yet despite some improvements, challenges persist. Production generally lags behind demand, fostering food insecurity. Policy reforms have so far brought only mixed results, while measures to boost output have been undermined by declining aid and low world prices for Africa's key agricultural exports.

As succinctly articulated in the 2010-11 FAO report – *Women in Agriculture: Closing the gender gap for development* – given African women's central roles with both food and cash crop production, and their management skills for utilizing new input packages and producing yields comparable to those of men, it's essential to ensure that women are able to effectively access land, education, agricultural extension, credit, inputs, and small business assistance programs. This requires concerted effort to overcome cultural and institutional barriers, and improve laws related to inheritance, marriage and property rights. Women's access to land and land tenure security can be improved through implementation of land policies and laws oriented toward equal rights for men and women. Efforts by governments and civil society to foster

formation and strengthening of women's organization and participation in farmer associations will prove beneficial. More than that, women should be key players in participatory processes involving communities and other stakeholders to set public investment priorities and deliberate policies.

The 2012 *Africa Capacity Indicators* seeks to address the aforementioned issues of capacity development on the continent, building on the dialogue stemming from the inaugural 2011 ACIR and linking this to a very pertinent issue facing Africa today – agricultural transformation and food security. The Report is very spot-on. It does not only identify the underlying capacity challenges facing Africa. It also attempts to help Africa redefine its post-colonial agricultural landscape and more importantly prescribes policy-relevant solutions and recommendations informed by country-specific ground truths. The report triangulates field surveys from forty-two African nations with thematically driven commissioned studies whilst interrogating the broader extant literature to collaborate or contradict its findings.

Central to the Report is the basic fact that while much has been written about agricultural transformation and food security in many African countries, what is missing is an authoritative discussion of the capacity development dimension needed to promote food security and agricultural potential of the continent. The Report's key index – the Africa Capacity Index – ranks the 42 nations surveyed on the strength of capacity development, in the process providing a unique two time series data on the status of capacity development on the Continent. The Report also generates a very bold

and ingenious index – Africa Capacity Index for Agriculture – which again measures how countries are doing in terms of capacity for agricultural transformation and food security.

The Report confidently posits that capacity development programs should come in the form of building the capacity of research institutions and the establishment of a positive relationship between the research institutions and farmers through a process where trained technical extension specialists serve the agriculture sector, especially those in the rural areas. It goes on to argue that creating space for local experimentation and innovation is a critical means of generating large scale impacts from incremental changes. Such successes emerge from localized experiments that allow participants to learn from their experiences or exchanges on best practices, adapt to changes in the landscape, evolve as the playing field becomes more complex, and pursue incremental, step-by-step approaches to scaling up.

Relatedly, if agriculture is to play a vital role in Africa's development, then it is critical to situate it in the broader context of globalization, which would define its role and will also shape outcomes.

In today's era of global agriculture, the activities of global multilateral and regional institutions can hamper agricultural policy performance – first, activities of regional organizations on issues such as quota and quality can affect market access; second, there are significant variations in the support systems that African states provide their farmers compared to what their counterparts in the global north extend to their farmers. This discrepancy has implications!

For example, there is the question of the extent to which respective countries abide by WTO provisions on agriculture. There is the issue of the ability of the WTO itself to forge a global compact on agricultural policy when it comes to north-south agricultural relations. Take the case of the African state and cotton farmers. Another case in point is that of Malawi versus the Washington Consensus on the issue of free markets. The Consensus requested free market. Malawi was opposed to it, and was right. The rice from Malawi is both of excellent quality and competitive. The experience proved Malawi right. The market cannot work alone! It needs to be guided!

Promotion of agricultural transformation that markedly increases production, productivity, and incomes in Africa and constitutes 'development' as reflected in the Millennium Development Goals requires serious, thoughtful attention to the myriad issues outlined in this Report!

I consider this 2012 ACIR a **must read** for all who seek to see Africa realize its potential. It is a 'must have' for all policy makers and agriculture pundits. I encourage all decision makers – starting with the AU – as well as our development practitioners, policy institutes, civil society organizations and the myriad stakeholders involved in capacity development and agricultural production to embrace these insightful findings and bold policy recommendations.



Dr. Mohamed 'Mo' Ibrahim
Board Chairman
Mo Ibrahim Foundation



Acknowledgements

The 2012 Africa Capacity Indicators Report (ACIR 2012) is truly a collaborative venture of myriad colleagues, stakeholders and partners that were generous to support the process with their time, resources and intellectual capital. Its conceptualization, design and ultimate production benefitted immensely from the experiential know-how, invaluable insights, written contributions and financial support of many. Accordingly, we would like to express our sincere gratitude to all who variously and collectively helped get this publication to fruition. Throughout its development, we benefited a great deal from the critical comments and ideas of both individuals and institutions that committed precious time to review, critique, and offer us guidance. We are particularly indebted to Frannie A. Léautier, Executive Secretary, ACBF, for her continued leadership and unflinching support without which this publication might not have been possible. We are also very appreciative of the vital financial support from both the United Nations Development Fund (UNDP) and the African Development Bank (AfDB) which, enabled us to successfully expand the Report's geographical coverage and undertake in-country field surveys in 42 African countries, up from the 34 countries surveyed for the 2011 Report.

ACIR 2012 was spearheaded by a core ACBF team comprising Kwabena Agyei Boakye, Maria Nita Dengo, Kobena T. Hanson, George Kararach, Frannie A. Léautier, and Robert Nantchouang. Noteworthy contributions were also provided by Ernest Etti, Edem Mesa-Gavo and Towera Luhanga.

Special appreciation goes to the 2012 ACIR distinguished External Reference Group (ERG) members, below listed, for their dedication, motivation and intellectual guidance. The ERG comprised: Kwadwo Asenso-Okyere (IFPRI, Addis Ababa, Ethiopia), Bruce Campbell (CCAFS, University of Copenhagen, Denmark), Cristina D'Alessandro-Scarpari (Sciences Po, Paris, France), Grégoire Kankwanda Ebulelang (INS, Democratic Republic of Congo), Shenggen Fan (IFPRI, USA), Abbi M. Kedir (University of Leicester, UK), Ben Kiregyera (DIC, Uganda), John Loxley (University of Manitoba, Canada),

Denis Maugenest (CERAP-INADES), Francis Owusu (Iowa State University, USA), Marios Obwona (NPA, Uganda), Sheryl L. Hendriks (University of Pretoria, South Africa), Roger A. Tsafack-Nanfoso (Université de Yaoundé II, Cameroon), Joachim von Braun (University of Bonn, Germany) and James Wakiaga (UNDP, Harare, Zimbabwe).

Credit also goes to the specialists who furnished us with vital written information and insights on key thematic issues by way of commissioned background papers. Contributors were: Godwin Arku et al. (University of Western Ontario, Canada), Peter K. Arthur (Dalhousie University, Canada), Robert Mazur (Iowa State University, USA), Godwell Nhamo (UNISA, South Africa), Aderibigbe S. Olomola (NISSER, Nigeria), and Korbla Pupilampu (Grant MacEwan University, Canada).

Our gratitude also extends to the seventeen (16) policy institutes who collaborated with ACBF to both undertake country-specific Country Policy and Institutional Assessment (CPIA) surveys and generate scores, namely: Conception et Analyse des Politiques des Développement (CAPOD), Benin; Centre d'Analyse des Politiques Economiques et Sociales (CAPES), Burkina Faso; Projet de renforcement des capacités en gestion économique et financière du Cameroun (CAMERCAP), Cameroon; Centro de Políticas Estratégicas (STPC), Cape Verde; Projet de Cellule d'Analyse de Politique Economique du Centre Ivoirien de Recherches Economiques et Sociales (CAPEC), Côte d'Ivoire; Institute for Democratic Governance (IDEC), Burundi; Centre de Recherches, d'Etudes et d'Appui à l'Analyse Economique à Madagascar (CREAM), Madagascar; Centre Mauritanien d'Analyse de Politiques (CMAP), Mauritania; Cellule d'Analyse et de Prospective en Développement (CAPED), Niger; Botswana Institute for Development Policy Analysis (BIDPA), Botswana; Centre for Policy Analysis (CEPA), Ghana; Liberian Macroeconomic Policy Analysis Capacity Building Project (LIMPAC), Liberia; Economic and Social Research Foundation (ESRF), Tanzania; Economic Policy Research Centre (EPRC), Uganda; Zambia Institute for Policy Analysis and Research (ZIPAR), Zambia; and Zimbabwe Economic Policy Analysis and Research Unit (ZEPARU), Zimbabwe.

We would like to thank our dedicated team of forty-two (42) in-country field data collectors and the five (05) Regional Focal Points (RFPs) who supervised the country survey process. The RFPs were: Basga Emile Dialla (CAPES, Burkina Faso, in charge of Francophone West Africa); Barnabé Okouda (CAMERCAP, Cameroon, in charge of Central Africa); Lawrence Apaloo

(CEPA, Ghana, in charge of Anglophone West Africa); Moses Ikiara (KIPPRA, Kenya, in charge of East Africa and the Horn); and, Jecob Nyamadzawo (ZEPARU, Zimbabwe, in charge of Southern Africa and the Indian Ocean). The field data collectors who gathered the country-specific information are: Ayédjo O. A. Tokou (Benin), Abel Tientore (Burkina Faso), Martin Nsengiyumva (Burundi), NGUENEVIT (Cameroon), Espoir Mhalioh (CAR), Ibn Ali Youssouf (Chad), Michel Tansia Molende Monkoi (DRC), Naasson Loutete-Dangui (Congo, Republic of), Gnanda Pélagie Eponou Benson (Cote d'Ivoire), Charmarké Idris Ali (Djibouti), Paul-Henri Nguema Meye (Gabon), Mamadou Camara (Guinea), Adulai Jalo (Guinea Bissau), Mande Isaora Zefania Romalahy (Madagascar), Tiemoko Marc Dembele (Mali), Ridouane Berrhazi (Morocco), Mamadou Cissoko (Mauritania), Abdou Maina (Niger), Mady Dansokho (Senegal), Komlan K. Agbovi (Togo), Antonio G. Miranda (Angola), Goaletsa B. Kesetse (Botswana), Benvindo Rodrigues (Cape Verde), Wondwossen Tsegaye Aselet (Ethiopia), Kunkung Jobarteh (Gambia, The), Anthony K. Krakah (Ghana), Mathews C. Omondi (Kenya), Masoai E. Mokone Dennis (Lesotho), Paul J. King (Liberia), Bernie Zakeyo (Malawi), Krishna Chikhuri (Mauritius), Claudio A. Dengo (Mozambique), Tsudao I. Gurirab (Namibia), Modinat O. Olusoji (Nigeria), Johnson Rukundo (Rwanda), Miatta V. M'bayo (Sierra Leone), Justice T. Lepheane (South Africa), Sindisiwe N. Hleta (Swaziland), Khamis A. Shauri (Tanzania), Christian J. Kakuba (Uganda), Shebo Nalishebo (Zambia), and Patience Siwadi (Zimbabwe).

We similarly benefitted in no small measure from a wide-ranging process of consultations. To this end, our appreciation goes to colleagues and friends who listened to, and interrogated our

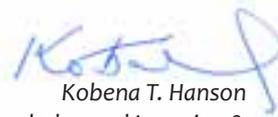
partially articulated ideas, read drafts of earlier chapters, assisted with reviews, data analysis and write-ups, as well as with the layout and design of the Report, namely: Korbla Pupilampu (Grant MacEwan University, Canada); Cristina D'Alessandro-Scarpari (Sciences Po, Paris); Christine Mathenge (Austin Peah State University, USA); Andrew Manu (Iowa State University, USA); Kwame Frimpong (University of Cape Coast, Ghana); Roger Atindehou, Alfred Gumbwa, Phumuzile Khumalo, Jasca Chamusanga, Walter Mangwende, Gibson Guvheya, and Karamoko Kane (all of ACFB).

The ACIR Team is equally grateful to all the distinguished individuals and institutions that participated and actively engaged the deliberations of the two-day Validation Workshop in Tunis, Tunisia; and subsequent meeting in Addis Ababa, Ethiopia. We appreciate them taking time off their very busy schedules to thoroughly review the Report. We are particularly grateful to Mthuli Ncube (Chief Economist and Vice President, AfDB, Tunisia); Victor Murinde (Director, Africa Development Institute, AfDB, Tunisia); Jacob Gyamfi-Aidoo (UNDP, South Africa); Suresh Babu (IFPRI, Washington DC, USA); and Moses Kiggundu (Carleton University, Ottawa) for their invaluable time and commitment to the ACIR initiative. Our appreciation also goes to the entire team from the AfDB's Africa Development Institute without whose support, the Validation Workshop would not have taken place. Here special credit goes to

Bernadette Dia Kamgnia, Nadia Ben Achour-Boutimzine and Temi Abimbola.

In Addis Ababa, the following persons contributed immensely to the success of the meeting: Abdoulie Janneh (UN Under-Secretary-General and Executive Secretary of UNECA); Josué Dioné (Director, Food Security and Sustainable Development Division (FSSD), UNECA); Gabriel Habebe Haile (Director of Rural Economy and Agriculture Department, AUC); Maurice Tankou (Chief, Agricultural Marketing and Support Services Section, UNECA); Adama Ekberg Coulibaly (Chief, Agriculture Section, UNECA); Ousmane Djibo (Program Coordinator, NEPAD Agency); Parminder Brar (Lead Financial Management Specialist, World Bank Ethiopia Country Office); Khecha Abderrahmane (Policy Officer, AUC); Assefa Admassie (Director, Ethiopia Economic Association); Newai Gebre-Ab (Director, Ethiopia Development Research Institute); Ali Issa Abdi (Managing Director, HESPI, Ethiopia); and Rahel Menda (UNECA).

While thanking all the people who supported this process, we acknowledge sole responsibility for any errors, misrepresentations and or omissions that may be found in this Report.



Kobena T. Hanson
Head, Knowledge and Learning &
Team Leader, ACIR
January 2012



Preface

In Africa, the agriculture value chain, which includes, in its broad sense, cultivation as well as food processing, livestock farming, fisheries, and forest exploitation – is a crucial sector. The sector not only contributes to the economy in diverse ways, but it is also essential to socio-cultural and political relations. Agriculture provides a direct source of employment and livelihood for a sizable proportion of the society, contributing to gross domestic production and essential for wealth. It is the primary activity of over 60% of Africa's populace; as well as the backbone of the African economies as it accounts for more than 30% of the Gross Domestic Product (GDP) in many African countries. Accordingly, there is therefore a general understanding and expectation that the development prospects in Africa are inexplicably linked to the performance of the agricultural sector.

While a number of policy initiatives that were supposed to bring new perspectives and approaches to Africa's development abound, especially post-Structural Adjustment Programs in the 1980s, Africa's development prospects, even in the face of these myriad policies, remain fragile and uncertain at best. The fragile nature of African development would therefore suggest, among other factors, policy and institutional failures. To this end, the need to focus on and address problems in African agriculture, if only to better address the development challenges in the region, is paramount. It is highly surprising for a continent that is home to more than 60% of the world's arable land, that several African countries repeatedly make international headlines when it comes to global discussions on food insecurity. For example, on July 20, 2011, the United Nations announced that the persistent and widespread drought in the Horn of Africa has led to famine in parts of Somalia, Kenya, Ethiopia, Uganda and Djibouti. This is not the first time the Horn of Africa has experienced human suffering and food insecurity.

Given that agriculture continues to assume a central role in the political, economic and social relations in many, if not all, African countries it is valuable to examine how capacity or the lack thereof can impact African agriculture and contribute to the achievement of important development goals. To this end, the performance of the agricultural sector is instructive to gauging the extent to which African countries can attain any of the United Nations-sponsored Millennium Development Goals (MDGs); especially, the goal to eradicate extreme poverty and hunger by 2015. It is equally vital to mapping how African countries are

fulfilling the goals detailed in the African Union's endorsed Comprehensive Africa Agriculture Development Programme (CAADP) – an initiative which has enhancing human and institutional capacity in the agricultural sector at its core.

When we talk about capacity development, and particularly its impact in Africa, we are really talking about the lives we envisage for all; and the countless generations yet unborn. As stated in the 2011 inaugural version of the Africa Capacity Indicators Report, in the eyes of the African Capacity Building Foundation (ACBF),

capacity development honors a commitment to the poorest of the poor that they are not marginal, not forgotten, and not excluded from the vision of a better, more equitable and just world. It honors a pledge to society's vulnerable and marginalized that they are entitled to the full protection of the law against discrimination, violence, and abuse in all forms. These are all central to the ACBF mandate to promote capacity for sustainable development and poverty reduction – a mandate we have been vigorously pursuing for the past two decades in partnership with our valued partners and stakeholders across the African continent.

The challenge is enormous on a continent where many Governments lack the resources – human, financial, technological, organizational, and leadership capacity to move forward without support from the international community. The perennial bane of African agriculture is that it is not anchored in the society and is unable to address the basic needs of the society. It is not an over-exaggeration to contend that an export focus has dominated the policy discourse of African agriculture. Globalization, as a contemporary discourse, simply reinforces earlier ideologies and practices. Accordingly, there is a critical need to rethink the future of African agriculture and also draw attention to three vital factors: institutional capacity; a focus on producers; and, the broad issue of governance and leadership.

This publication, the second edition of the ACBF's annual *Africa Capacity Indicators Report*, surveys forty-two African countries' capacity development needs, but also their agricultural capacity landscape. In so doing, the Report teases out the underlying geo-historical, macro-

economic, and socio-political elements that have shaped the current capacity development standings. Its premise is that it is certainly superfluous to argue that it is people working in institutions that make change and development possible. Accordingly, a call for institutions to carry through the agricultural policies is certainly not a novel position. However, the emphasis has to be on capable institutions, informed leaders, and networked farmers. It is one thing to establish an institution, but quite another issue to have capable institutions! It is possible to have good policies gather dust due to lack of implementation arrangements. Leaders armed with the right information, acting in the interest of society, are a critical link for capable institutions to show results. Farmers linked up to information and with access to markets can contribute enormously to the productivity increase needed to solve Africa's food problems and give place of pride to agriculture as a driver of economic growth. While the desire of African governments to establish agricultural institutions is a tangible expression of the importance of agriculture, most of the institutions do not have the sufficient and necessary resources for optimal performance.

Indeed, given the heterogeneity and complexity of agro-ecological conditions and farming systems observed throughout Africa, externally generated blueprints have little or no positive role in the continent's agricultural transformation. Genuinely collaborative research involving institutions, scientists, local farmers and other stakeholders is essential to identifying and adopting appropriate practices for sustainable agricultural intensification which blend local and exogenous knowledge, and create space for local experimentation and innovation – key

undervalued elements in 'sustainability.' Such efforts can, amongst others, engender a 'basket' of agricultural technology and management practices that provide farmers with flexibility in choosing among options that best match the site-specific diversity of their fields and socioeconomic circumstances, effectively boost farm productivity, and are resilient to weather variability, resource availability and market fluctuations.

To achieve and sustain meaningful advances toward agricultural transformation and food security, it behooves political leaders to work painlessly to ensure that institutions have the required resources to discharge their mandate. In so doing, the circumstances of farmers should be at the centre of the discourse. An equally pressing challenge is at the global level. It is worrisome what African countries have to contend with as and when they want to extend or assume some degree of control over their activities for farmers. Since national development is not only about choices, but also the ability to implement those choices, the ability of African governments to address the genuine aspirations of their citizens, in the face of global imperatives, is an issue that also deserves the utmost attention. African knowledge-producing

institutions within the agricultural system should also assume a prominent role in support of the Continent's development effort.

These challenges are all real. But in the end, they are not only goals of capacity development, but the means by which we can move toward fulfilling our commitment to Africa. ACBF concurs with many others that while different types of countries require appropriately tailored policies to achieve agricultural transformation and food security; there is no one-size fits-all solution. Nonetheless, we strongly believe that capacity development as embodied in infrastructure development, institutional strengthening, technological advances, training and education, as well as a focus on leadership, entrepreneurial and marketing skill-building, linking farmers to research as well as addressing issues on critical aspects of the agricultural value chain should be at the core of efforts to transform agricultural and empower African countries to assume their own self-sufficient place at the global table.



Frannie A. Léautier
Executive Secretary
ACBF

Contents

Foreword	iii
Acknowledgements	vii
Preface	xi
Acronyms and abbreviations	xix
<hr/>	
Executive Summary	1
<hr/>	
Chapter 1: Reaffirming Capacity Development in Africa	17
<hr/>	
1.0 Introduction	17
1.1 Capacity development landscape in Africa and some conceptual issues	18
1.2 Agricultural capacity: issues and options	24
1.3 Africa Capacity Indicators Report 2012: highlights and trends	29
1.4 The Country Policy and Institutional Assessment (CPIA) – self-assessment for 2012	38
1.5 Some implications of the ACI work	44
1.6 ACIR – One Year down the Road	46
Chapter 2: Special Focus on Agriculture	51
<hr/>	
2.0 Introduction	51
2.1 The need for investing in agriculture now	51
2.2 Focus on policies, challenges and opportunities	58
2.3 Food security and African development prospects	63
2.4 Specialized capacities for agricultural transformation	65
2.5 Moving forward – Africa, agriculture and food security	69
Chapter 3: The Status of Agriculture, Poverty Reduction, Sustainable Livelihoods and African Development	75
<hr/>	
3.0 Introduction	75
3.1 Agriculture is critical – but why?	75
3.2 Debating food security and food sovereignty	85
3.3 Causes of food insecurity- review of evidence	86
3.4 Consequences of food insecurity	93
3.5 Agriculture and poverty – young people, women and livelihoods	94
3.6 Sustainable livelihoods, diversification and dynamics	96
3.7 Gender and livelihoods	100
3.8 Land, soil fertility management, and irrigation	103
3.9 Conclusion	109
Chapter 4: Agricultural Policies in Africa and the Role of the State	115
<hr/>	
4.0 Introduction	115
4.1 Rethinking agricultural policies - context and problem	115
4.2 Debating the conceptual framework	117

4.3	The State, African agriculture and globalization: an overview	118
4.4	Critique of prevailing perspectives and alternate framework	124
4.5	Politics of agricultural marketing and agricultural marketing politics in Africa	128
4.6	Agricultural producers and governance: survival or sustainability?	133
4.7	Conclusion	136
Chapter 5: Investing in Capacity for Agricultural Transformation and Food Security		141
5.0	Introduction	141
5.1	Biotechnology for agricultural transformation – the quandary	141
5.2	The agriculture biotechnology debate and Africa: an overview	143
5.3	Infrastructure bottlenecks and enablers	160
5.4	Financing agriculture in a changing landscape	164
5.5	Needs and mechanisms for agricultural finance in Africa	165
5.6	Progress towards 10% budgetary allocation to agriculture in Africa	169
5.7	Credit flow from commercial banks	169
5.8	International alliance for financing African agriculture and food security	173
5.9	Agricultural finance constraints in Africa	174
5.10	Towards a paradigm shift in African agricultural finance	178
5.11	Reform of State-owned agricultural finance institutions	181
5.12	Innovations for effective agricultural financing in Africa	181
5.13	AfDB recent initiatives for agricultural value chain financing	186
5.14	Commercial agricultural credit scheme in Nigeria	187
5.15	Implications for development building	189
5.16	Markets and agriculture transformation	191
5.17	Conclusion	192
Chapter 6: New Threats – Debating Climate Change and Adaptation		197
6.0	Introduction	197
6.1	Climate change and agriculture	197
6.2	Environmental degradation and agriculture	200
6.3	Impact, adaptation and mitigation in key sectors	201
6.4	Biofuels, carbon farming and food security	213
6.5	Agricultural trade under climate change	215
6.6	Conclusion	217
Chapter 7: Agricultural Transformation and Food Security – Getting the Policies and Institutions Right		223
7.0	Introduction	223
7.1	Taking leadership, politics and policy variations in country contexts seriously	224
7.2	Globalization, competition and food markets	226
7.3	Developing coherent frameworks embedded in national policies	229
7.4	Listening to farmers – participation, governance and social inclusion	230
7.5	Galvanizing action and leadership for agricultural transformation and food security in Africa – reflections on the various capacity issues	234
7.6	Importance of implementation, monitoring and evaluation - the special role of data and statistics/ACIR findings	251
7.7	Capacity to influence international policy	252
7.8	Conclusions	253
End Notes		257
Bibliography		258

Boxes

2.1 Land grabbing— a growing phenomenon?	60
2.2 Burkina Faso great reformer and promoter of integration and sub-regional stability as a basis for sustainable development	62
3.1 The Role of urban agriculture for food security	84
5.1 Agricultural biotechnology utilization and institutional constraints: the case of Ivorian rice sector	158
5.2 Nigeria’s agricultural credit guarantee scheme: a boost to commercial lending	171
5.3 Access for the rural vulnerable poor: the case of SHGs in India	182
5.4 Success stories in term finance: The case of leasing in Madagascar	185
5.5 The NIRSAL initiative in Nigeria	188

Figures

A. ACI levels in 2012	4
B. Range of band to classify countries in the CPIA	6
C. ACIAgric capacity by clusters	9
1.1 The six pillars round the CDSF	21
1.2 Three key elements shaping change readiness for successful sector and capacity development	22
1.3 ACI levels in 2012	31
1.4 Map of Africa by ACIR rankings	32
1.5 ACIAgric capacity by clusters	36
1.6 ACIAgric and food security ranking by country	37
1.7 Understanding the Outliers	41
1.8 Comparing the World Bank and AfDB CPIA scores in 2010	42
1.9 Comparing the World Bank and country self-assessment scores in 2010	43
1.10 Range of band to classify countries in the CPIA	44
2.1 Innovation and usage of mobile technologies	52
2.2 Fragility and agricultural performance	54
2.3 Dynamics of change impacting Africa	55
2.4 Transforming agriculture: Burkina Faso’s capacity to tap into the “green” and “health” movements	57
2.5 Average change in performance of the agricultural sector in Africa from 1990-2010 for countries that have and have not had a recent election.	58
2.6 Capacity profile of resource and non-resource rich countries.	59
2.7 Transforming agriculture – Burkina Faso rank in World, by commodity 1967-2007	63
2.8 Average annual agriculture expenditure share in total expenditures, 2003-09	66
2.9 Difference between the achievement of development results during and outside of an election year	68
2.10 Major activities during an election year	68
3.1 Agricultural capacity and performance	77
3.2 Unemployment levels and per capita agricultural production	82
3.3 Does democracy lead to improved policy capacity?	90
3.4 Countries with elections under-perform those with no elections.	91
3.5 Countries with elections out-perform those with no elections	92
5.1 Information systems contribute more to increased agriculture value added and productivity than other dimensions of capacity	148
5.2 Relations between agricultural capacity and democracy	159
5.3 Variation in value-chain as share of GDP against cereal yields selected African countries (1990-2010)	167
6.1 Trends in selected African natural disasters (1900-2010)	198
6.2 Agricultural emissions 1990-2020 (Mt CO ₂ equivalence)	201
6.3 Holistic view on climate change adaptation and agriculture	202

6.4 Climate change impacts on livestock production	209
6.5 Land grabbed by product 2004-2009 (ha)	214

Tables

A. Capacity Dimensions in 2012 (% of countries by level)	2
B. Pattern of ACI 2012 results	5
C. Country capacity levels in 2012.	5
D. ACIAgric - Percentage of Countries by Cluster	8
1.1 Capacity dimensions in 2012 (% of countries by level)	29
1.2 Pattern of ACI 2012 results	32
1.3 Correlation coefficients between ACI 2012 indicators	33
1.4 Correlation coefficients between ACI 2011 indicators	33
1.5 2012 ACI for agriculture - ACIAgric (countries by decreasing order)	35
1.6 ACIAgric - percentage of countries by cluster	36
1.7 Comparison of 2009 and 2010 data on CPIA assessments	38
1.8 Differences between CPIA from country self-assessments, AfDB and World Bank	40
1.9 Impact of Country Type on Differences in CPIA Assessments	41
2.1 Resource dependence co-exists with dependence on agriculture— case of Great Lakes	59
2.2 Number of countries and RECs achieving selected Milestones	67
3.1 Characteristics of urban agriculture (UA) and Peri-Urban Agriculture (PUA)	79
3.2 Total and urban population in Africa, 1950 – 2030	80
3.3 Percentage of household food consumption provided by urban agriculture	81
3.4 Percentage of households involved in urban agriculture (UA) and related monthly incomes	83
3.5 Farming systems, potential and relative importance of household strategies for poverty reduction in Africa	106
3.6 Irrigation potential – selected African countries	107
4.1 A sociological analysis of agricultural policy in Africa: An analytical framework	127
4.2 Transforming agriculture: Top 20 producing countries of cotton lint in 2007	131
5.1 Cost of infrastructure as reflected in spatial commodity price dispersion in some African countries	161
5.2 The Spread of agricultural banks in Africa	172
5.3 Obstacles faced by borrowers and lenders	175
5.4 Agricultural risks and mitigation strategies	177
5.5 Agricultural commodity value chain characteristics	179
5.6 Value chain finance versus traditional lending	179
5.7 Types of financial products required by agricultural value chain actors	180
5.8 Capacity building needs in agricultural finance delivery system	190
6.1 Overview of climate change impacts on African agriculture	199
6.2 Climate change-induced migration in selected African countries	200
6.3 Socio-agroecological systems (SAS) adaptation toolkit	203
7.1 Capacity building needs in agricultural finance delivery system	246
7.2 Summary of policy recommendations	248

Annexes

Technical Note	281
ACI Indices	289
Country profiles	301
Compendium of statistics	345

Acronyms and Abbreviations

AATF	African Agricultural Technology Foundation
ABS	Agricultural Bank of Sudan
ACBF	African Capacity Building Foundation
ACGS	Agricultural Credit Guarantee Scheme
ACGSF	Agricultural Credit Guarantee Scheme Fund
ACI	Africa Capacity Index
ACIAgriC	Composite Index for Agriculture
ACIR	Africa Capacity Indicators Report
AERC	Africa Economic Research Consortium
AFD	Agence Française de Développement
AfDB	African Development Bank
Afi	Aid for Investment
AFRACA	The African Rural and Agricultural Credit Association
AgDBs	Agricultural Development Banks
AGRA	Alliance for a Green Revolution in Africa
AGRITEX	Department of Agricultural, Technical and Extension Services
AIDS	Acquired Immune Deficiency Syndrome
ALG	Liptako-Gourma Authority
ARCN	Agricultural Research Council of Nigeria
ARV	Anti-Retroviral
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
AU	African Union
AUC	African Union Commission
AWG-LCA	Ad hoc Working Group on Long Term Cooperative Action
BNDA	Banque Nationale de Développement Agricole Mali
BOA	Bank of Agriculture Limited
Bt	Bacillus thuringiensis
CAADP	Comprehensive Africa Agriculture Development Program
CACS	Commercial Agriculture Credit Scheme
CAMES	Conseil Africain et Malgache pour l'Enseignement Supérieur
CAMPFIRE	Communal Areas Management Program for Indigenous Resources
CAP	Common Agricultural Policy
CB	Commercial Bank
CBN	Central Bank of Nigeria
CBNRM	Community-based Natural Resource Management
CCC	Climate Change Scenario
CCCI	Confronting Climate Change Initiative
CDD	Community-Driven Development
CDM	Clean Development Mechanism
CDSF	Capacity Development Strategic Framework
CECAM	Caisse d'Épargne et de Crédit Agricole Mutuel
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CERUDEB	Centenary Rural Development Bank Ltd

CGAP	Consultative Group to Assist the Poor
CGIAR	Consultative Group on International Agricultural Research
CIDR	Compagnie Internationale de Développement Rural Canada
CILSS	Comité Permanent Inter Etats de lutte contre la Sécheresse dans le Sahel
CIP	Crop Intensification Program
CNCA	Caisse Nationale de Crédit Agricole du Sénégal
COMESA	Common Market for Eastern and Southern Africa
CORAF/	
WECAD	Central African Council for Research and Agricultural Development
CPIA	Country Policy and Institutional Assessment
CSIR	Council for Scientific and Industrial Research
DB	Development Bank
DFID	Department for International Development (UK)
DID	Développement International Desjardins
DMO	Debt Management Office
DRC	Democratic Republic of Congo
ECA	East African Community
ECOWAS	Economic Community of West African States
EGFAA	Equity and Guarantee Fund for Agriculture and Agribusiness in Africa
EM-DAT	The International Disaster Database
ENSO	El Niño/La Niña-Southern Oscillation
ESA	Eastern and Southern Africa
EU	European Union
FAFS	Framework for African Food Security
FANR	Food, Agriculture and Natural Resources
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization Statistical Databases
FARA	Forum for Agricultural Research in Africa
FCB	Farmer's Commercial Bank
FCTA	Federal Capital Territory Administration
FFS	Farmer Field School
G20	The Group of Twenty Finance Ministers and Central Bank Governors
GAFAFSP	Global Agriculture and Food Security Program
GATT	General Agreement on Tariffs and Trade
GCMs	Global Circulation Models
GDN	Global Development Network
GDP	Gross Domestic Products
GEF	Global Environment Facility
GFAR	Global Forum on Agricultural Research
GHG	Greenhouse Gas
GM	Genetically Modified
GMOs	Genetically Modified Organisms
GNAPF	Ghana National Association of Poultry Farmers
GPAFS	Global Partnership for Agriculture and Food Security
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HLF4	The Fourth High Level Forum on Aid Effectiveness
IAASTD	International Assessment of Agricultural Science and Technology for Development
IAC	InterAcademy Council

ICT	Information and Communications Technology
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFIs	International Financial Institutions
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
IMPACT	International Model for Policy Analysis of Agricultural Commodities and Trade
IPCC	Intergovernmental Panel on Climate Change
IPPC	International Plant Protection Convention
IRAI	International Development Association Resource Allocation Index
ISAAA	International Service for the Acquisition of Agri-biotech Applications
ITC	Independent Telecommunications Corporation
ITCZ	Inter-tropical Convergence Zone
KARI	Kenya Agricultural Research Institute
LDCs	Least Developed Countries
LUBILOSA	Lutte Biologique contre les Locustes et Sauteriaux
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MEAs	Multilateral Environmental Agreements
MFIs	Microfinance Institutions
MF4A	Making Finance Work for Africa
MNCs	Multinational Corporations
MRV	Measurement, Reporting and Verification
Mt CO ₂	Metric Tonne (ton) Carbon Dioxide Equivalent
NAB	Nigerian Agricultural Bank
NABARD	National Bank for Agriculture and Rural Development
NACB	Nigerian Agricultural and Cooperative Bank
NACs	New Agricultural Countries
NARS	National Agricultural Research Systems
NBC	National Biosafety Committee
NBF	National Biosafety Framework
NBFI	Non-Banking Financial Institution
NEPAD	New Partnership for African Development
NERICA	New Rice for Africa
NGOs	Non-Governmental Organizations
NIRSAL	Nigerian Incentive-based Risk Sharing System for Agricultural Lending
NPCA	NEPAD Planning and Coordinating Agency
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
PBN	People's Bank of Nigeria
PBS	Program for Biosafety Systems
PPB	Participatory Plant Breeding
PPP	Public Private Partnerships
PUA	Peri-Urban Agriculture
R&D	Research and Development
RCPB	Reseau des Caisses Populaires du Burkina
rDNA	Recombinant Deoxyribonucleic Acid
RECs	Regional Economic Communities
REDD+	Reducing Emissions from Deforestation and Forest Degradation plus

RUFORUM	Regional University Forum for Capacity Building in Agriculture
SACAU	Southern African Confederation of Agricultural Unions
SACCAR	Southern African Centre for Cooperation in Agricultural Research
SADC	Southern African Development Community
SAMB	State Agricultural Marketing Boards
SAPs	Structural Adjustment Programs
SAS	Socio-agroecological Systems
SHGs	Self-Help Groups
SLAs	Sustainable livelihoods Approaches
SPEG	Sea-Freight Pineapple Exporters of Ghana
SSA	Sub-Saharan Africa
SWAC	Sahel and West Africa Club
TRIPs	Trade Related Aspect of Intellectual Property Rights
UEMOA	Union Economique et Monétaire Ouest Africaine
UN	United Nations
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Program
UNEP-GEF	United Nations Environment Program Division of Global Environment Facility Coordination
UNFCCC	United Nations Framework Convention on Climate Change
UR	Uruguay Round
USA	United States of America
USAID	United States Agency for International Development
USG	United States Government
WAEMU	West African Economic and Monetary Union
WARDA	West Africa Rice Development Association
WDR	World Development Report
WECARD	West African and Central African Council for Agricultural Research and Development
WFO	World Farmers' Organization
WFP	World Food Program
WII	Weather Index Insurance
WTO	World Trade Organization

Executive Summary

Africa has become a continent moving at multiple speeds! In the last two decades or so, African countries have registered average annual economic growth of between 5-8% despite low foreign investments and the global economic crisis. Such evidence of good returns even on minimal investment indicates that Africa has great promise. In 2012 Africa is home to the seven fastest growing economies in the world. At the same time, Africa is still dependent on external aid, including food aid. In the last 50 years about one trillion US dollars in development aid has been transferred to Africa. But real per capita income today is less than it was in the 1970s and more than half the population – about 500 million people – still live in poverty. At this rate, most African countries may not meet many of the Millennium Development Goals (MDGs).

To sustain the high economic growth momentum and ensure that growth generates jobs and poverty reduction, Africa needs to continue to develop capacity, including capabilities to further transform its economies and that means transforming agriculture. To effectively use aid and to guarantee food security, Africa needs capacity to negotiate aid, secure fair trade deals, and manage under uncertainty. To achieve the MDGs Africa needs to focus on its capacity to get things done, to implement programs to meet stated objectives, and to harness the capacity of its vast domestic resources to effectively leverage and allocate to the right priorities the sources of funds it has for development.

To ACBF:

Capacity comprises the ability of people, organizations and society as a whole to manage their affairs successfully; and that is the process by which people, organizations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time. Capacity is also better conceptualized when answering the

question: capacity for what? Capacity for individuals, organizations and societies to set goals and achieve them; to budget resources and use them for agreed purposes; and to manage the complex processes and interactions that typify a working political and economic system. Capacity is most tangibly and effectively developed in the context of specific development objectives such as delivering services to poor people; instituting education, public service and health care reform; improving the investment climate for small and medium enterprises, empowering local communities to better participate in public decision making processes; and promoting peace and resolving conflict (ACBF, 2011:30-31)

This second Africa Capacity Indicators Report (ACIR2012) discusses capacity for agricultural transformation and food security. The first report, published in 2011, dealt with fragile states. The methodology used for the ACIR in 2012 maintains the three levels of core capacity

that were measured in 2011 in addition to the specific measures along the theme of the report - fragile states in 2011 and transforming agriculture and food security in 2012. The three levels of core capacity measured are: (i) the enabling environment; (ii) the organizational level; and (iii) the individual level (see Table A). The enabling environment refers to the system beyond the organization – including the tone set by leadership and other countervailing factors. It encompasses the broader system within which individuals and organizations function thus influencing their performance outcomes. The role of leadership is to set the vision, the tone and the stage by which activities that derive results can be undertaken. As was done in the

2011 report, the data collected on a set of indicators defined from the best known theory and practice, is subjected to a cluster analysis. The analysis confirms the four clusters calculated in the last report and allows an assessment of trends across time to gauge achievement and uncover challenges. The four clusters include the effectiveness of the policy environment, the soundness of processes in place for implementation, the ability to achieve a track record of development results, and the dynamic capability to generate capacity development outcomes. The four clusters are used in addition to the three dimensions mentioned above to generate a set of sub-indices and a composite index of capacity that allows linkage to strategies and actions

TABLE A
Capacity Dimensions in 2012 (% of countries by level)

Level	Enabling environment	Organizational level	Individual level
Very Low	0.0	4.8	71.4
Low	0.0	23.8	19.0
Medium	40.5	4.8	9.5
High	57.1	35.7	0.0
Very High	2.4	31.0	0.0
Total	100	100	100

Source: ACI database 2012

The organizational level of capacity is characterized and driven by the internal policies, arrangements, procedures and frameworks that allow organizations to operate and deliver on their mandate and that enable the integration and consolidation of individual capacities to work together to achieve specified goals. The individual level assesses skills, experience, and knowledge that are vested in people. Leadership comes at the individual level in the values espoused that determine accountability and results, as well as at the level of policies and

frameworks that allow individuals to transform the environment in which they work and generate results.

The policy environment examines the conditions that must be in place to make development possible, with particular emphasis on effective and development-oriented organizations and institutional frameworks. It is focused on (a) whether countries have put in place national strategies for development (including a strategy for agricultural development, given the

importance of transforming agriculture and achieving food security) and their level of legitimacy; (b) the countries' levels of commitment to meeting development and poverty reduction objectives established within the MDGs; (c) country-level awareness and focus on better utilization of limited resources for capacity development as measured by the presence of policies for aid effectiveness; and (d) degree of inclusiveness that supports their long-term stability as measured by the existence of gender equality and other socially inclusive policies – indeed broad participation and good governance underpin this measure. The role of leadership is recognized in the ability to nurture the development of strategy and embed it into vision-driven activities. Also embedded in this cluster is the concept that the leaders and their strategy need to be legitimate. How committed leaders are to achieving results such as those defined in the poverty reduction objectives and the MDGs is also embedded in this definition. The role leaders play to inform and engage is embedded in the concept of country level awareness, as are the values including efficiency and effectiveness that come from appropriate use of public resources. Finally, the leaders' tone-setting in inclusiveness is recognized as a key aspect that generates stability in the long-term and assures good governance. The role of the leader in tone and stage setting is explicitly visible in the conceptualization of the processes for implementation as is the ability to generate a track record of results and outcomes at the national level for the good of the people.

Processes for implementation assess the extent to which the countries are prepared to deliver results and outcomes. This dimension is concerned with the creation of an environment that motivates and supports individuals; the capacity to manage relations with key

stakeholders inclusively and constructively; and the capacity to establish appropriate frameworks for managing policies, strategies, programs and projects. Equally important are processes for designing, implementing, and managing national development strategies to produce socially inclusive development outcomes. Development results are tangible outputs that permit development. The main areas covered by the cluster are; the coordination of aid support to capacity development; the level of creativity and innovation in agriculture; achievements in the implementation of the Paris Declaration on Aid Effectiveness; achievement in gender equality and social inclusion as well as in partnering for capacity development.

Capacity development outcomes tend to measure the desired change in the human condition. Indicators to this effect are captured mainly through the financial commitment to capacity development; the actual achievement of the MDGs; gender and broader social equity; and the achievements in agriculture and food security, among other measures. Leadership is recognized in the attention to the dynamic aspects of human and organizational capacity and leadership for capacity development. Such a definition also includes the conceptualization of anticipating future needs, such as the skills needed to mitigate risks from climate change, the ability to function in environments of low predictability such as when food shocks are in full effect, and the wherewithal to react and respond in the face of disasters as will be needed when the effects of climate change impinge on cities and countries alike.

When the preceding ideas are applied to a particular context or sector, then one gets the levels of capacity in that context or sector. This Report utilizes these concepts to define the

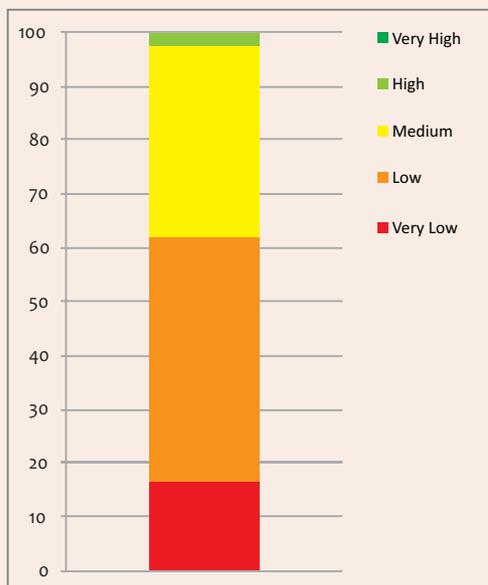
capacity for agricultural transformation and food security. The World Bank, Food and Agriculture Organization of the United Nations, and the US Agency for International Development (USAID) for example, define food security as 'access by all people at all times to enough food for an active and healthy life' (Tweeten, 1999:474). The most widely used definition was offered at the Rome Declaration of the World Food Summit of 1996. This declaration defined food security as existing when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life (Boyer, 2010; Sowman and Cardoso, 2010), and their dietary needs and food preferences (Scanlan, 2001).

The Africa Capacity Index (ACI) 2012, just like its predecessor, is a composite index computed from the four sub-indices generated from an analysis of clusters, each of which is an aggregated measure calculated on the basis of both a quantitative and a qualitative assessment of various components that form a cluster. Cluster analysis was used to generate the sub measures along the dimensions of policy environment; processes for implementation;

development results at country level; and capacity development outcomes. It is noteworthy that the pattern in 2012 is similar to the pattern in 2011 with a few important distinctions (see Figure A and Tables A-D):

- In 2012 one country (Ghana) barely slipped into a class of "High" capacity, as judged at the ACI composite level. This is an improvement relative to 2011 where there was not a single country that classified in the "High" category of capacity.
- There are notable improvements in "Development results at country level", where the percentage of countries in the lowest levels (Low and very Low) decreased from 61.7% to 19%. The majority shifted from "Low" to "Medium" Level and one can observe one country (Ghana) in the "High" level. These findings provide further evidence of the optimism around Africa from a number of sources including the World Bank, the IMF, and the Economist Magazine. Not only have a number of countries made notable improvements in moving up from the lowest levels of results, but they did so because they invested in capacity develop-

FIGURE A
ACI levels in 2012



Very High: No country (0%)
High: (1 country = 2.4%) Ghana
Medium: (13 countries = 31.0%) Benin; Burkina Faso; Cape Verde; Ethiopia; Gabon; Kenya; Mali; Nigeria; Rwanda; Senegal; Uganda; Zambia; Zimbabwe
Low: (22 country = 52.4%) Botswana; Burundi; Cameroon; CAR; Chad; Congo (DRC); Congo (Rep. of); Côte d'Ivoire; Gambia; Guinea Bissau; Lesotho; Liberia; Malawi; Morocco; Mozambique; Namibia; Niger; Sierra Leone; South Africa; Swaziland; Tanzania; Togo.
Very Low: (6 countries = 14.2%) Angola; Djibouti; Guinea; Madagascar; Mauritania; Mauritius.

Source: Computed from ACI database 2012

TABLE B
Pattern of ACI 2012 results

Level	ACI 2012 (% of countries)	Policy environment	Processes for implementation	Development results at country level	Capacity development outcome
Very Low	14.3	0.0	0.0	0.0	71.4
Low	52.4	0.0	0.0	19.0	23.8
Medium	31.0	2.4	33.3	66.7	4.8
High	2.4	23.8	50.0	11.9	0.0
Very High	0.0	73.8	16.7	2.4	0.0
Total	100	100	100	100	100

Source: Computed from ACI database 2012

TABLE C
Country capacity levels in 2012.

Country	ACI 2012 value	Rank	Country	ACI 2012 value	Rank
ANGOLA	17.2	38	LIBERIA	35.6	19
BENIN	43.4	11	MADAGASCAR	10.2	42
BOTSWANA	23.1	33	MALAWI	27.7	26
BURKINA FASO	53.4	3	MALI	50.3	7
BURUNDI	39.5	15	MAURITANIA	14.6	41
CAMEROON	37.3	17	MAURITIUS	14.8	40
CAPE VERDE	40.2	14	MOROCCO	36.2	18
CAR	28.1	25	MOZAMBIQUE	33.4	23
CHAD	20.2	36	NAMIBIA	25.2	29
CONGO (DRC)	34.5	20	NIGER	30.7	24
CONGO, REP	34.1	21	NIGERIA	50.5	6
CÔTE D'IVOIRE	24.6	30	RWANDA	51.9	5
DJIBOUTI	18.2	37	SENEGAL	42.7	12
ETHIOPIA	52.8	4	SIERRA LEONE	23.6	32
GABON	40.4	13	SOUTH AFRICA	26.0	28
GAMBIA	33.9	22	SWAZILAND	22.5	34
GHANA	60.2	1	TANZANIA	37.6	16
GUINEA	15.7	39	TOGO	20.7	35
GUINEA BISSAU	27.0	27	UGANDA	45.2	10
KENYA	58.1	2	ZAMBIA	49.7	8
LESOTHO	24.6	31	ZIMBABWE	48.6	9

Source: ACI database 2012

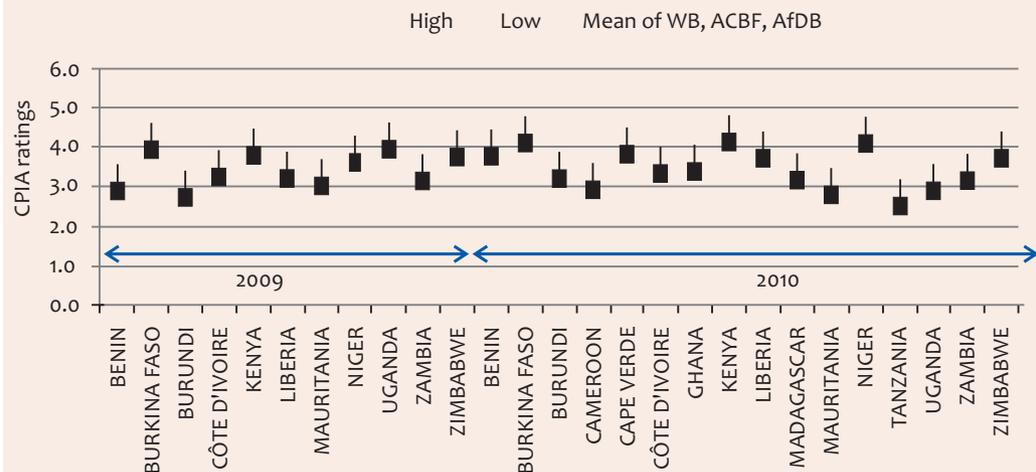
Also, as was done in 2011, countries were asked to do a self-assessment of their country policies and institutions using the questionnaire administered by the World Bank and the AfDB for the Country Policy and Institutional Assessment (CPIA) for countries receiving concessional finance. This report has a unique feature that also includes self-assessments for middle income countries like Botswana which are not assessed publicly by the multilateral aid agencies. The data collected from self-assessment provided opportunity for an analysis of two-years-worth of CPIA data comparing ACBF-commissioned self-assessments by countries to the World Bank and AfDB assessments. The data cover CPIA ratings for the years 2009 and 2010.

Analyzing the differences between the three assessments indicates that the AfDB tends to give ratings that are statistically similar to the

World Bank but higher than country self-assessments. The variance amongst ratings is the highest for the AfDB assessments, being twice as high as the Self-assessment. However, the AfDB assessments show more variability than the World Bank assessments. The volatility rankings are in the order of the AfDB, World Bank, then country self-assessments.

All of these results indicate that it is very important to use multiple measures before classifying countries. A methodology that accounts for the systematic biases would largely adjust for this difference. Using a band to classify countries would be more appropriate. Such a band is used to illustrate the range of the indicator in Figure B. The band is composed of the country self-assessment, and measures that are one standard deviation away.

FIGURE B
Range of band to classify countries in the CPIA



Source: Computed from ACI 2012, World Bank and AfDB databases

Capacity is at the heart of sustainable development. A core message of this Report is that improving the productivity and economic returns of agriculture has immediate effects on poverty and hunger in at least three important ways: it increases the productivity and incomes of the majority of Africa's poor, who work primarily in agriculture; it reduces food prices, which affect real incomes and poverty in urban areas; and it generates important spillovers to the rest of the economy.

The current Report also distinguishes between four clusters of agricultural capacity, generated using cluster analysis. The first is the ability to have a good strategy for the agricultural sector, which comes from leadership to embed a vision for agriculture at the country level and the set of vision-driven activities that can transform the sector and have it contribute to development. The second cluster captures the investment in dynamic capacity, including the skills, knowledge and innovation needed to get results in the agricultural sector. The third cluster recognizes the explicit role of the private sector in the agricultural supply chain and the capacity of this sector to contribute to the process of transformation. The last cluster relates to the information system that supports farmers, buyers and sellers and other stakeholders in the supply chain including making research relevant for farmers. The same formula for the calculation of the ACI composite index (see technical note) is employed to compute the ACIAgric, i.e. the harmonic mean of the following component indices (Agricultural Strategy; Training-Innovation; Role of Private Sector; Information System)

This Report discusses the various issues relating to the concept of agriculture in Africa, including land productivity and the constraints upon it,

globalization and its effects on commodity prices, as well as climate change and rural-urban migration. The Report starts from the basis that agriculture (and therefore the growth of agriculture) is part of the key to Africa's development. Various theoretical models have been posited over the years, and it was long thought that the key to development was industrialization. In the post-industrial world, development was thought to reside in the market – through structural adjustment in the 1990s leading to the “Washington Consensus” model of very recent times. Now the world is beginning to realize that the State does have a crucial role to play, and must exert responsibility in many different areas in order for development to take place. In developmental states, such as China, the world has seen rapid growth, which has resulted from the state playing a controlling role in development while permitting private ownership and entrepreneurship at the same time. An active state is not necessarily a repressive one. The world is also beginning to realize that so-called “free market” governments also exercise a tremendous amount of control through protectionist measures – and these are primarily to do with agricultural trade.

The economies of most African countries are agricultural. Agricultural labor comprised 59% of the total labor force in Africa (FAO, 2011) and 13% of value added to GDP in 2009 (World Bank, 2011b). Thus, agricultural growth holds the key to overall growth and development in Africa. Growth in agriculture has been relatively strong in recent decades, while at the same time the food security situation is worsening. Land productivity has not increased, only the extent of cultivated land. There is need for sustainable intensification, so that more output is obtained from the same area. Productivity is constrained

by endemic diseases such as malaria and HIV/AIDS, which have weakened the labor force. Livestock diseases have affected livestock production: such diseases often result from poor livestock producers being unable to dip cattle, when the state has withdrawn public dipping or veterinary services. Furthermore, agricultural producers are marginalized in society, and young people no longer wish to farm, preferring to live their lives in urban areas. Rural areas can become depopulated, with agriculture being carried out largely by the old or the very young.

Globalization has increasingly resulted in unstable commodity prices, rising input costs, low levels of investment and lack of credit. Food policies have effects that cut across national boundaries. Decisions such as that of the United States to convert corn to ethanol, as well as the growing interest in using large areas of African land for the growing of biofuel crops affect food prices. The extent of land available for growing food will obviously become more limited. Foreign acquisition of African farmland has affected the land rights of the poor and of women. This has implications for capacity development.

Africa is the fastest urbanizing region in the

world, and Africa also currently contains some of the world's fastest growing economies (in terms of GDP). The way in which farming is done will have to adapt in order to feed the urban poor. Green belts and urban agriculture should be encouraged, where today such activities are marginal and even illegal in some countries. There is also enormous diversity within Africa, wealth, resource-rich countries such as Nigeria alongside "least developed" states such as Burkina Faso and Niger. There is also a wide variance in climatic zones. But all of Africa is characterized by lack of capacity, as well as low levels of public spending on agriculture thus food security

The majority of countries have a composite capacity for agriculture that is rated Medium. Countries have made important investments in the dimension of capacity related to information systems (Table D). These results support the work done by many in the agricultural sector of improving the information available to farmers and others in the supply chain, enabling them to make the right decisions. The impact of the cellphone and the availability of mobile communications platforms cannot be underestimated in its contribution to this capability to get information out to farmers.

TABLE D
ACIAgric - Percentage of Countries by Cluster

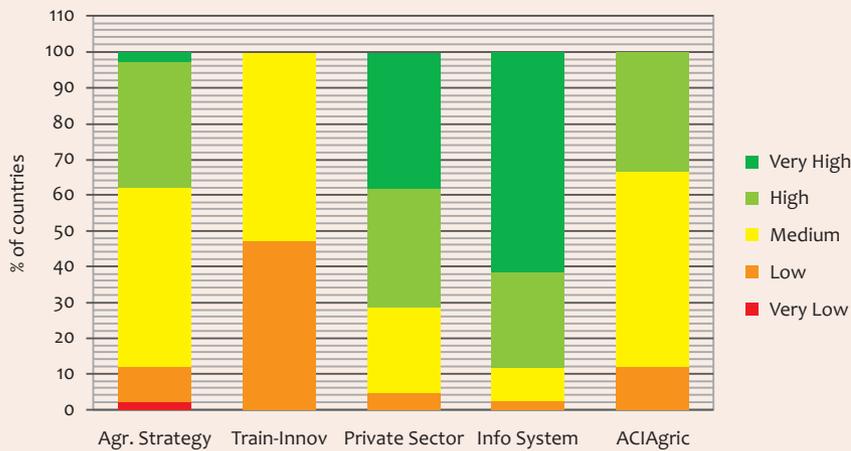
	Agricultural Strategy	Training-Innovation	Role of Private Sector	Information System	ACIAgric
Very Low	2.4	0.0	0.0	0.0	0.0
Low	9.5	47.6	4.8	2.4	11.9
Medium	50.0	52.4	23.8	9.5	54.8
High	35.7	0.0	33.3	26.2	33.3
Very High	2.4	0.0	38.1	61.9	0.0
Total	100	100	100	100	100

Source: Computed from ACI database 2012

Also noteworthy is that the majority of countries do have medium capacity to develop a good agricultural strategy and to invest in the right areas to build the skills and innovation needed for the future (Figure C). There is evidence of leadership in the area of dynamic capacity, and it may be that the Comprehensive Africa

Agriculture Development Programme (CAADP) is showing results. However, 12% of countries remain with very low capacity and the majority of them still have a long way to go to involve the private sector and build their capacity for a private sector that contributes to transforming agriculture.

FIGURE C
ACIAgric capacity by clusters



Source: Generated from ACI database 2012

The results indicate that countries need to go beyond strategy and focus on implementation. As agricultural growth holds a major key to overall growth and development in Africa, a focus on implementation of agricultural strategies would also yield overall development results.

In agriculture and food distribution, infrastructure is pivotal, and in this, states cannot act unilaterally. Regional groupings, such as NEPAD Agency, must be encouraged, and can play a role because of its own cross-continental nature to support regional public goods. Lack of infrastructure affects exports of “cash” crops, but improvements in roads and transport and

storage facilities can enable small producers and those engaged in other farming activities to market their surplus, making some income for themselves and their families. Infrastructure development is one of the key pillars for achieving inclusive, sustainable and resilient growth. Infrastructure does not only consist of marketing facilities, but includes schools and other training facilities.

Co-operation can be fostered not only between, but also within states, and the role that co-operatives can play in agricultural production and distribution needs to be re-examined. The private sector can also play an important role. Africa should learn from her own experiences in

agricultural transformation, placing a premium on knowledge management to harvest lessons learned and best practices. To this end, clearing houses should be fostered, making use of such fora as RUFORUM, the regional university forum.

Focus should also be on the enhancement of livelihoods. Livelihoods encompass the resources and strategies that individuals and households use to meet their needs and accomplish their goals, that is, people, their capabilities and their means of living. Thinking in this way accommodates women much more seamlessly, and capacity building is a tool that is eminently appropriate for sustainable livelihoods. Small farms, which occupy 60% of arable land worldwide, and are as much as 90% of the world's 525 million farms, tend to be operated by women.

Sustainable livelihoods approaches represent a powerful theoretical development, and vulnerability and resilience are key sustainable livelihoods concepts. Land tenure insecurity is a primary cause of vulnerability. Without tenure, farmers can do no more than subsist.

Small farmers include the growing numbers of people who are involved in urban agriculture, an activity which is becoming more and more important for food security and nutrition. Urban agriculture provides employment, and urban agriculture needs to be taken more seriously by national governments – given that Africa is the fastest urbanizing continent. Local governments have tended to obstruct agricultural activities, in many cases treating them as illegal. The issue of the use of municipal water for agricultural activities is extremely contentious.

The effects of agricultural policy, through the state and government, cut across all levels of agricultural activity from the small plot to the

vast plantations. And government activities such as land distribution policies and the holding of elections can have profound effects on agricultural productivity. It is thus important to look at the capacity of the state, as well as the individual farmer, with regard to implementation and policy formulation. But the state is not an autonomous institution, and NGOs in particular play an increasingly important role. NGOs are supposed to represent the citizenry, and the participation of people themselves in policy formulation is vital. There is an obvious place for capacity development here. Agricultural policy has become a contested site between state and non-state actors. Multilateral non-state organizations like the European Union play a further role in agricultural policy, including those corporations that promote biotechnology and genetic engineering. But the state is the only body that can act to unify and regulate policy across all the multiple players in agriculture.

African responses to biotechnology have been mixed, with some countries adopting some schemes, while others have refused even to import Genetically Modified (GM) grain in times of food shortage. This delay in initiating policy is due to lack of political commitment and foresight on the part of governments, but also due to lack of scientific skill to make a proper determination on the basis of the unique conditions Africa faces. In other areas, too, policy is inconsistent and short-term. Collaboration in policy as well as research at a regional and also at an international level must take precedence as should the link between research and farmers.

In order to formulate and implement policy governments require knowledge. Hitherto the only repositories of knowledge in Africa, specifically targeted at government, have been the National Agricultural Research Systems

(NARS), and these have been too “technical,” ignoring the vast reserves of knowledge possessed by individual farmers. New ways to gather and process knowledge – the knowledge management approach – are necessary here. And nothing can proceed unless there is a financial system in place, for Research and Development (R&D) require investment, which individual small states may not be able to afford. Governments should build on the regional research councils that exist. Farmers themselves must become involved in R&D activities.

Although agricultural finance has hitherto been supported through national agricultural banks, with microcredit schemes operating at the very margins, the international financial system has had a devastating effect on African agriculture. The global financial crisis led to increasing amounts of commodity speculation, affecting food prices throughout the world and national agricultural financial policies have failed to support agriculture. The Report recommends a paradigm shift in the financing of agriculture, with much more investment in rural financial infrastructure. Microcredit schemes have already proven effective in India, and cooperatives can play an important role here. Loans can be made available to farmers for different ends – short, medium and long term loans. Commercial banks are notoriously reluctant to extend credit to small farmers, and this situation is exacerbated by the farmers' own ignorance of financial procedures. Both bankers and farmers require training. Agricultural development banks have been established in a number of countries, but these have failed to mobilize savings and domestic capital market resources. The Report provides details on the Global Agriculture and Food Security Program (GAFSP), which provides support for national and regional strategic plans for agriculture and

food security.

The agricultural sector has been poorly served by the financial system partly because of the unfavorable policy environment. Poor banking infrastructure is largely to blame for this, alongside weak institutional capacity in the financial sector. The risks inherent in agriculture give rise to the reluctance by financial institutions to provide credit to farmers. Insurance schemes are not generally available, but insurance would provide a sense of security to both the creditor and the farmer seeking a loan.

In 2003 NEPAD proposed that all governments commit themselves to allocating 10% of their budget to agriculture (Maputo Declaration, 2003). By 2011 only ten African countries had reached or surpassed this target.

Recommended is the adoption of a value-chain approach, and a regional approach to value chain development is important where many countries have small populations with many similarities with neighboring people across borders. Value chain financing implies that lending will be done differently, with the appropriate framework for capacity building. In value chain, financing risks decrease as the value chain moves forward. Different types of financial product will be required. Expanding regional trade markets can provide more opportunities and incomes for small farmers. Indeed, well-functioning markets increase income to farmers, reduce the costs of food and the unreliability of supply, as well as improving food security. Small farmers are extremely vulnerable to risk, which can to a large extent be offset by diversification, and well-functioning markets.

The Report identifies numerous innovations which might be used in delivering finance to poor

farmers.

A major shift in emphasis from upstream agriculture to the downstream sector is required, in order to promote growth and enhance food security. The private sector has generally been very marginal to development thinking on agriculture in Africa, but it must be encouraged to play a role, and can do so here through contract farming schemes. But mostly, it is governments that have to provide the enabling environment for the financial sector to be strengthened.

There are also economic measures that governments and financial agencies can take to mitigate risks, such as weather insurance schemes. In the green global economy, governments invest in areas that stimulate the greening of economic sectors, as well as in capacity building, training and education. Taxes and other financial instruments can also be introduced. Measuring, reporting and verification (MRV) of emissions should not only be a tool of the developed world and, for this, training will be necessary for African countries.

In all activities, different types of partnership have been important in guaranteeing success. The Comprehensive African Agricultural Development Programme (CAADP) is a key platform for the restoration of agriculture growth, food security and rural development in Africa, and ACIR2012 recommends adopting it. The CAADP process involves the development of partnerships, such as that between the private and public sectors, and farmers' associations.

A number of key issues and recommendations emerge clearly from the Report. The first of these is that it is no longer viable (as the Washington Consensus imposes) for the State to play a secondary role in agriculture – and indeed

in development as a whole. It is imperative that the State takes an active role, taking charge of development activities and committing itself to investing in development. Countries should avoid the mistakes of the 1960's and 1970's of having the state run everything in agriculture by also ensuring that agriculture markets function. First among the role of the state is that of investments in rural and connecting infrastructure. Agriculture can only develop through trade, and for this to take place there must be adequate roads and other means of transporting *fresh* produce rapidly and efficiently. The transport infrastructure includes adequate storage facilities for the different types of commodities. The private sector seeing opportunities in bigger markets will then make the needed investments to support cold chain logistics and other agribusiness ideas that add value to agricultural production.

In developing policy, the state must involve the farmers themselves, in harvesting the knowledge that they possess. The concept of livelihoods is a more inclusive conceptual framework within which to consider the farmer.

Climate change is an urgent problem for agriculture and food security, and ways to mitigate this must be prescient not reactive, so that the continent does not lurch from crisis to crisis, dependent always on emergency relief. Water issues cross boundaries, and African governments must be prepared to work together in order to allocate adequate water for agriculture. As in all collaborative efforts, States must be prepared to cede some aspects of their sovereignty for the greater good.

But how can African governments pay for the damage caused by extreme weather events due to climate change? The threats of increasing drought, flooding, rising sea levels and population movements caused by disasters are

real. Yet, for Africa they have sometimes proved an opportunity. For the first time, African governments spoke together at the recent COP 17 in Durban in December 2011, and were successful in ensuring the inclusion of agriculture in the final agreement.

The capacity to mitigate the effects of climate change is vital if agriculture is to succeed and people to have the ability to feed themselves. Without water, no activity can take place, and water resources for agriculture have always been unevenly distributed. Agriculture in Africa has been plagued by disputes over water distribution, from controversial large dams to small streams. The Nile River Basin has for some time been a focus of dispute. Given that water resources transcend national boundaries, water rights must be devised at a regional level. It is only governments that can agree on access to transboundary water resources, as well as developing the infrastructure for storage of water. The very nature of farming systems will have to change, with more emphasis on integrated farms and horticulture production. Irrigation schemes that were attempted in the 1960s and 70s have largely failed, but smallholder irrigation has had more success. Improved weather forecasting and early warning systems assisted by the widely adopted mobile phone networks can be used. Insurance and compensatory measures could be put in place. Fisheries could be integrated with other types of farming, and livestock selection can be enhanced, as well as programs to assist farmers in re-stocking following a drought period.

African countries need to develop policies and frameworks that allow for poverty reduction as well as sustainable livelihoods, and need to be well aware of emerging challenges such as climate change and the need for climate adaptation. Strategies must be developed to deal with household vulnerabilities by strength-

ening resilience and reducing risks. Innovative sources of financing have to be sought in the context of the evolving global aid architecture. Development assistance has the possibility to be one of the major instruments for enhancing global justice and equity if used appropriately by both donors and recipients. Assistance – especially food aid – has been known to have immediate positive impact on food insecurity.

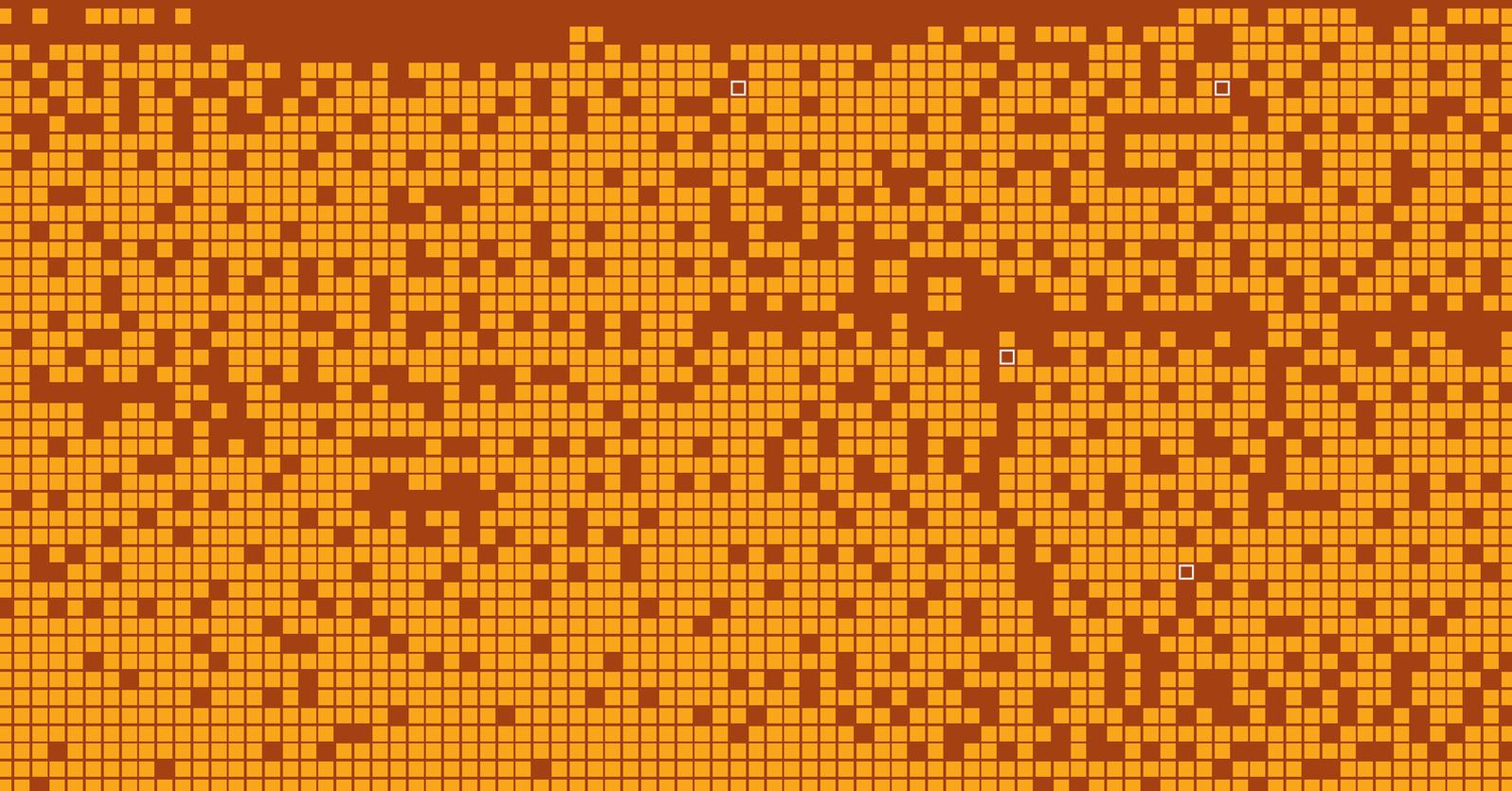
Developed countries' emissions of greenhouse gases already undermine the productivity of farming systems essential to survival of the poor in many African countries. The burden of climate change needs to be fairly shared.

Yet, countries need capacities of all kinds to make these productivity improvements and secure the required economic returns. Governments have the responsibility to implement policies, laws and regulations that create an enabling economic and institutional environment in which private and civil society agents, including farmers, can flourish. Social equity concerns challenge policy-makers, researchers, practitioners and donors to work together to provide not only the technological means, but also the social support needed to encourage and enable uptake of new techniques by those previously lacking skills, training, extension services or credit facilities. The success of agriculture depends on what resources and rewards are available to those involved in it including young people.

With this Report, the African Capacity Building Foundation (ACBF) hopes to bring political, policy, research, investment, and capacity development attention to the implementation, monitoring, and tracking issues holding back the transformation of African agriculture and the guaranteeing of food security for its growing and youthful population. Done right, agriculture can indeed transform Africa. But it needs to start by

1

Reaffirming Capacity Development in Africa





1

Reaffirming Capacity Development in Africa

1.0 Introduction

It is a well-known fact that social development is increasingly linked to a nation's ability to acquire and apply technical and socio-economic knowledge, and the process of globalization is increasingly accelerating this trend through the speed with which knowledge can become obsolete (Hanson and Kararach, 2011). Comparative advantages come less and less from abundant natural resources or cheaper labor, but emerge increasingly from technical innovations and the competitive use of knowledge.

Terms like “absorptive capacity” which were originally defined for firms (see Cohen and Levinthal, 1990; Zahra and George, 2002) as the ability to recognize the value of new information, assimilate it, and apply it for added value, have been used by many to argue for investments in improving accumulation and use of knowledge at the country and organizational level. In today's world, socio-economic development is as much a process of knowledge accumulation as it is capital accumulation. According to Salmi (2005:1), “firms devote one-third of their investment to knowledge-based intangibles such as training, research and development, patents, licensing, design and marketing. In this context, economies of scope, derived from the ability to design and offer different products and services with the same technology, are becoming a powerful factor of expansion.” In high-technology industries like electronics and telecommunications, economies of scope can be more of a driving force than traditional economies of scale. At the same time, there is a rapid acceleration in the rhythm of creation and dissemination of knowledge, which means that the life span of technologies and products gets progressively shorter and that obsolescence comes more quickly.

The aforementioned factors are composites of capacities for development. The Africa Capacity Indicators Report goes beyond the definition of capacity to absorb and use knowledge and extend the concept to the capacity to implement, borrowing from lessons in evidence-based practice that have been in use in areas of social policy (see for example Schaughency and Ervin, 2006). The choice to widen the search for defining indicators of capacity is in part due to the importance of capacity development in Africa and the need for a definition and set of indicators that can serve equally well in economies that are largely dependent on agriculture, those that are transforming into industrial countries with growing manufacturing of products for domestic use and export, and those that may be competing in knowledge services on a global basis. A lot has been learnt since the African Capacity Building Foundation (ACBF) published its inaugural Africa Capacity Indicators Report in 2011. The 2011 Report focused on the concept of fragility and gave a lot of importance to the role of capacity to ensure stability. The theme of the current Report is on Agricultural Transformation and Food Security.

The Report argues that capacity for agricultural transformation and food security is critical for Africa given emerging challenges such as climate change and the need for climate adaptation, but also because of the link between food security and social stability.

1.1 Capacity development landscape in Africa - conceptual issues

Africa has become a continent of mixed messages! Over the last 50 years approximately one trillion US dollars in development aid has been transferred to Africa. But real per capita income today is less than it was in the 1970s and more than half the population – about 500 million people – still live in poverty. At this rate, most African countries may not meet many of the Millennium Development Goals (MDGs). At the same time, in the last two decades or so, African countries have registered average annual economic growth of between 5-8% despite low foreign investments and the global economic crisis. Such evidence of good returns even on minimal investment indicates that Africa has great promise (Kagame, 2011). Arguably, this turnaround in economic performance has been powered by dramatic improvements in political stability and the quality of governance. Incidents of civil violence fell 34 percent between 2004 and 2008, while scores on the Ibrahim Index of African Governance have improved in 42 out of 53 African countries since 2002. Sierra Leone is a case in point whereby tens of thousands were killed and 2 million people were displaced from their homes due to civil war. A decade later, Sierra Leone has held two free and fair elections – its first peaceful transfer of power – and recorded one of the fastest improvements in political stability of any country in the world (Blair, 2010).

Africa is also experiencing new waves of global confluence. The rising influence of China and other emerging powers, and the growth of new

south-south partnerships, have challenged the traditional donors' intellectual monopoly on how development assistance should be provided. China's investment in African infrastructure has skyrocketed, rising by 46 percent a year between 2001 and 2007. There are heated debates about what China is doing in Africa. But what shouldn't be missed are the lessons of how it is going about it. The Chinese approach is focused on delivering rapid, visible results (Schiere et al., 2011). Whatever one thinks of it, China is certainly meeting a real demand felt by African leaders for politically significant 'quick wins'. Even if one does not always agree with China, there is need to recognize and respond to the power of this approach, and its impact on the expectations of African leaders and citizens for other development assistance (ibid). Furthermore, China is a country with an exemplary record on absorptive capacity, where learning from external interventions is at a premium and results are the driver of decision-making. Africa can learn from China what capacities need to be developed such that investments, private and public alike, including Foreign Direct Investment (FDI) can be used to deliver development results.¹

For these 'winds of change' to be exploited to benefit Africa, there must be capable leadership to empower society (Lopes, 2002:128). Indeed there is a need not only for effective leaders who can take risks and show results, but also who can create an environment for success in development because of the values they espouse for promoting human development for common good and benefit of their countries (Safty, 2003).

Defined thus, leadership is also needed for capacity development itself, through vision-driven activities of people who are able to transform their environments and chart new paths of progress (Safty, 2003). As Blair (2010: 5) posits: “the biggest opportunity of all is the new generation of visionary, reformist leaders that has emerged in many African countries, intolerant of the old excuses, determined to turn the page on the past. Not all of these leaders will succeed—risk is inherent to real leadership—but the signs are positive.” As Mkandawire (2002:150) argues, governments can commit two types of errors: that of omission – where the state fails to do what it ought to do; and errors that of commission where the state does too much and overstep its bounds. Here Blair can be quoted extensively when he argues that:

[E]very leader must balance the risk of committing 'errors of commission', doing things they should not do, against the risk of committing 'errors of omission', neglecting to do the things they should. Yet when it comes to Africa, the development community seems to be much more worried about the danger of doing wrong than the challenge of getting things done. The major donor countries of the OECD invest more than \$3.5bn in governance every year, but much of this—perhaps as much as 60 percent—is focused on tackling 'errors of commission' through public financial management systems, strengthening of civil society and oversight bodies, support to parliaments, media, NGOs, human rights watchdogs and anti-corruption commissions. The question is not whether these things are important—

they clearly are — but whether more and different support needs to be given to leaders to help them do the right thing, not just catch them when they do wrong. In fact, supporting leaders is crucial to creating the conditions where real, vibrant democracies can flourish. It is not a question of doing this instead of strengthening transparency and accountability. The two must go hand in hand, to create a positive cycle where elected leaders are able to deliver for their citizens, in turn nurturing a politics that is about issues and competence not just ethnicity or patronage, and which offers a model to inspire future generations of leaders. But to get there we need a proper understanding of the realities of leadership... Government is not a single, monolithic thing, with a single set of views and interests, even if it is convenient for outsiders to think of it that way. It is a set of sometimes co-operating, often competing organisations and personalities, with different values, worldviews, incentives and loyalties (2010:8-9).

Evidence of the complexity of state capacity was visible in the Africa Capacity Indicators Report of 2011 where some countries showed great achievement in the areas of policymaking, but limited achievement in implementing policy or even achieving results (ACBF, 2011). These findings point to an important dimension of choice — a state that may be overstepping its bounds in certain areas could be woefully inadequate in others, and thus may need to be strengthened at the same time as it is checked.

That is also why strong individual institutions must be matched by mechanisms to make governments work as a coherent whole more than the sum of its parts. African governments today have a number of demands put on them; not only do they need to get the basics right but are additionally being asked to deliver justice, healthcare, schooling, environmental protection, gender equality and a whole panoply of other standards and services, even when they have only just emerged from conflict, and with a fraction of the resources and revenues. In such highly resource-constrained environments, leaders face a daily dilemma: do they try to govern responsibly, and drive a weak and cash-strapped bureaucracy to deliver the services that will persuade people that government is on their side; or do they take the easy way out, and secure the loyalty of their citizens through patronage, favors and intimidation? The rationale for encouraging contested elections, supporting powerful anti-corruption authorities and other accountability mechanisms is to sharpen leaders' incentives to choose the first path. But this assumes that the capacity of the state to respond to what leaders ask it to do is not in question.

So beyond what has been said earlier about leadership, absorptive capacity and its links to knowledge, innovation and learning, what does one operationally mean by capacity? According to ACBF (2011:30-31),

[capacity] comprises the ability of people, organizations, and society as a whole to manage their affairs successfully; and capacity development is the process by which people, organizations, and society as a whole unleash, strengthen, create, adapt, and maintain capacity over time.

Capacity is also better conceptualized when answering the question: capacity for what? Capacity for individuals, organizations, and societies to set goals and achieve them; to budget resources and use them for agreed purposes; and to manage the complex processes and interactions that typify a working political and economic system. Capacity is most tangibly and effectively developed in the context of specific development objectives such as delivering services to poor people; instituting education, public service, and health care reform; improving the investment climate for small and medium enterprises; empowering local communities to better participate in public decision making processes; and promoting peace and resolving conflict.

ACBF therefore recognizes capacity in its dynamic sense and its context. This definition is in agreement with the approach taken by the African Union/NEPAD in the Capacity Development Strategic Framework (CDSF) adopted by African Head of States in 2003. The CDSF has six pillars (see Figure 1.1) and is designed to assist countries and institutions to:

- deeply analyze the fundamental capacity challenges confronting them;
- promote the adoption of innovative, appropriate and effective solutions to capacity development that take into account local needs, priorities and context; and
- encourage the application of integrated, comprehensive and sustainable solutions.

FIGURE 1.1
The six pillars round the CDSF

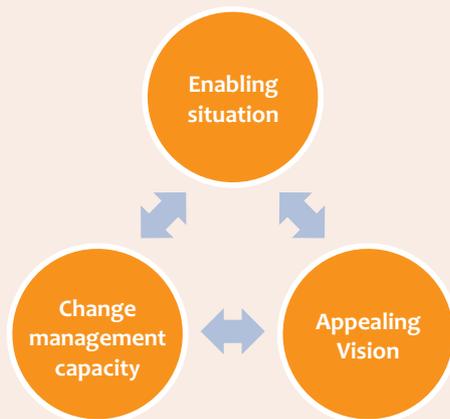


Source: Djibo, 2012

The ACBF - AU/NEPAD conceptualization of capacity when applied to a particular context or sector, then one gets the levels of capacity in that context or sector. This Report utilizes these concepts to define the capacity for agricultural transformation and food security whereby change is driven by an enabling situation/environment, management capacity and supportive vision (see Figure 1.2). The World Bank, Food and Agriculture Organization of the United Nations, and the US Agency for International Development (USAID) for

example, define food security as "access by all people at all times to enough food for an active and healthy life" (Tweeten, 1999:474). However, the most widely used definition was offered at the Rome Declaration of the World Food Summit of 1996. This declaration defined food security as existing when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life (Boyer, 2010; Sowman and Cardoso, 2010), and their dietary needs and food preferences (Scanlan, 2001).

FIGURE 1.2
Three key elements shaping change readiness for successful sector and capacity development



Source: Djibo, 2012

Capacity development remains a central tool for the social transformation and food security of Africa. Leaders need to focus on it for change to occur at the speed and sustainability required for Africa to secure development for its people. In the last twelve months, a series of international meetings have reaffirmed capacity as being at the heart of sustainable development. This was most recently reflected in the March 2011 Cairo Consensus on capacity development. The Busan HLF4 in November 2011 provided yet another opportunity for building a consensus to improve capacity development practice. However, important policy and technical challenges remain. Capacity development faces several important challenges: ownership and readiness for change cannot be taken for granted; multiple stakeholders are involved that can be both providers of and recipients of capacity development support – the role of the private sector and civil society merit particular attention; contextual factors, including opportunities for change can have a major influence on capacity

development outcomes. There is a need for pragmatic approaches, moving from rhetoric to practice: development partners' own procedures and business processes need to be adapted in areas critical to capacity development. These include internal competencies such as cultural sensitivity and communication skills, alignment, flexible planning, risk taking and a focus on learning amongst others. A tension exists between results orientation and process support: the pressure to deliver fast measurable results is not conducive to an engagement in capacity development processes. In the end, capacity development is both a means to produce results, and a strategic priority. The tension needs to be managed. There is also a need for an increased use of knowledge sharing and collaborative tools to allow for stakeholders learning across as well as within countries. Capacity development is highly contextualized; therefore, centralized decision-making should be balanced by information sharing between practitioners. The practice of capacity development is also still evolving and there is room to learn from the large reservoir of knowledge that can be drawn from the private sector.

The discussions in this Report are also guided by a number of additional concepts. These concepts and their operational definitions (the state, non-state, agricultural policy, farmers, globalization and scientific knowledge) are briefly examined as follows:

- **The state and its institutions:** To a large extent, the work of Karl Marx and his colleague Friedrich Engels, and that of Max Weber have influenced much of the scholarly debate on the state (Gerth and Mills, 1946; Engels, 1884/1986). In Africa, theorizing about the state has followed

either the Marxian or Weberian perspective with particular emphasis on its nature, organizational capability and relative autonomy (Leys, 1975; Saul, 1974). The state, in this Report, will be conceptualized in terms of a central or national political actor that interacts with several social groups (agricultural and non-agricultural) in initiating agricultural policies.

- **Non-state institutions:** These are generally private and, theoretically speaking, operate independently of the state institutions. There are different types (small, big, local, international, non-profit and for-profit) of non-state institutions or non-governmental organizations (NGOs).
- **Agricultural policy:** As a general term, policy “implies state intervention in the economy, while policies are the specific type of intervention, such as, for example, producer price policy, exchange rate policy, credit policy, or research policy” (Ellis, 1992:7). If policy is conceptualized only in terms of intervention or actions, the consequences of the absence of policies cannot be accounted for. However, it is important to take into consideration the absence of policy, because policy absence is itself a policy (Galjart, 1971:38-39). Agricultural policies in Africa are the actions and non-actions that result in intended and unintended consequences in the ability of state and non-state institutions to provide social groups with resources and rewards.
- **Farmers:** As agricultural producers, farmers play a major role in agricultural systems. Two broad categories of farmers will be considered in this Report

(small-scale and large-scale farmers). Small-scale farmers tend to rely on family land and labor and relatively little capital. Large-scale farmers have been privileged by the contemporary African state in its modernization schemes. Another distinction between small-scale and large-scale farmers is their relationship to the state. Small-scale farmers, residing mostly in rural areas, are “at arm's length from the social sources of [state] power” (Shanin, 1990:43). The state, nonetheless, requires small-scale farmers to produce export and domestic food crops, to raise foreign exchange and conserve foreign exchange spent on food imports respectively. Small-scale farmers also require income from the sale of crops, in order to buy non-agricultural goods and services. They depend on the state for access to some resources, for example, research and extension services. However, small-scale farmers can also resist state agricultural policies when they smuggle exports crops for sale in neighbouring countries for higher prices, or produce food crops for their own consumption. As a result, the state and small-scale farmers depend on and require each other.

Large-scale farmers are traditionally major players in the production of non-traditional agricultural crops for export (for example, flowers, pineapples and bananas). They have extensive non-agricultural interests and a better working relationship with the state. This is particularly because large-scale farmers are, in some cases, serving or retired political elites and formally educated, and have a closer relationship with ruling

coalitions. Given their extensive non-agricultural interests, some large-scale farmers are mostly absentee farmers, who do not live near their farms.

Farmers occasionally coalesce into associations in an attempt to influence agricultural policy. These associations reflect the character of what the farmers produce as well as the social characteristics of the group. For example, producers are made up of small-scale and large-scale producers, or of farmers producing crops for local consumption or export agriculture, and are located either in the urban or rural areas. Even though the specific group of interest in this Chapter is the producers, it is worth noting that producers have to liaise with buyers, consumers and agricultural policy makers. Thus, the relations between and within social groups in the agricultural sector are fluid. Underlying the relations between and within the social groups are political and socio-cultural considerations. The dynamics of these relations define and shape how producers relate to other groups in terms of access to agricultural resources and rewards. Thus, the conceptual distinctions are not static; especially with the changing nature of production systems in an era of globalization.

- **Globalization:** An interactive process that involves political, economic and social relationships among nations. It is a process that has historical origins, but has taken on a distinct qualitative character with the emerging breakthroughs in communication and information technologies. These changes have given rise to the compression of time and space

and the “intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa” (Giddens, 1990:64). Globalization is thus integrative by nature and the compression of time and space has implications for state and non-state institutions in agricultural policy and access to agricultural resources and rewards.

- **Scientific knowledge:** Is generally considered as the set of ideals or intellectual phenomena generated with the scientific method. The scientific method proceeds on the assumption that systematic processes can be employed to study phenomena, and such outcomes are rational. As used here, scientific knowledge is associated with knowledge producing entities like policy analysts and researchers in state and non-state institutions (national, international, public or private).

The aforementioned concepts and their theoretical value will be assessed while discussing the nexus between civil society, private sector, the state and African agriculture in an era of globalization.

1.2 Agricultural capacity: issues and options

A core message in this Report is that improving the productivity and the economic returns of agriculture has immediate effects on poverty and hunger in at least three important ways: a) it increases the productivity and incomes of the majority of Africa's poor, who work primarily in

agriculture; b) it reduces food prices, which affect real incomes and poverty in urban areas; and, c) it generates important spillovers to the rest of the economy. Yet, countries need capacities of all kinds to make these productivity improvements and secure the required economic returns.

The sector has a big footprint in a number of critical economic processes. Agricultural labor comprised 59% of the total labor force in Africa (FAO, 2011), with agriculture contributing 13% of value added to GDP in 2009, with \$322 value added per worker in agriculture (World Bank, 2011a). Growth in agricultural GDP in Africa has been relatively strong in recent decades (4.8% in 2009), and was the highest of the developing regions in 2009. The size of the sector and the positive growth prospects for Africa bode well for improving the contribution of this large footprint to food security and improved livelihoods.

But there are a number of constraints. First and foremost is the capacity to raise productivity. Agricultural production has somewhat kept pace with population growth (Livingston et al., 2011). However, in contrast to other regions, this has occurred largely through expansion of the cultivated area rather than increases in land productivity. Extensification reflects the lack of capacity to increase agricultural productivity. Research shows that for each 10% increase in small-scale agricultural productivity in sub-Saharan Africa, approximately 7 million people are moved above the poverty line (IFPRI, 2006a; IAASTD, 2009a). Due to the economic multipliers between agriculture and the rural non-farm sector where growth is generally faster and labor productivity and wages are higher, the urban poor benefit along with the rural poor from broad-based agricultural productivity growth (IAC, 2004). GDP growth in agriculture is four

times more effective in raising incomes of extremely poor people than when it originates outside the sector (World Bank, 2007a).

Capacity to raise production while facing sustainability constraints is another area of importance. 'Sustainable agricultural intensification' is likely to be an integral component in efforts to increase production in a sustainable manner among small-scale farmers. It is a cornerstone in the emerging global hunger and food security initiative 'Feed the Future' that constitutes a 'whole of government' approach in the United States (USG, 2011). Agricultural intensification involves three different ways: (1) increasing yields per hectare; (2) increasing cropping intensity (i.e., two or more crops) per unit of land or other inputs (water); and (3) changes in land use from low-value crops or commodities to those with higher market prices (e.g., from maize to fruits, vegetables and flowers in Kenya). Sustainable agricultural intensification involves producing more output from the same area while reducing negative environmental impacts and increasing natural capital and environmental services (Conway and Waage, 2010; Godfray et al., 2010; Royal Society, 2009).

Characteristics typically attributed to a sustainable production system are that it:

- Utilizes crop varieties and livestock breeds with a high ratio of productivity;
- Avoids unnecessary use of external inputs;
- Harnesses agro-ecological processes such as nutrient cycling, biological nitrogen fixation, allelopathy, predation and parasitism;
- Minimizes use of technologies or practices with adverse impacts on environment and human health;
- Makes productive use of human capital, in the form of knowledge and capacity to

adapt and innovate, and social capital to resolve common landscape-scale problems; and

- Quantifies and minimizes the impacts of system management on externalities such as greenhouse gas emissions, clean water availability, carbon sequestration, conservation of biodiversity, and dispersal of pests, pathogens and weeds (Lele et al., 2010:11-12).

Sustainable intensification requires research on technology and policy and institutional changes. It involves development of enabling institutional environments to build on strengths, address weaknesses, exploit opportunities and remove threats to achieving sustainable development (Lele et al., 2010).

Capacity to harness the complexities facing the sector and handle policy reforms and implementation processes in a holistic manner is also an area for attention. The multiple potential benefits from increased agricultural productivity in Africa confront six stark realities. First, an array of local conditions constitutes significant hurdles to be overcome. Endemic diseases such as malaria and yellow fever, and the HIV/AIDS pandemic, have weakened Africa's labor force. Debilitating livestock diseases such as trypanosomiasis have severely limited livestock rearing, animal traction, and mixed cropping in the tropical zones. Africa's meager output gains in recent years have come mainly from area expansion. This extensification, coupled with shortened fallow periods and minimal input use, has led to nutrient mining and declining soil fertility (Cleaver and Schreiber, 1994; Haggblade et al., 2010a). During the past decade, net food imports, measured in constant prices, increased more than 60% in Africa, further widening the food trade deficit, as increases in food

production have been outstripped by rapid population growth (FAO, 2011).

Second, globalization has increased pressure on the agricultural sector as declining commodity prices, rising input costs, low levels of investment and lack of credit take their toll on small-scale farmers, their families and agricultural workers in terms of uncertainty of income, indebtedness, unfulfilled needs, and deteriorating economic and social conditions. Most agricultural producers are increasingly on the margins of economic, social, and political life. Productivity enhancement is not so much a technical issue, as one of political, economic and social choices and constraints, and thus an issue of equity (UNDP, 2006a). These equity concerns challenge policy-makers, researchers, practitioners and donors to work together to provide not only the technological means, but also the social support needed to encourage and enable uptake of new techniques by those previously lacking skills training, extension services or credit facilities (IAASTD, 2009b).

'Equity modifiers' that involve human capital enhancement may reduce poverty and contribute to broad-based agricultural development. These include targeting small and medium sized family farms as priority beneficiaries for publicly funded agricultural research and extension, marketing, credit and input supplies; setting public investment priorities through participatory processes; investing in human capital to raise labor productivity and increase opportunities for employment; ensuring that agricultural extension, education, credit and small business assistance programs reach rural women; undertaking land reform; and actively encouraging the rural non-farm economy (Hazell, 1999; IAASTD, 2009b).

Third, Africa is a region particularly vulnerable to climate change - because of limited adaptive capacity (IPCC, 2007a). Analysis of long-term trends (1900- 2005) indicates rising temperatures in Africa as a whole as well as decreased precipitation (IAASTD, 2009a). Longer and more intense droughts have been observed since the 1970s, particularly in the tropics and subtropics (IPCC, 2007b). By 2050, Africa may be 0.5-2°C warmer and drier, with 10% less rainfall exacerbated by higher evaporation (Nyong, 2005). Changes in rainfall and temperature patterns are likely to negatively affect water availability and growing conditions, reducing food production and security, as well as hydroelectricity production. Biodiversity and ecosystems are likely to be severely affected (IAASTD, 2009a).

- Fourth, countries in protracted crisis have special requirements in terms of interventions by the development community. Of 22 countries currently in protracted crises, 17 are in Africa. Protracted crisis situations are characterized by recurrent natural disasters and/or conflict, long-term food crises, breakdown of livelihoods and insufficient institutional capacity. The aid architecture needs to better address both immediate needs and the structural causes of protracted crises (FAO, 2011:12):

- Food assistance helps build the basis for long-term food security;
- Improving food security in protracted crises requires going beyond short-term responses in order to protect and promote people's livelihoods over the longer term;
- Agricultural and rural-based livelihoods are critical to the groups most affected by protracted crises, but they are not

properly reflected in aid flows. Agriculture accounts for one-third of protracted crisis countries' gross domestic product and two-thirds of their employment. Yet agriculture accounts for only 4% of humanitarian aid received by countries in protracted crisis and 3% of development aid;

- Broader social protection measures help countries cope with protracted crises and lay the foundation for long-term recovery; and
- Supporting institutions is key to addressing protracted crises.

Fifth, there is need for Africa to invest in infrastructure to ensure better connectivity to markets. The importance of leveraging efforts and resources to enhance the enabling environment for infrastructure development and bridge the investment gap in the agricultural sector cannot be over-emphasized. Indeed, infrastructure has been recognized by both the G20 multi-year action plan and the Comprehensive Africa Agriculture Development Programme (CAADP) as one of the key pillars for achieving inclusive, sustainable and resilient growth. While African countries can bridge their infrastructure gap through further strengthening their investment frameworks, there is the need for development partners to take decisive actions that have a strong leverage effect on infrastructure investment on the continent. Financiers currently provide only half of the US\$93 billion that the continent needs every year for new physical infrastructure and operations and maintenance. Bridging the remaining gap requires a bigger public-sector role as the primary financier and infrastructure service provider; attracting the private sector to contribute its expertise and capital; and, identifying how official development assistance

can help leverage private investment in infrastructure and also strengthen the enabling environment, including the appropriate investment policy frameworks and institutional capacity on which hard infrastructure depends. African countries need to assess and diagnose public sector capacity bottlenecks that hamper infrastructure investment. In this regard, there is a clear need for more capacity building for undertaking public-private partnerships (PPPs).

Sixth, the African continent continues to experience increasing urbanisation rates (between 3% and 5% annually). This imposes severe pressure on urban food supply with consequent rise in urban poverty. As is discussed in Chapter 3, there is an apparent lack of political will to promote African urban agriculture over the years reflected in weak or absent policy frameworks; and resulting in an enormous capacity deficit. Policy makers and planners need systematic information for planning and managing capacity development centered on urban agriculture. Such a focus on urban agriculture will unlock its potential to address the growing urban demand for food and to alleviate urban poverty. To fully realize the potential of urban agriculture and deal with existing challenges, however, requires developing capacities at various levels. For example, African states must understand the implications of the rapidly shifting socioeconomic and demographic profiles of their cities. Furthermore, African states must be able to balance the need to preserve physical aesthetics of urban spaces as cities attract foreign capital, with the need to ensure food security through urban agriculture. Additionally, efforts to promote urban agriculture should be accompanied by an attempt to mitigate the negative impacts of changes in urban ecological systems, including public health threats that

urban farming may cause. Thus, African cities will require the capacity to develop and implement policies and funding instruments that foster ecologically sound urban agriculture, including appropriate land tenure reforms (Arku et al., 2011).

Political economy issues, choice of crops, changing needs and changing food habits with globalization, land degradation, land renting and sale to foreign companies on a large scale amongst others, do contribute to food insecurity in Africa. However, given the difficulty of discussing all these factors in detail, this Report focuses on and argues that food insecurity can be explained by factors which include poor policy choices by governments, maldistribution of food supplies, lack of rains and drought, lack of proper storage facilities, and the recent attempts in the international community to promote biofuels. Efforts to overcome food insecurity will be realized through improvement in storage facilities, infrastructure, and the promotion of biotechnology. Particularly capacity development efforts as embodied in the provision of extension services, training and educating personnel for agriculture sector, entrepreneurial, and marketing skills, are crucial to attaining food security in Africa. Countries like Ethiopia, Ghana, Malawi, Tanzania, and Zambia have experienced huge improvements in food production and the agriculture sector as a whole through capacity development measures and government support and investment in research and extension services. However, at the same time, extensive investments both in infrastructure and institutional capacity development as well as increased investment in modern technology and a determined effort to build up public research capacity will be needed to sustain the food security currently enjoyed by these countries (Swedish FAO Committee, 2009; see also Juma, 2011).

Moreover, notwithstanding the contribution of existing capacity development measures to promote and sustain food security, there is the concern that many of the current food security promotion measures, which have international trade and agribusiness at the centre of the food chain, only reinforce the neo-liberal paradigm advanced by international institutions. It is in this regard that food sovereignty offers a framework that can remedy the problems associated with the current approach to promoting food security. Food sovereignty, as characterized by deepening citizen participation, agrarian reforms, promoting property rights for local people, access by small-scale farmers to local and regional markets, putting producers and consumers at the centre of decision-making process on food issues, while having its constraints, represents a way out for African governments' efforts to reform and improve their food and agriculture sector.

In order to make significant progress toward reducing hunger and poverty, improving rural livelihoods, and facilitating equitable, environmentally, socially and economically sustainable development in Africa, identification of innovative approaches and commitment to implementing them is clearly needed.

1.3 Africa Capacity Indicators Report 2012: highlights and trends

As in the ACIR 2011, the methodology used for the ACIR 2012 is maintained and three levels of capacity are measured: (i) the enabling environment; (ii) the organizational level; and (iii) the individual level (Table 1.1). The enabling environment refers to the system beyond the organization – including the tone set by

TABLE 1.1
Capacity Dimensions in 2012 (% of countries by level)

Level	Enabling environment	Organizational level	Individual level
Very Low	0.0	4.8	71.4
Low	0.0	23.8	19.0
Medium	40.5	4.8	9.5
High	57.1	35.7	0.0
Very High	2.4	31.0	0.0
Total	100	100	100

Source: ACI database 2012

leadership and other countervailing factors. It encompasses the broader system within which individuals and organizations function, thus influencing their performance outcomes. The role of leadership is to set the vision, the tone and the stage by which activities that derive results can be undertaken.

The organizational level of capacity is characterized and driven by the internal policies, arrangements, procedures and frameworks that allow organizations to operate and deliver on their mandate and that enable the integration and consolidation of individual capacities to work together to achieve specified goals. The individual level assesses skills, experience, and knowledge that are vested in people. Leadership comes at the individual level in the values espoused that determine accountability and results, as well as at the level of policies and frameworks that allow individuals to transform the environment in which they work and generate results.

The Africa Capacity Index (ACI) 2012 is a composite index computed from four sub-indices, each of which is an aggregated measure calculated on the basis of both a quantitative and a qualitative

assessment of various components that form a cluster. Cluster analysis is used to generate the sub measures. The clusters have the following dimensions: policy environment; processes for implementation; development results at country level; and capacity development outcomes.

The policy environment examines the conditions that must be in place to make development possible, with particular emphasis on effective and development-oriented organizations and institutional frameworks. It is focused on (a) whether countries have put in place national strategies for development (including a strategy for agricultural development, given the importance of transforming agriculture and achieving food security) and their level of legitimacy; (b) the countries' levels of commitment to meeting development and poverty reduction objectives established within the MDGs; (c) country-level awareness and focus on better utilization of limited resources for capacity development as measured by the presence of policies for aid effectiveness; and (d) degree of inclusiveness that supports their long-term stability as measured by the existence of gender equality and other socially inclusive policies – indeed broad participation and good governance underpin this measure. The role of leadership is recognized in the ability to nurture the development of strategy and embed it into vision-driven activities. Also embedded in this cluster is the concept that the leaders and their strategy need to be legitimate. How committed leaders are to achieving results such as those defined in the poverty reduction objectives and the MDGs is also embedded in this definition. The role leaders play to inform and engage is embedded in the concept of country level awareness, as are the values including efficiency and effectiveness that come from appropriate use of public resources. Finally, the leader's

tone-setting in inclusiveness is recognized as a key aspect that generates stability in the long-term and assures good governance. The role of the leader in tone and stage setting is explicitly visible in the conceptualization of the processes for implementation as is the ability to generate a track record of results and outcomes at the national level for the good of the people.

Processes for implementation assess the extent to which the countries are prepared to deliver results and outcomes. This dimension is concerned with the creation of an environment that motivates and supports individuals; the capacity to manage relations with key stakeholders inclusively and constructively; and the capacity to establish appropriate frameworks for managing policies, strategies, programs and projects. Equally important are processes for designing, implementing, and managing national development strategies to produce socially inclusive development outcomes. Development results are tangible outputs that permit development. The main areas covered by the clusters are: the coordination of aid support to capacity development; the level of creativity and innovation in agriculture; achievements in the implementation of the Paris Declaration on Aid Effectiveness; achievement in gender equality and social inclusion; as well as in partnering for capacity development.

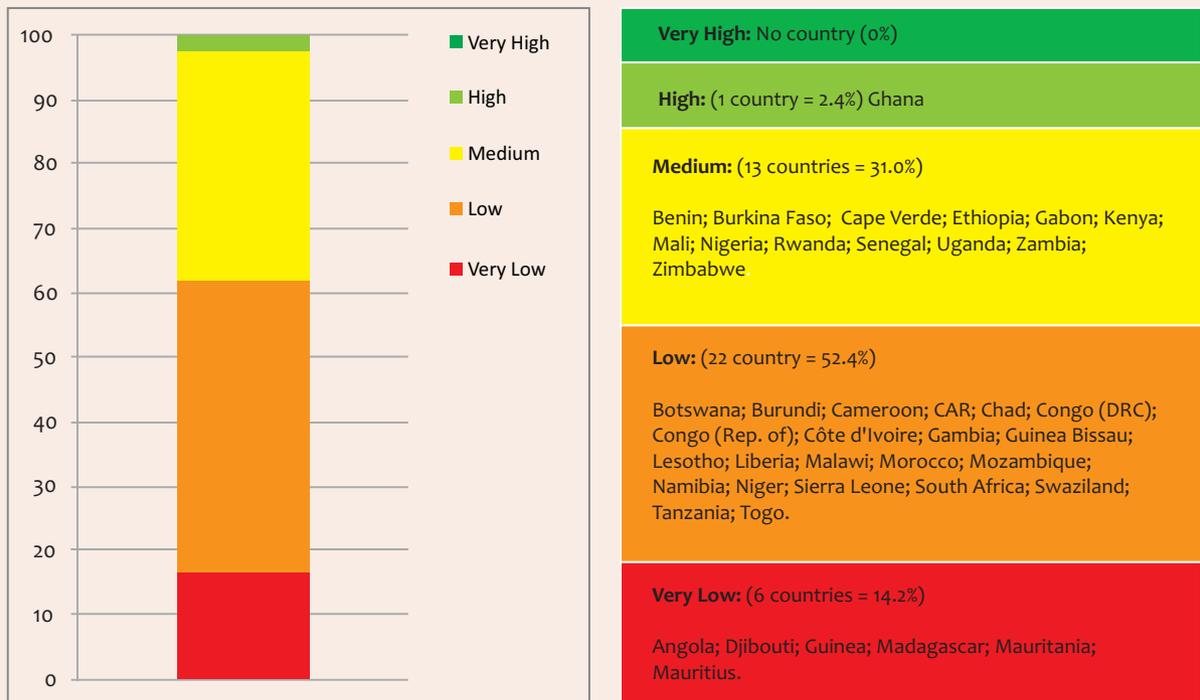
Capacity development outcomes tend to measure the desired change in the human condition. Indicators to this effect are captured mainly through the financial commitment to capacity development; the actual achievement of the MDGs; gender and broader social equity; and the achievements in agriculture and food security, among other measures. Leadership is recognized in the attention to the dynamic aspects of human and organizational capacity

and leadership for capacity development. Such a definition also includes the conceptualization of anticipating future needs, such as the skills required to mitigate risks from climate change, the ability to function in environments of low predictability such as when food shocks are in full effect, and the wherewithal to react and respond in the face of disasters as will be needed when the effects of climate change impinge on cities and countries alike.

With these definitions the Report assesses and compares capacity achievements in Africa. It is noteworthy that the pattern in 2012 is similar to that in 2011 with a few important distinctions (see Figure 1.3 and Table 1.2):

- Overall, as judged at the ACI composite level, whereas in 2011 there was not a single country that classified in the “High” category of capacity, in 2012 one country (Ghana) improved by barely sliding into that Level.
- There are notable improvements in “Development results at country level,” where the percentage of countries in the lowest levels (Low and very Low) decreased from 61.7% to 19%. The majority shifted from “Low” to “Medium” and one country (Ghana) moved into the “High” category. These findings provide further evidence of the optimism around Africa expressed by a number of actors (World Bank, the IMF, and the Economist

FIGURE 1.3
ACI levels in 2012



Source: Computed from ACI database 2012

FIGURE 1.4
Map of Africa by ACI Rankings

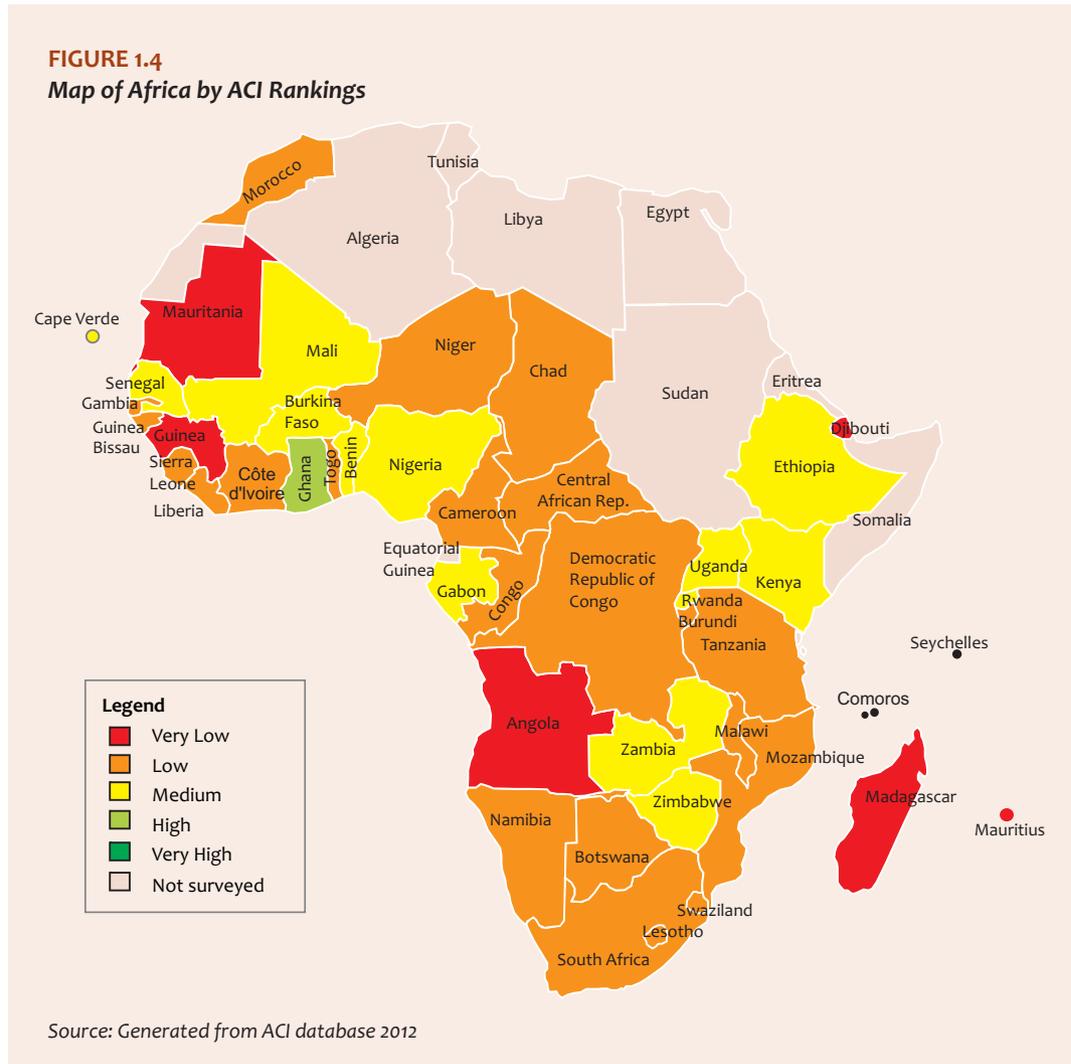


TABLE 1.2
Pattern of ACI 2012 results

Level	ACI 2012 (% of countries)	Policy environment	Processes for implementation	Development results at country level	Capacity development outcome
Very Low	14.3	0.0	0.0	0.0	71.4
Low	52.4	0.0	0.0	19.0	23.8
Medium	31.0	2.4	33.3	66.7	4.8
High	2.4	23.8	50.0	11.9	0.0
Very High	0.0	73.8	16.7	2.4	0.0
Total	100	100	100	100	100

Source: Computed from ACI database 2012

TABLE 1.3
Correlation coefficients between ACI 2012 indicators

	Policy environment	Processes for implementation	Development results at country level	Capacity development outcome
Policy environment	1.00			
Processes for implementation	0.36	1.00		
Development results at country level	0.09	0.42	1.00	
Capacity development outcome	0.14	0.29	0.05	1.00

Source: Computed from ACI database 2012

Another aspect that was possible to do in 2012 was to check the stability of the definition of the four clusters of capacity. An assessment of the correlation among the indicators was

done to see if there have been any structural changes across clusters. The results are shown in Tables 1.3 for 2012 and Table 1.4 for 2011.

TABLE 1.4
Correlation coefficients between ACI 2011 indicators

	Policy environment	Processes for implementation	Development results at country level	Capacity development outcome
Policy environment	1.00			
Processes for implementation	0.20	1.00		
Development results at country level	0.00	0.24	1.00	
Capacity development outcome	-0.09	0.12	-0.09	1.00

Source: Computed from ACI database 2012

The analysis shows that the correlation among the four clusters of capacity are weak, further reinforcing the need to maintain the use of the four clusters to compute the composite index. In particular, the correlation coefficient between the policy environment and the development

results at country level is nil in 2011 and close to zero in 2012. One may recall that, as the pattern presented in Table 1.2 shows, African countries have made an effort to foster an enabling environment, but development results are not following through. The absence of a correlation

between the policy environment and development results at the country level, though it does not prove that the two indicators are independent, follows a pattern similar to that observed in in Table 1.2. One suspects the policy environment is struggling to create significant impacts on development results at the country level. The lack of implementation of policies defined could be one reason for the absence of a link between policy and results. Another possibility could be that of isomorphic mimicry, where countries develop blueprints for the type of policies they perceive donors need to see, merely to access development aid. Noteworthy is the fact the correlation between the policy environment and processes for implementation increased from 0.20 in 2011 to 0.36 in 2012, as did the correlation between processes for implementation and development results which increased from 0.24 in 2011 to 0.42 in 2012. There may also be some evidence for the dynamic value of capacity development, in the fact that the capacity development outcomes and all other measures—including policy, implementation and results— show improved correlation between 2011 and 2012.²

Table 1.5 overleaf presents the agriculture and food security sub-indices and component index. The last column depicts the composite index for agricultural transformation and food security (ACIAgric). We distinguish between four clusters of agricultural capacity, generated using cluster analysis. The first is having a good agricultural sector strategy, which has leadership embedded in the vision for agriculture at the country level and a set of vision-driven activities that can transform the sector and have it contribute to development. The second cluster captures the investment in dynamic capacity, including the skills, knowledge and innovation needed to get results. The third cluster recognizes the explicit role of the private sector in the agricultural supply chain and the capacity of the sector to contribute to the process of transformation. The last cluster relates to the information system that supports farmers, buyers and sellers and other stakeholders in the supply chain including making research relevant for farmers. The same formula for the calculation of the ACIR composite index (see Technical Note) is employed to compute the ACIAgric, i.e. the harmonic mean of the following component indices (Agricultural Strategy; Training-Innovation; Role of Private Sector; Information



Investing in dynamic capacity - A tea processing plant in Zimbabwe

TABLE 1.5
2012 ACI for Agriculture - ACIAgric (Countries by decreasing order)

Rank	Country	Agriculture Strategy	Training-Innovation	Private Sector	Information System	ACIAgric
1	GHANA	67.8	53.2	82.7	88.5	70.2
2	ETHIOPIA	69.8	47.1	78.8	97.9	68.5
3	MALI	78.1	43.5	88.5	87.5	68.3
4	GAMBIA	93.6	40.4	82.7	83.3	67.2
5	ZAMBIA	64.0	47.5	84.6	86.5	66.6
6	NIGERIA	51.7	56.3	82.7	83.3	65.4
7	SIERRA LEONE	74.8	40.8	82.7	88.5	65.3
8	MOROCCO	65.4	48.4	73.1	85.4	65.2
9	NIGER	78.4	40.4	82.7	82.3	64.8
10	UGANDA	64.6	42.5	80.8	91.7	64.2
11	MALAWI	63.7	37.9	90.4	82.3	61.3
12	CHAD	68.6	37.8	71.2	95.8	61.1
13	SENEGAL	53.5	40.4	90.4	90.6	61.0
14	BURKINA FASO	59.5	40.8	75.0	90.6	60.9
15	GUINEA BISSAU	67.7	39.5	59.6	92.7	59.1
16	SWAZILAND	45.7	40.8	90.4	91.7	58.5
17	CAPE VERDE	68.3	43.5	48.1	92.7	57.8
18	CAMEROON	56.1	41.0	75.0	72.9	57.8
19	MADAGASCAR	42.2	48.3	69.2	93.8	57.6
20	TOGO	58.1	40.7	75.0	68.8	57.4
21	ZIMBABWE	45.6	45.9	69.2	82.3	56.9
22	BENIN	60.4	37.9	80.8	65.6	56.7
23	RWANDA	78.1	36.9	65.4	62.5	56.2
24	TANZANIA	42.2	43.7	84.6	78.1	56.2
25	KENYA	70.6	33.9	73.1	67.7	55.5
26	LESOTHO	53.1	36.7	59.6	87.5	53.8
27	SOUTH AFRICA	41.1	53.9	46.2	100.0	53.7
28	NAMIBIA	40.6	34.2	82.7	85.4	51.5
29	CONGO, REP	47.1	40.1	53.8	64.6	49.9
30	LIBERIA	50.2	26.6	76.9	89.6	48.9
31	MAURITIUS	46.5	33.4	82.7	50.0	47.9
32	DJIBOUTI	48.3	35.9	42.3	66.7	45.9
33	GABON	51.9	32.9	53.8	50.0	45.4
34	MOZAMBIQUE	32.1	38.5	55.8	75.0	45.3
35	GUINEA	49.1	22.6	53.8	88.5	42.4
36	ANGOLA	54.3	21.4	73.1	58.3	41.7
37	BOTSWANA	29.4	23.6	94.2	85.4	40.5
38	MAURITANIA	42.2	29.4	34.6	63.5	39.1
39	CAR	49.9	25.5	36.5	63.5	39.1
40	CONGO (DRC)	19.3	41.7	44.2	89.6	36.5
41	BURUNDI	28.9	36.8	76.9	25.0	34.9
42	CÔTE D'IVOIRE	23.9	22.1	75.0	50.0	33.2

Source: Computed from ACI database 2012

The country level results in Table 1.5 are summarized in Table 1.6 and Figure 1.5 in order to better interpret the patterns observed. The majority of countries have a composite capacity for agriculture that is rated Medium. Most countries have made important investments in

the dimension of capacity related to information systems. These results support the work done by many in the agricultural sector of improving the information available to farmers and others in the supply chain, enabling them to make the right decisions (Arthur, 2011; Mazur, 2011b).

TABLE 1.6
ACIAgric - Percentage of Countries by Cluster

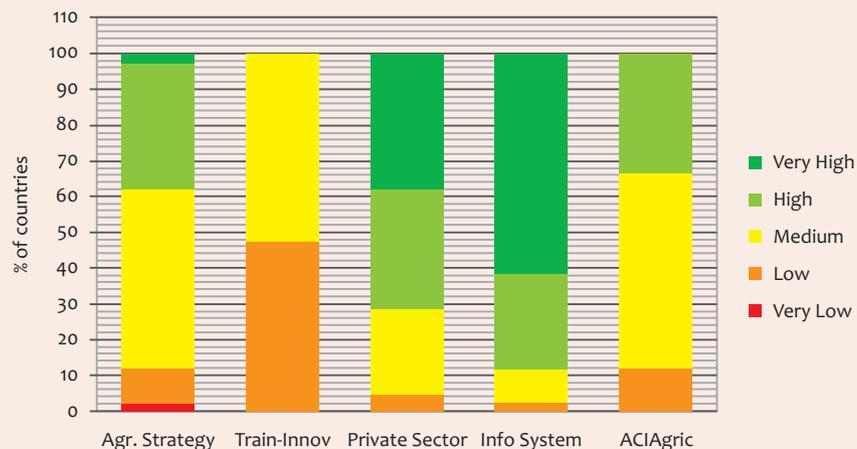
	Agricultural Strategy	Training-Innovation	Role of Private Sector	Information System	ACIAgric
Very Low	2.4	0.0	0.0	0.0	0.0
Low	9.5	47.6	4.8	2.4	11.9
Medium	50.0	52.4	23.8	9.5	54.8
High	35.7	0.0	33.3	26.2	33.3
Very High	2.4	0.0	38.1	61.9	0.0
Total	100	100	100	100	100

Source: Computed from ACI database 2012

Also noteworthy is that the majority of countries do have medium capacity to develop a good agricultural strategy and to invest in the right areas to build the skills and innovation needed for the future. There is evidence of leadership in the area of dynamic capacity, and it may be that

the CAADP is showing results. However, 12% of countries remain with very low capacity and the majority of them still have a long way to go to involve the private sector and build their capacity for a private sector that contributes to transforming agriculture.

FIGURE 1.5
ACIAgric capacity by clusters



Source: Generated from ACI database 2012

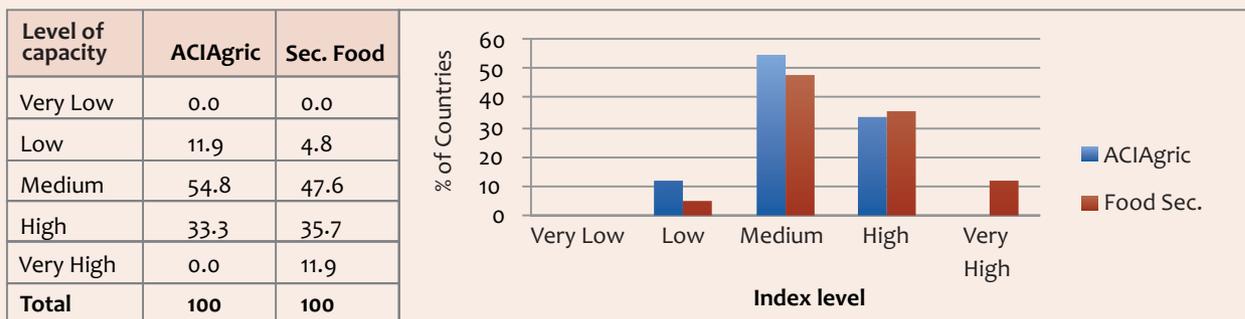
The results indicate that countries need to go beyond strategy and focus on implementation. There is support for the work ACBF has been doing in developing the right skills for agriculture through its partnership with the World Bank to invest in Masters degree training programs in the Collaborative Masters Program in Agricultural Economics as well as for the work of the Africa Economic Research Consortium (AERC) in linking research to farmers. Attention by the African Development Bank (AfDB) and the International Finance Corporation (IFC) on building a private sector response to the agricultural sector also has support from the results of this assessment.

On the basis of the available data, one can offer some comments on the association between agricultural capacity and food security. The analysis suggests a strong association between agricultural capacity and food insecurity. Overall, the performance in agriculture and food security is good. The majority of countries surveyed are ranked either High (33%) or Medium (55%). However, five countries are at the Low level

(Burundi, Central African Republic, Congo (DRC), Côte d'Ivoire and Mauritania). Countries that have chronic food security problems such as Kenya did not rank very well. The vagaries of climate change and food prices put a premium on this measure of capacity and necessitate investments to ensure countries realize the highest possible capacity to manage this important element of development.

There appears to be an intense variation within the components of agricultural capacity. The main strengths are that countries surveyed are doing very well in equipping themselves with an information system (98% of countries are ranked High or Very High). Yet there is still work to be done to guarantee food security, as only 12% of countries surveyed scored very high on the food security index (Figure 1.6). This suggests that the availability of information does not necessarily achieve results. The private sector is playing an active role in agriculture (71% of countries ranked High or Very High) but needs to do more.

FIGURE 1.6
ACIAgric and Food Security Ranking by Country Percentage



Source: Computed from ACI database 2012

The aforementioned notwithstanding, there are a number of areas for attention. More effort needs to go into “training, research and innovation in agriculture.” Not a single country featured in the highest levels (High or very High) and close to half (47.6%) were ranked low in this measure (Table 1.6). The finding also suggests that there is an inadequate skill pool available to employ research-related and other information. Investment in the future, as well as building the dynamic capacity to manage uncertainty and anticipate change in agriculture puts added pressure on countries to try to do better in this aspect of capacity. Attention should also be paid to agricultural strategy, because only 38% of countries surveyed are ranked at the high or very high level. Having a good strategy sets the tone by which results can be achieved in the other dimensions of capacity.

1.4 The Country Policy and Institutional Assessment (CPIA) – self-assessment for 2012

As in 2011, an analysis of two-years-worth of CPIA data comparing ACBF-commissioned self-assessments by countries to that of the World Bank was conducted. This time effort was also made to bring in a comparison with the AfDB's CPIA.

A comparison of the 2009 and 2010 CPIA assessment by the three institutions – AfDB, World Bank and ACBF – suggests that the AfDB inclines to give ratings that are similar on average to the World Bank but higher than country self-assessments (Table 1.7). The variance amongst ratings is highest for the AfDB assessments, being twice as high as the Self-assessment. AfDB assessments show more variability than the World Bank assessments as well. The volatility rankings are in the order of the AfDB, World Bank, then country self-assessments.

TABLE 1.7
Comparison of 2009 and 2010 Data on CPIA Assessments

CPIA Index Based on Data in 2010			
Country	CPIA World Bank	CPIA Self-Assessment	CPIA AfDB
BENIN	3.5	4.0	3.9
BURKINA FASO	3.8	4.3	4.2
BURUNDI	3.1	3.4	3.0
CAMEROON	3.2	3.1	3.8
CAPE VERDE	4.1	4.0	4.4
CÔTE D'IVOIRE	2.7	3.5	3.0
GHANA	3.9	3.6	4.1
KENYA	3.8	4.3	4.2
LIBERIA	2.9	4.0	3.6
MADAGASCAR	3.4	3.4	3.4
MAURITANIA	3.2	3.0	3.7
NIGER	3.4	4.3	3.6
TANZANIA	3.8	2.7	4.0
UGANDA	3.8	3.1	4.3
ZAMBIA	3.4	3.4	3.9
ZIMBABWE	2.0	3.9	1.9

TABLE 1.7 (cont'd)
Comparison of 2009 and 2010 Data on CPIA Assessments

CPIA Index Based on Data in 2009			
Country	CPIA World Bank	CPIA Self-Assessment	CPIA AfDB
BENIN	3.5	3.1	4.06
BURKINA FASO	3.8	4.2	4.22
BURUNDI	3.1	2.9	3.09
CÔTE D'IVOIRE	2.8	3.5	2.92
KENYA	3.7	4.0	4.2
LIBERIA	2.8	3.4	3.63
MAURITANIA	3.2	3.3	3.6
NIGER	3.3	3.8	3.67
UGANDA	3.9	4.2	4.24
ZAMBIA	3.4	3.4	3.97
ZIMBABWE	1.9	4.0	1.8
BENIN	3.5	3.1	4.06
AVERAGE	3.31	3.63	3.64
VAR	0.29	0.22	0.44
STD DEV	0.54	0.47	0.66
Volatility as a % of the mean	16%	13%	18%

Source: Computed from ACI database 2012; World Bank: IRAI 2010 table and AfDB Website [accessed 06 January 2012]

The differences in ratings between AfDB, World Bank and ACBF's country self-assessments are presented in Table 1.8. The data cover CPIA ratings for the years 2009 and 2010. There are three countries where there is a big difference of 20% or more between the country self-assessments and the World Bank assessments in 2009 compared to five countries in 2010. In 2009 the big differences relate to Côte d'Ivoire, Liberia, and Zimbabwe. In 2010, these differences relate to Côte d'Ivoire, Liberia, Niger, Tanzania, and Zimbabwe. The fact that there are more large variations between the ratings in 2009 than in 2010 may indicate some form of divergence between the ratings. Since feedback was provided to countries in 2009 on the differences between their self-assessments, one could argue that learning has not taken place or that adjustments on both sides of the ratings may be taking place, thus negating any pattern in the observed differences. Benin is a case in

point, where it had rated itself much more harshly than the World Bank in 2009 and reversed to rate itself leniently, and agreed that Benin is not a Fragile State. There are no similar anecdotes as Benin but in the future one could observe a pattern of change in countries where dissemination has taken place and assess the role of convergence and learning. In the data so far there is no evidence of this, but do observe divergence in the ratings over time.

Country self-assessments are in closer agreement with the AfDB than with the World Bank, as can be seen in Table 1.7. The World Bank may be adjusting for international comparisons and rating African countries on an international scale, which may explain their ratings. On the other hand, countries and the AfDB are closer to the ground and may have better information on the policy environment than the World Bank, explaining the closer agreements in their ratings.

TABLE 1.8
Differences between CPIA from Country Self-Assessments, AfDB and World Bank

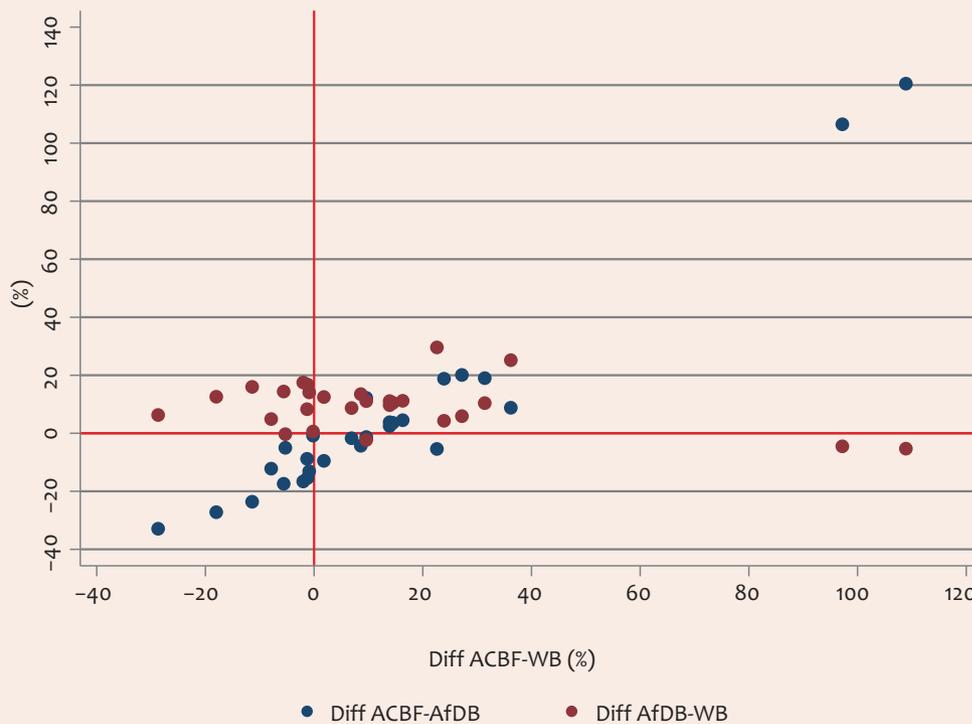
Differences in the Ratings Using Data from 2009			
Country	Difference ACBF-WB	Difference ACBF-AfDB	Difference AfDB-WB
BENIN	-11.4%	-23.6%	16.0%
BURKINA FASO	9.6%	-1.3%	11.1%
BURUNDI	-5.3%	-5.0%	-0.3%
CÔTE D'IVOIRE	23.9%	18.8%	4.3%
KENYA	8.6%	-4.3%	13.5%
LIBERIA	22.6%	-5.4%	29.6%
MAURITANIA	1.8%	-9.5%	12.5%
NIGER	16.3%	4.5%	11.2%
UGANDA	6.9%	-1.7%	8.7%
ZAMBIA	-1.2%	-15.4%	16.8%
ZIMBABWE	108.9%	120.5%	-5.3%
Differences in the Ratings Using Data from 2010			
BENIN	13.9%	2.5%	11.1%
BURKINA FASO	13.9%	3.8%	9.7%
BURUNDI	9.6%	12.2%	-2.3%
CAMEROON	-2.0%	-16.6%	17.5%
CAPE VERDE	-1.3%	-8.8%	8.3%
CÔTE D'IVOIRE	31.4%	19.0%	10.4%
GHANA	-7.9%	-12.2%	4.9%
KENYA	14.5%	3.6%	10.5%
LIBERIA	36.2%	8.8%	25.2%
MADAGASCAR	-0.2%	-0.8%	0.6%
MAURITANIA	-5.6%	-17.4%	14.4%
NIGER	27.2%	20.1%	5.9%
TANZANIA	-28.7%	-32.9%	6.3%
UGANDA	-18.0%	-27.2%	12.6%
ZAMBIA	-0.9%	-13.1%	14.1%
ZIMBABWE	97.2%	106.5%	-4.5%
AVERAGE	13.3%	4.6%	9.7%
VAR	8.9%	11.7%	0.7%

Source: Computed from ACI database 2012; World Bank: IRAI2010 table and AfDB Website [accessed 06 January 2012]

Plotting the data to see the scatter in the differences shows that there is close bunching toward the zero area, which indicates convergence in the ratings (Figure 1.7). However, one notes the outliers mentioned

above for both 2009 and 2010. There are as many outliers – five – in the difference between country self-assessments with the AfDB as there are between the AfDB and the World Bank.

FIGURE 1.7
Understanding the Outliers



Source: Generated from ACI database 2012, and IRAI 2010

The pattern of outliers indicates that there are a number of systematic biases, especially with respect to the type of country (fragile or non-

fragile). This is seen clearly when looking at the percentage agreement by country type as shown in Table 1.9.

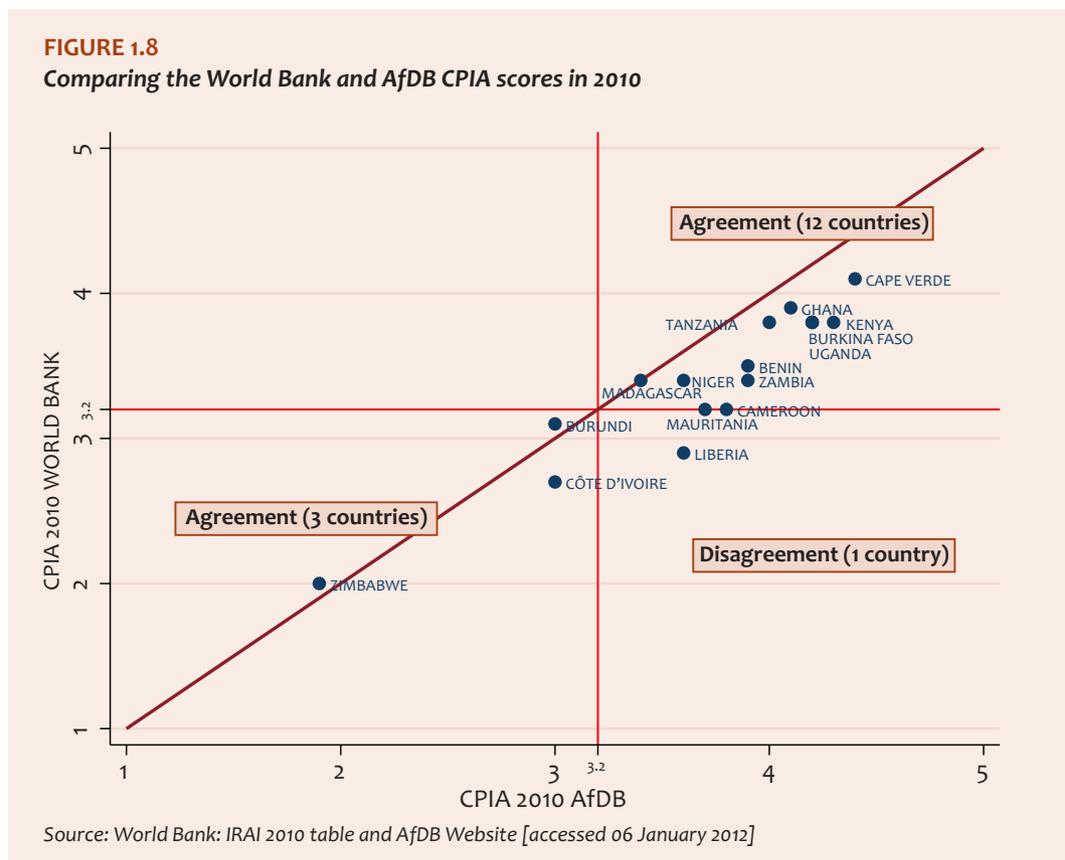
TABLE 1.9
Impact of Country Type on Differences in CPIA Assessments

Areas of Agreement	Non-Fragile States	Fragile States
Country Self-Assessment and World Bank	74%	13%
Country Self-Assessment and AfDB	84%	13%
World Bank and AfDB	100%	63%
Country Self-Assessment, World Bank and AfDB	63%	13%

Source: Computed from ACI database 2012; World Bank: IRAI2010 table and AfDB Website [accessed 06 January 2012]

The results in Table 1.9 may suggest that countries are cautious in rating themselves fragile as opposed to the World Bank and AfDB. The World Bank rates countries overall more harshly than they rate themselves. As depicted in Figure 1.8 below, the World Bank and AfDB

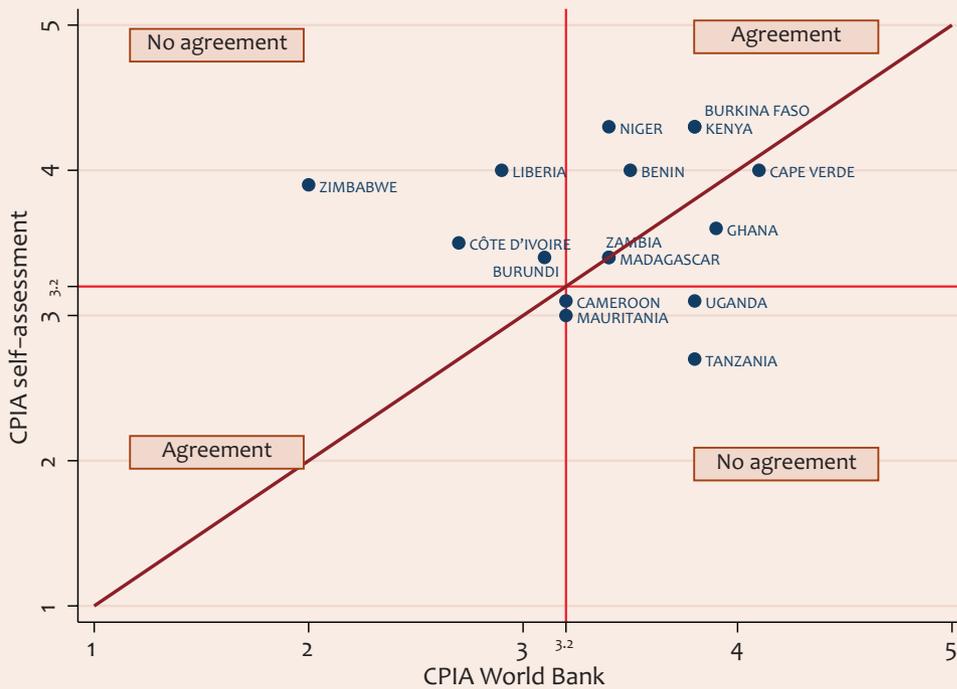
assessment agree on country-classifications with regard to fragility. Using the sample of 16 countries where the survey was conducted, the Kappa coefficient³ for CPIA based on World Bank and AfDB assessments was calculated at $k = 0.82$ (indicating perfect agreement) for 2010.



Whereas the analysis suggests that the World Bank and AfDB CPIA assessment are in agreement, it appears that a similar comparison

between the World Bank and country self-assessment (see Figure 1.9) show strong disagreement (kappa coefficient = -0.33).

FIGURE 1.9
Comparing the World Bank and Country Self-Assessment scores in 2010

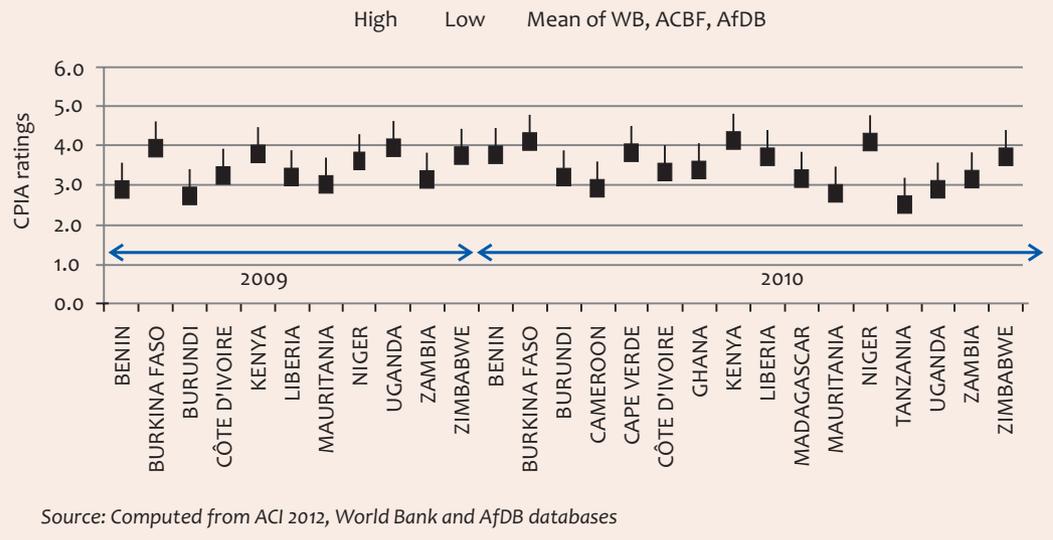


Sources: World Bank: IRAI2010 table, ACI database 2012

The above results indicate that it is very important to use multiple measures before classifying countries. A methodology that accounts for the systematic biases would largely adjust for this difference. Using a band to classify countries would be more appropriate. Such a band is used to illustrate the range of the indicator in Figure 1.10. The band is composed of the country self-assessment, and measures that are one standard deviation away.

The areas of systematic bias are clearly visible in Figure 1.10 overleaf, with specific countries indicating large or wider bands. Country dialogue and further interrogation of these differences at the sub-indicator level could be helpful to better understand the areas of difference.

FIGURE 1.10
Range of band to classify countries in the CPIA



1.5 Some implications of the ACI work

There are a number of implications for capacity development and the ACI exercise overall. Some of the issues to be considered are:

(a) **Capacity development remains a priority** – as per the ACBF definition, capacity development is a multi-dimensional activity that can address a variety of components in a 'development' initiative taking place within a given environment. The ACI is calculated based on various levels and dimensions, many of which can be the focus of an analysis process or intervention to increase system performance. Strengths or weaknesses in any of these dimensions or levels indicate potential areas to be reinforced so as to improve system effectiveness and performance. Indeed, any weaknesses in any of these dimensions or levels will negatively

impact the ability of an organization or country to address its development objectives. Both strengths and weaknesses are potential points for Capacity Development inputs. As found in the raw data from the survey, controlling for ACBF support in cluster 4 significantly affect the ranking of countries in the composite ACI. The absence of ACBF-supported projects in a country negatively impacts the ranking of that particular country. Accordingly, the ACIR in future will attempt to map out capacity development interventions by all external agencies in a given country at a given time. The capacities in agriculture transformation and food security equally remained varied across countries.

(b) **Need to embed the ACI findings in partners' programs** – as noted in this Chapter and reiterated throughout much of this Report, the findings from the exercise impresses

upon ACBF, governments and other development partners the need to embed the findings of the Report in their work. There is need to distill and compile key programmatic (design, implementation, and M&E) issues from the Report into a user-friendly version convenient and amenable to programmatic interventions in capacity development. There may be need to organize learning events such as seminars to disseminate key issues and findings at country and organizational level as well as within ACBF itself. Multilateral and bilateral donors could also find the report useful as they design their interventions. The need for embedding also emerges from the fact that 'doing' capacity development requires a cultural reorientation whereby there is a change in values (beliefs, attitudes, incentives and motivations) of the people in the system. However, there is a political economy caveat as noted by Blair: "developing capacity is about change, change is about choices, and choices are political. However technocratic we might try to make it sound, every capacity development intervention is political to some degree because it creates winners and losers, strengthens some rather than others, and pits reformers against the status quo. Yet the risk of being 'too political' is sometimes overblown while the alternative risk—of interventions failing because they do not understand or engage with the politics of reform—is often understated" (2010:13).

(c) **Thinking more about partnerships** – because the work around the ACIR is resource-intensive – especially in terms of the number of people that need to be involved, partnership would appear to be the logical way forward. ACBF will strengthen its existing partnerships with institutions such

as AfDB, ECA, AU-NEPAD and the UNDP to conceptualize and implement the ACIR exercise as much as possible. Additionally, ACBF will engage in joint launch of the Report with key partners/countries to consolidate partnerships for the future development and dissemination of the ACIR. This will enhance the ownership and up-take of the ACIR both across Africa and globally. Given the importance of leadership in and for capacity development, partnerships will be particularly sought in the area of interface with organizations such as the Africa Governance Initiative and the Blair Foundation, as well as the Mo Ibrahim Foundation to ensure these aspects are properly engaged with at the country level. Given the special focus on agriculture, partnerships with players in the agricultural field would also be of great relevance going forward.

(d) **Country ownership and self-assessments** – since the Paris Declaration a new consensus on the importance of 'country ownership' to the success of development efforts emerged and has been reaffirmed in Busan in 2011. It is now recognized that the effectiveness of aid depends critically on whether or not a country's leadership is really committed to development. The question has always been: how can international actors support the emergence of country-owned development efforts? The assumption seems to be that most countries already have development-oriented political leaderships (Booth, 2011). This assumption may be untenable and country-ownership should be treated as a desirable outcome, not an achieved state of affairs. Given that some commentators have argued that aid as such is probably on balance bad for the institutional fabric of poor developing countries (Moyo, 2010), much more attention should be given to

reforming the non-aid policies of donor countries which are known to affect the economic and political systems of developing countries in negative ways. The starting point for designing any development strategy is participation and ownership. For many years before the Paris Declaration, authorities in developing countries and major donor agencies started with top-down approaches with well-meaning experts telling local communities what to do leading to a range of problems (Johnson-Sirleaf, 2008). First, the diagnosis of the problem is often incorrect. Second, without local participation the design of the intervention may be flawed, exclusionary and irrelevant. And third, and more importantly, without local participation in the process of decision-making, the people tend not to own the project. Self-assessments make people own the decisions, and be deeply involved in determining the success or failure of the outcome. Underlying the principle of participation and ownership is good governance. The shift towards democracy in Africa has been accompanied by measurable improvements in governance by many countries: greater stability, improved human rights and civil liberties, a strengthening of the rule of law, greater accountability to the people, and lower rates of corruption. Donors can streamline their bureaucracies and shorten the time between commitment, cash and project implementation. They can rely more on country ownership and local participation as the cornerstone of more of their interventions. For example, they provide budget support to a small number of selected countries on a pilot basis to help strengthen local systems of financial management, rather than imposing new and complicated parallel systems. In that respect, the use of country systems becomes less

contested.

- (e) **Methodology** – the different partners: especially the World Bank, AfDB and ACBF may want to revisit the way CPIA is assessed and the index calculated. One approach is to have a harmonic mean for the indices from the three agencies. These would go a long way to deal with the short-comings discussed in the previous section – especially issues to do with outliers.
- (f) **Outreach and dissemination** – as ACIR is intended to serve as a key reference point for capacity development support in Africa, it should be widely circulated as much as possible. The first edition which focused on *Capacity Development in Fragile States in Africa*; and was launched in Kigali, Rwanda, February 2011; stimulated a lot of interest. This notwithstanding, there is the need to sustain and expand the interest, distribution and coverage of ACIR. This second edition has coverage of 42 countries, up from 34 countries in the last report. There is also need to create critical awareness on the findings of the Report for countries that were surveyed.

1.6 ACIR – one year down the road

As noted above, the launch of 2011 ACIR generated a lot of interest and created optimism about how to track and focus capacity development efforts in Africa. Evidence from print and electronic media, user feedback, etc., support the fact that the Report is reshaping capacity development discourse, rejuvenating interest in capacity development; and raising the expectation of key stakeholders of the strategic and the unique role ACBF can play in promoting and sustaining capacity and capacity development on the African continent.

The last report attracted a lot of reviews both in

academic and popular press. As one reviewer noted: “[T]he ACI marks the ACBF's two decades (see pp. 29–30 for a potted history) with its 'Country Policy and Institutional Assessment' (CPIA) of the continent. This is commendably critical about the low level of 'capacity development' at the start of the new decade (p.33): of the 34 countries ranked, most are low or medium in terms of composite capacity indicators, with Togo and Guinea being 'very low' and none judged to be high, Burkina Faso scoring highest (pp. 218–219), along 30 different indicators such as gender equality mainstreaming and tertiary training. ACI is revisionist, focusing on the limitations of neo-liberalism and the nature of the failed, fragile or failing states in Africa (pp. 48–55 and 105–107), including limitations of the neo-liberal peace model (pp. 49–60). Its 30 indicators (pp. 266–295) can be contrasted to the several established rankings, such as the annual Failed States Index from Foreign Policy or the Brookings Institution's newer 'Index of State Weakness' or Mo Ibrahim Foundation's 'African

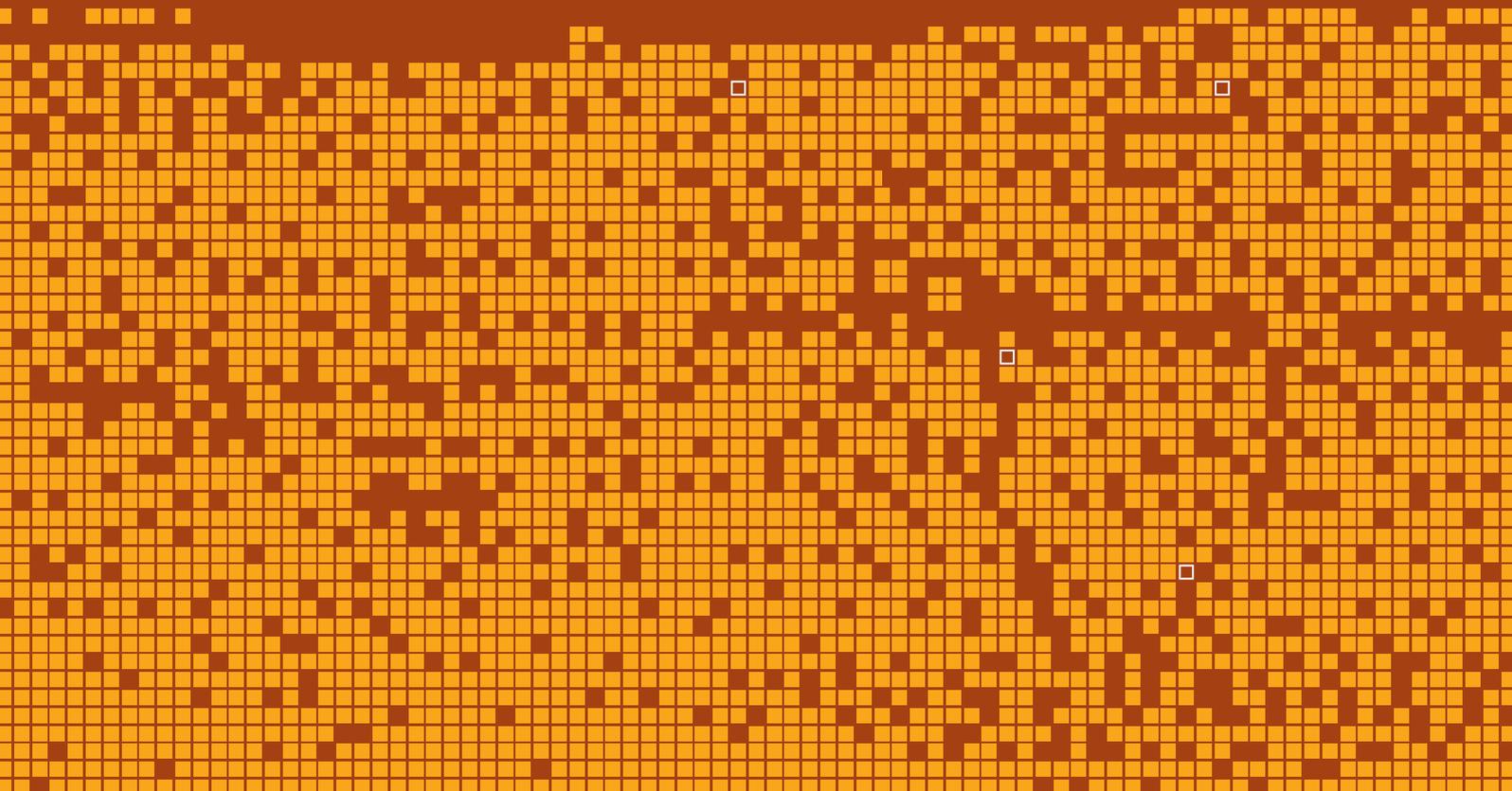
Governance'...” (Shaw, 2011:335-336).

The ACIR has had influence in the way countries view capacity development. Two examples come to mind. Cameroon initiated the revision of its budget nomenclature to capture the spirit of ACI2011. Equally, the ACI2011 informed the debate Zimbabwe had around its planning and budget execution for 2011. Indeed, there has been relatively good uptake as many institutions including AfDB and GDN now have the Report on their websites. The EU did a special interview on capacity based on the ACIR which it published on its website before the Busan Aid Effectiveness High Level Forum in November 2011.

This second edition of the Report responds to some of the feedback received. To this end, attempts have been made in this Report to use the findings of other efforts to get a more balance picture of drivers of capacity development in Africa. One year down the road, the ACIR remains a tool that should be considered to be complimentary and not in

2

**Special Focus
on Agriculture**





2

Special Focus on Agriculture

2.0 Introduction

The modern history of Africa is one in which a number of African smallholders became involved in international trade through agricultural products. For the purposes of analysis, agriculture in this Report covers crops, livestock, agroforestry and aquaculture. The discussions of the link between agriculture and forestry are undertaken when deforestation, climate change and related environmental services are considered. This is also based on the notion that agricultural transformation and the achievement of food security can occur in isolation from these other areas. During the late 1800's under colonial rule, agro-commodities from smallholders were the main source of agricultural trade. Later in the 1900's larger farms and estates were organized to extract more effectively from the land. Early agricultural labor pools were created to serve these large estates, but they co-existed with smallholder production. This pattern was unlike the period of colonization in some Asian countries where large groups of people were relocated far from home to work on estates, such as in the tea estates of Sri Lanka.

The cause for the increased trade is to be found in improved incomes and increased demand for tropical products in Europe. Many local systems of production in sub-Saharan Africa proved to be adaptable and dynamic to serve this increasing demand. The most well-known example of this kind of trade is probably in West Africa, where smallholders were almost solely responsible for the production of export crops such as cocoa, groundnuts and palm oil. A number of transitions then occurred in the way land in Africa came to be used. Emergent cities, which consumed large swathes of agricultural land, began to depend on rural areas for their food supplies, a pattern that continues to date. The history of African socio-economic and political development is closely tied to the history of transformation of agriculture whether positively or otherwise!

2.1 The need for investing in agriculture now

The importance of agriculture in African economies has not been in doubt either as a propeller of growth or the cause of their stagnations. As Green et al. (2011:1) posit: "Africa has generally been described as a continent of stagnation...One fundamental explanation given for the stagnation has been the assumed low productivity levels of African agriculture.

Yet, we know very little about long term actual performance of the agricultural sector at the aggregate level." This Report seeks to undertake assessment of the dynamics in African agriculture to identify some of the capacity issues necessary for its transformation.

Change has been taking place in African agriculture in ways that are sometimes not recognized. While the sector is seen by many in the images on television and social media of

starving populations ravaged by the elements, the sector has also seen dramatic change led by a small but growing number of innovative smallholders, who combine all sorts of discoveries with traditional processes to get better yields. Some of the discoveries come from experiments in new types of seeds and crops, others in new ways of farming and storing. Yet others use innovations in technology, logistics and banking to get ahead. The role played by mobile and cellular technology in the

agricultural sector is one whose full effects are yet to be uncovered. Other innovations are in the area of banking and finance with its subsequent impact on the access to finance for farmers and rural residents as well as in smaller innovations in the transport and logistics systems (see Figure 2.1). Even the improvements in access to health in rural areas contribute to the increase in smallholder productivity through simple relations such as the link between reduced malaria infections and the number of

FIGURE 2.1
Innovation and usage of mobile technologies

Africa has done well in use of mobile technologies: Mobile & cellular subscriptions (per 100 people)

Region	2005	2007
East Asia & Pacific	29	53
Middle East & North Africa	22	58
South Asia	8	33
Sub Saharan Africa	13	33

- Raising productivity of milk using iCow
- Banking and finance using mobile phones mPESA
- Mobile health solutions to rural areas using mHEALTH
- Bicycle technology for charging cell phone batteries

Source: Calculated using data from World Bank Datafinder

Conceptually, as the World Bank (2007a:1) notes: “the worlds of agriculture are vast, varied, and rapidly changing, with the right policies and supportive investments at local, national, and global levels, today's agriculture offers new opportunities to hundreds of millions of rural poor to move out of poverty. Pathways out of poverty open to them by agriculture include smallholder farming and animal husbandry, employment in the “new agriculture” of high-value products, and entrepreneurship and jobs in the emerging rural, nonfarm economy.”

The commitments made by world leaders in the name of the MDGs to halve poverty and hunger

by 2015 have significant dependence on the performance of the agricultural sector. Although the agricultural sector by itself may not be enough to reduce poverty in the required manner, it is a major contributor to that effort (World Bank, 2007a:1). The sector arguably contributes in different 'planes': a) agriculture-based; b) transformational; and c) urban-based.

Most of Africa falls in the agriculture-based countries. In these types of countries, as the World Bank notes: “[A]griculture and its associated industries are essential to growth and to reducing mass poverty and food insecurity. Using agriculture as the basis for economic

growth in the agriculture-based countries requires a productivity revolution in smallholder farming” (World Bank, 2007a:1).

Africa also has countries that fall under the transforming plane. In these countries, the key issue is managing the urban-rural interface appropriately within a global context of commodity price shocks. Consider the countries in North Africa, which have seen unprecedented rises in the rural-urban income gap and continuing rise in both urban and rural poverty. These patterns of inequality have become sources of social and political tensions and instability. Lagi et al. (2011:5-6) seem to confirm this association. As Lagi and colleagues note: “[T]he importance of food prices for social stability points to the level of human suffering that may be caused by increased food prices... the timing of peaks in global food prices and social unrest implies that the 2011 unrest was precipitated by a food crisis that is threatening the security of vulnerable populations. Deterioration in food security led to conditions in which random events trigger widespread violence.”

Many countries, particularly during an election year, attempt to manage commodity price shocks through instituting controls on food prices. Such controls, while useful in attenuating the instability effects of increasing food prices in the countries using the controls, have severe negative consequences on other countries. As Lagi et al. (2011:6) have found: “The condition of these vulnerable populations could have been much worse except that some countries controlled food prices in 2011 due to the unrest in 2008. Food price controls in the face of high global food prices carry associated costs.”

The types of policies used by transforming countries are also of relevance more globally due

to the cross-country effects of agricultural practices and policies. Because of the interconnections across countries in the food and other agricultural commodity markets, it is sufficient for only a few countries to have the wrong policies for an effect to be exerted on other countries. Lagi et al. (2011:6) further point out that “[b]ecause of the strong cascade of events in the Middle East and North Africa only some countries had to fail to adequately control food prices for events to unfold.”

Effects could also come from countries that are intervening in other areas of the commodity space for purposes other than food security. Consider the policy decision of the United States to support the conversion of corn to ethanol or the move to commodity trading during the recent collapse of the real estate market in London and New York. Such choices by individuals in countries far removed from the African continent have an effect on prices and hence choices by African policy makers and farmers alike. Lagi et al. (2011) conclude that understanding these linkages suggests that reconsidering biofuel policy as well as commodity market regulations should be an urgent priority for policy makers, further adding that: “Reducing the amount of corn converted to ethanol, and restricting commodity future markets to bona fide risk hedging would reduce global food prices. The current problem transcends the specific national political crises to represent a global concern about vulnerable populations and social order” (2011:6).

Having the indicators and the data that allows better understanding of the country and cross-country effects of policy should help get agricultural contributions to development and poverty reduction in the right policy space. Lagi et al. (2011) have shown that there is a link between global food prices and social unrest,

and their work supports a growing conclusion that it is possible to build mathematical models of global economic and social crises. They further argue that: “Identifying a signature of unrest for future events is surely useful” (Lagi et al. 2001: 5-7). But such identification requires a holistic response to deal with not just the cause of poverty but also the role that is played by income inequality, social exclusion and poor governance.

Figure 2.2 below, shows the link between fragility and agricultural productivity. Of particular relevance in this analysis is the fact that African countries with stable political environments have not performed better than fragile states in benefiting from the high prices in cereals around the world, as many of them are net food importers and rely on cereals for their food security. Actually some fragile states that rely heavily on agriculture, like Liberia, Sierra Leone and Central African Republic, have

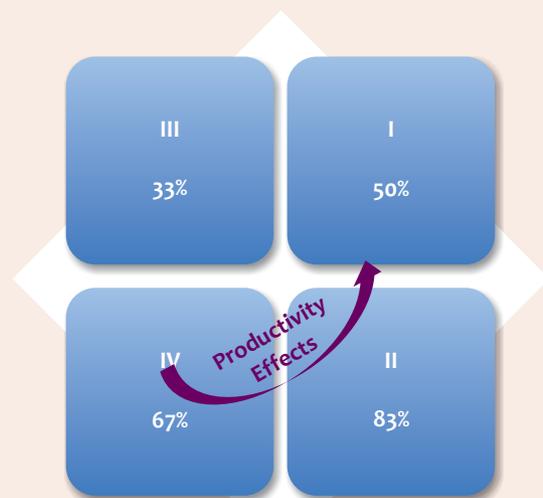
hedged against the destabilizing effects of high prices by raising the productivity of cereal production (see Figure 2.3). Fifty percent of the countries that have been able to raise both agriculture value added and cereal yields during the period of high global prices are fragile states. However, the effect of fragility does show up in the share of countries that have raised cereal yields during the period of high global prices but have not been able to raise the contribution of the agricultural sector to the economy. The results seem to support the argument that effects of governance show up in the ability to take long-term decisions that secure the contribution of the agricultural sector to income and economic growth. Indeed, there appears to be an association between social instability (an indicator of fragility) and performance of the agricultural sector, but that the effects may not always go in the same direction. The Lagi et al. (2011) finding may be explaining the short-run effects, while the governance environment

FIGURE 2.2
Fragility and Agricultural Performance

Countries with stable political environments have not performed better than fragile states in benefiting from the high prices in cereal yields than countries that are fragile and unstable. Countries like Central African Republic, Liberia and Sierra Leone have not been able to increase yields between 1990 and 2010 due to their high dependency on agriculture.

Quadrant	Category
I	Increase in both agricultural value added and cereal yields
II	Increase in agricultural value added but decline in cereal yields
III	Decline in agricultural value added but increase in cereal yields
IV	Decline in both agricultural value added and cereal yields

Share of Non-Fragile States in each of Four Categories of Agricultural Performance



Source: Agriculture value added as a share of GDP and cereal yields per hectare from World Bank Data Finder. All other data from ACI

FIGURE 2.3**Dynamics of change impacting Africa:****Agricultural dependency and arable land. Top 10 Countries over 5 Years**

	Country	Ag. Value in 2008 (%GDP)	Rank in 2008
Availability: Arable land makes up 11% of total global land area (1.4 billion hectares globally) Europe and Central Asia has the highest arable land per capita (0.57 ha per person) Arable land per capita has declined by 19% in low income countries over the past two decades.	Liberia	61	1
	Guinea Bissau	56	2
	Central African Rep.	53	3
Technology: Fertilizer use per hectare is highest in East Asia and Pacific and lowest Sub-Saharan Africa (by a factor of 17). During the past 30 years, Africa has experienced at least one major drought each decade.	Capabilities: agricultural productivity, innovation in drought resistant technologies, managing food security, regional for markets and agricultural supply chains.		
	Tanzania	45	6
	Ethiopia	45	7
	Rwanda	37	9
	Togo	44	8

Source: World Development Indicators, World Atlas

On the third plane, which relates to urbanizing countries, there are also some important areas to consider. Africa is the fastest urbanizing region of the world, and policy needs to provide a good balance between rural and urban development, including the unique role that agriculture needs to play as the continent further urbanizes. In rapidly urbanizing countries, the agricultural sector can help in the reduction of both rural and urban poverty through the provision by small-holder farmers of direct supplies to modern food markets, jobs get created in agriculture and agro-industry, and markets for environmental services are created (World Bank, 2007a:2). Rising resource scarcity and externalities cause agricultural transformation and environmental services to be intertwined. In this respect, ACIR 2012 discusses the role of urban agriculture for poverty reduction and food security in Africa.

One can add a fourth category to the three planes identified by the World Bank (2007a), which is fast growing countries. Africa is home to seven of the ten fastest growing economies in 2011-2012, largely due to the dividend from the economic reforms of the past 15 years (IMF, 2011). Africa has a distinctive potential to harness contributions from agriculture along the three planes, while channeling the effects of the added dimension of the fast economic growth. Along with the continent's unique institutions, including the growing role of sub-regional and regional entities that can speed up its integration, the transformation of agriculture in Africa will have to be different from the Asian green revolution. The key challenge is how to identify the many innovations and successes on the continent, map them to the potential and uniqueness of Africa, define a policy environment that enables the continent to

harness this potential, and support implementation of new ideas to take advantage of the opportunities present in today's global economy. This, is the main role of agricultural capacity.

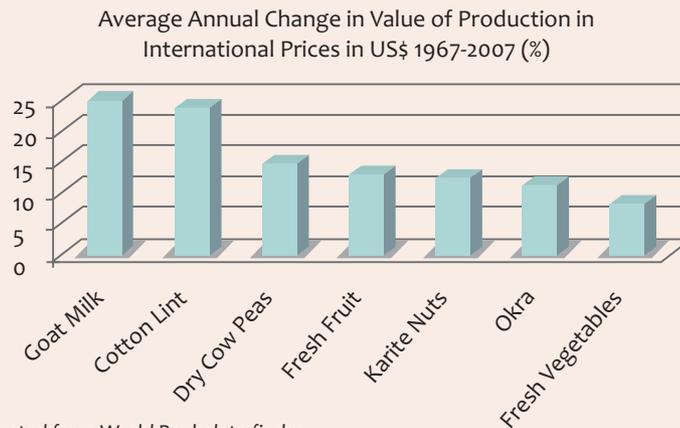
There are therefore several reasons why Africa should invest in agriculture – without going in detail here, as these are discussed extensively in upcoming chapters. As noted earlier, agricultural transformation can only happen in a holistic policy environment that acknowledges the roles of the other sectors of the economy. Subsequent sections and chapters will highlight that the sector contributes to development as economic activity, source of livelihood and provider of environmental services.

One other point to keep in mind is the heterogeneous nature of the agricultural sector – which has been historic and prevalent in Africa. The first area of heterogeneity is the co-existence of large commercial farmers alongside small-holders many of whom are also involved in commercial farming. As noted by the World Bank (2007a:5): “Commercial smallholders deliver surpluses to food markets and share in the benefits of expanding markets for the new agriculture of high-value activities. But many others are in subsistence farming, mainly due to low asset endowments and unfavorable contexts. Consuming most of the food they produce, they participate in markets as buyers of food and as sellers of labor. Membership in these categories is affected not only by asset positions, but also by

gender, ethnicity, and social status, as they imply differing abilities to use the same assets and resources in responding to opportunities.”

Africa also has heterogeneous rural labor markets as the continent maintains a high share of low-skill, poorly paid rural workers employed in agriculture. Despite the innovations in the use of technology and cold-chain logistics, there are at present only a small number of high-skill jobs in rural Africa offering workers pathways out of poverty. Most African villages have limited rural nonfarm activities, whose economies are served by low productivity self-employed small operators engaged in first stage agricultural transformation. Many of these small operators are women and they engage other women to develop products as varied as plantain chips and rice cakes that are sold in roadside informal trade. Yet one can find wage-employment coexisting with employment in dynamic enterprises, such as the production of skin and hair care products using first stage transformation of agricultural inputs such as shea butter (Karite nuts) (see case of Burkina Faso in Figure 2.4). The second aspect of heterogeneity comes from the rural-urban linkages built as a result of migration. Much of Africa's urbanization has come as a result of migration of rural poor moving to cities and towns. The outcome of this type of migration is also heterogeneous, as some of the rural poor are able to come out of poverty and send remittances to their families in the rural areas, but others have continued to be poor and have even become destitute and relegated to

FIGURE 2.4
Transforming Agriculture: Burkina Faso's Capacity to tap into the "green" and "health" movements



Source: Generated from World Bank data finder

This pervasive heterogeneity in agriculture has deep implications for public policy in using agriculture for development (World Bank, 2007a:5). Countries that have tried liberalizing trade to raise the prices of food have helped net sellers and rural farmers with surpluses but hurt urban and rural food buyers. Policies would also have a differential effect on the basis of gender, as men and women are engaged in different activities. There are also varied effects whether dealing with crops for export, food production, livestock or forest products. Any policy reform is likely to have winners and losers and it is important to balance the heterogeneity of the agricultural subsectors, regions, households and genders. Defining a set of appropriate and differentiated policies is one of the toughest policy dilemmas facing poor countries, especially those with severe resource constraints. Doing so requires evidence-based policy choices, which rely heavily on the availability of data (information systems), a cadre of skilled and talented analysts and researchers (training and innovation capacity), and linking research to

policy design and implementation (policy and implementation capacity).

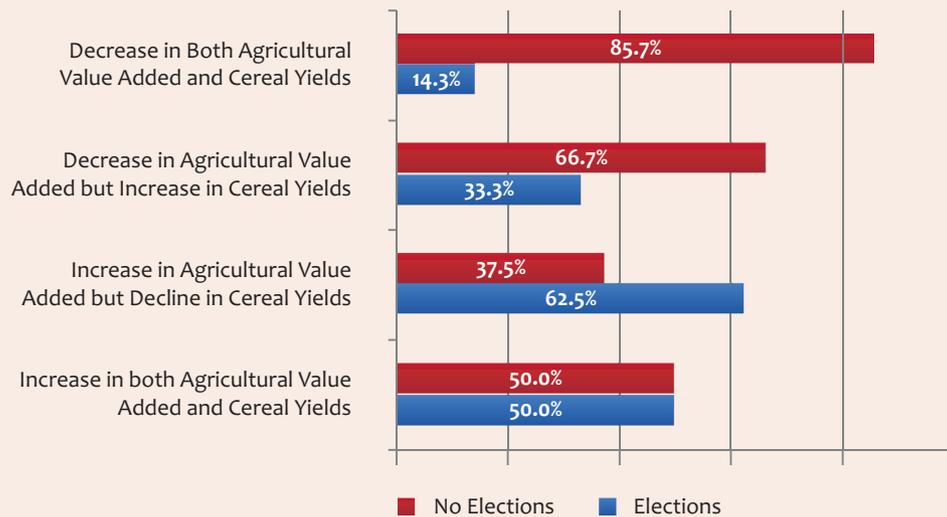
The World Bank in its 2008 *World Development Report* (WDR) identified many of these issues. However, the World Bank has been heavily criticized for failing to follow its own recommendations with respect to policy (Oxfam, 2007). Oxfam argues that the broad messages of the WDR 2008 are welcome. "However, to tackle rural poverty effectively in this new context, policies for rural development will need to change, along with the conception of how different institutions will deliver those policies. In emphasizing efficiency gains, the WDR fails both to grapple with new relations of power in the global marketplace and to ensure that equity (including gender equity) remains a core goal for policy-makers" (Oxfam, 2007:1).

The need for data and a political economy perspective is paramount. Indeed the 2012 ACIR survey data suggests that countries that held elections recently had the same likelihood of

seeing an increase in both agricultural value added as a share of GDP and cereal yields in kilograms per hectare. Countries that have not had a recent election, however, are overwhelmingly likely (85.7%) to see a decline in both agricultural value added and cereal yields. The results are mixed when looking at the trade-off between agricultural value added and productivity. Elections in Africa lead to instability in many countries and this can prevent farmers from their productivity. Ability to respond to global price signals will be improved in stable conditions, and that may be the reason for the increase in cereal yields in countries not facing elections.

Furthermore, when looking at averages and not changes during the period 1990-2010, one sees that while both categories of countries have seen an increase in the average cereal yields, those that have had no election have seen a higher increase in cereal yields during the period 1990-2010. The results support findings by others that democracy is important for raising both productivity and yield (Diao, 2010) as well as for avoiding famine. However, in the African context, given the instability during elections, there could be a net loss to productivity and value added that mutes the overall effect.

FIGURE 2.5
Average Change in Performance of the Agricultural Sector in Africa from 1990-2010 for Countries that Have and Have Not Had a Recent Election.



Source: Computed from ACI data base 2012

2.2 Focus on policies, challenges and opportunities

Given the potential of the agricultural sector to significantly reduce poverty in Africa, there is also need to develop appropriate policies and

strategies to guide the sector's transformation. As argued by Guvheya and Léautier (2011), there is a wide diversity across national economies in Africa, ranging from emerging economies such as South Africa and Tunisia; resource rich countries such as Nigeria, Ghana, Equatorial

Guinea and Uganda; least developed countries such as Niger, Burkina Faso, The Gambia, and Rwanda; resource-poor countries such as Ethiopia, Eritrea and Kenya; reforming countries such as Ghana, Uganda, Tanzania and Zambia; post-conflict countries such as Liberia and Burundi, within a broader bracket of fragile states; and the extreme case of Somalia as a failed state. The continent is also characterized by a wide variation in ecological zones and

climatic conditions, from the vast expanses of desert and sparsely populated savannah with weak to medium agricultural potential, to the densely populated coastal areas in West Africa and the Great Lakes Region of East Africa. Resource dependency coexists with the dependency on agriculture as demonstrated in the Great Lakes Region, because of heterogeneous morphological conditions.

TABLE 2.1
Resource Dependence Co-exists with Dependence on Agriculture—Case of Great Lakes

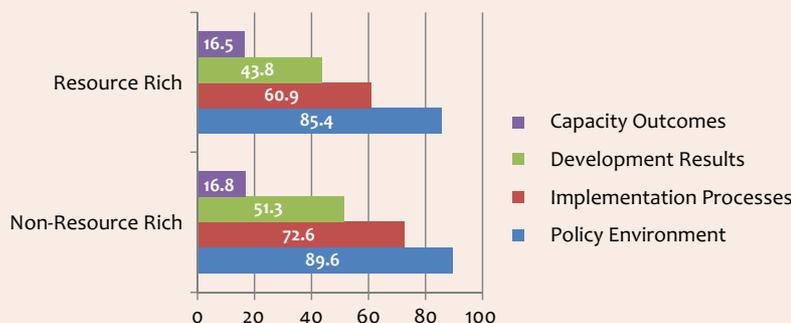
Country	Main Exports
Burundi	Coffee, tea, sugar, cotton, hides
Central African Republic	Diamonds, tobacco, coffee, timber, cotton
Democratic Republic of Congo	Diamonds, copper, coffee, cobalt
Republic of Congo	Oil, timber, plywood, sugar, cocoa, coffee, diamonds
Rwanda	Coffee, tea, hides, iron ore
Uganda	Coffee, fish and fish products, tea, tobacco, cotton, corn, beans, sesame

Source: Export rankings data taken from International Trade Center (ITC)

All of these call for context-specific policies to reflect the heterogeneity and capacity development required. Indeed from the field survey data, resource rich countries underperform those poor in natural resources in all measures of capacity (see Figure 2.6).

However, the difference is highest in the area of capacity to achieve development results and having the right policies in place. The issue of management of natural resources is then strategic and the need of adapted policies as well as their implementation is central for capacity

FIGURE 2.6
Capacity profile of resource and non-resource rich countries.



Source: Computed from ACI data base 2012

African agriculture remains largely underdeveloped with inadequate adoption of yield-enhancing technologies, due to underinvestment especially in infrastructure, policy inefficiency/urban bias, a retraction of the state from output and input markets without a compensating increase in private-sector activity, and a systemic lack of capacity throughout the entire spectrum of actors required to manage the complex process of agricultural transformation. These factors have precipitated a vicious cycle of low yields, food insecurity, environmental degradation, and poverty (Diao, 2010 p.5). Many agriculture-based countries show little structural transformation (a declining share of agriculture in GDP and a rising share of industry and services as GDP per capita rises). The same applies to vast areas within countries of all types. Rapid population growth and migration, declining farm size and land grab (Box 2.1), falling soil fertility, and missed opportunities for income diversification undermine agricultural transformation by putting pressure on the sector.

Excessive taxation of agriculture and underinvestment in agriculture are also to blame, reflecting a political economy in which there is an urban-bias, but largely neglecting urban agriculture. When compared with successful transforming countries during the days of a high share of agriculture in GDP, the agriculture-based countries have very low public spending in agriculture as a share of their agricultural GDP (4% in the agriculture-based countries in 2004 compared with 10% in 1980 in the transforming countries). The pressures of recurrent food crises also bias public budgets and donor priorities toward direct provision of food rather than investments in growth and achieving food security through rising incomes (World Bank, 2007a) – although food aid is increasing being sourced locally. In most circumstances, women are the majority of smallholder farmers, whereby failure to release their full potential in agriculture is a contributing factor to low growth and food insecurity (FAO, 2011).

BOX 2.1

Land grabbing — a growing phenomenon?

Private, government and public-private joint ventures, usually from capital-rich countries, are acquiring long-term leases or ownership rights to large portions of land (often more than 1,000 hectares) in developing countries. Economically powerful developing countries, such as China, India and Saudi Arabia, as well as developed countries, are joining the land grab. While sources differ, all suggest a recent acceleration, with estimates of more than 20–30 million hectares transacted between 2005 and mid-2009 and about 45 million hectares between 2008 and 2010. The rise in commodity prices appears to be motivating both government and private purchases.

Some see this phenomenon as an opportunity for long-awaited investments in agricultural modernization that will provide access to better technology, create more jobs for farmers and reduce poverty in rural areas. But others consider it a threat to local populations. A recent World Bank study supports the latter view, finding that expected benefits were not achieved. Several studies have reported human rights violations, with local populations forcibly displaced and access to local natural resources restricted. Hurt most were smallholders, indigenous people and women, who often lack formal title to the lands on which they live and farm. Environmental organizations have criticized negative impacts, including deforestation, loss of biodiversity and threats to wildlife.

Recent international initiatives seek to provide a regulatory framework to spread out the benefits and balance opportunities with risks. The challenge is to implement multilevel institutional arrangements, including effective local participation, to promote sustainability and equity in this major change in land use and ownership.

Source: Borras and Franco 2010; Deiniger et al. 2011; Da Vià 2011

However, there is rigidity in transforming countries – like South Africa and Tunisia - such that rapid growth in nonagricultural sectors, results in the exodus of large numbers of poor people from the rural areas which eventually widens the rural-urban income gap (World Bank, 2007a). In such circumstances, there is need for farming populations to be given subsidies and protection. But weak fiscal capacity to sustain transfers large enough to reduce the income gap and continuing urban demands for low food prices creates a policy dilemma. The opportunity cost of subsidies has reduced public goods for growth and social services in both rural and urban areas. Raising incomes in agriculture and the overall nonfarm economy must be part of an integrated solution.

Indeed, one of the immediate consequences of the underperformance of African agriculture has been the worsening food security situation on the Continent. The FAO (2009a) estimates that some 30 percent of Africa's population suffers from chronic hunger and malnutrition — the largest incidence in the world — which sharply increased by 269 million people since 2009 in the wake of the food price and global financial crises (FAO, 2010a). Food insecurity is a defining feature of poverty, which condemns the poor to some of the vicious cycles that they face — namely that, lack of adequate food engenders ill-health and low earnings in labor or product markets, in turn leading to low command over food and, critically, inability to send their children to school, thereby not only deepening extant

poverty but propagating it to future generations. Furthermore, malnutrition of under-five children permanently impairs their cognitive abilities, resulting in poor education outcomes leading to low incomes thereby further entrenching poverty (Guvheya and Léautier, 2011).

Equally important, is for Africa to seize on emerging opportunities. There are a number of such opportunities: dynamic new markets, far-reaching technological and institutional innovations, and new roles for the state, the private sector, and civil society all characterize the new context for agriculture (World Bank, 2007a). Burkina Faso, is a good case in point, as highlighted in Box 2.2.

The emerging 'new agriculture' is led by 'private entrepreneurs' in extensive value chains linking producers to consumers and including many entrepreneurial smallholders supported by their organizations. However, the role of small-scale farmers must be interpreted in context of the global political economy. The agriculture of staple crops and traditional export commodities may find new markets as it becomes more differentiated to meet changing consumer demands and new uses (for example, biofuels) and benefits from regional market integration but it can equally be decimated by global competition. In short, agriculture faces large uncertainties that are difficult to predict and call for caution in managing the global food supply. The exploitation of any opportunities therefore requires careful consideration and planning.

BOX 2.2***Burkina Faso – great reformer and promoter of integration and sub-regional stability as a basis for sustainable development***

Burkina Faso is a great reformer. The country was ranked 6th reformer in the world and 2nd in Africa, behind Senegal (World Bank, 2011b). With regard to regulation, the country has made significant progress on the start and closure of economic activities as well as promotion of competition. It is now easier to obtain a license and do business in Burkina Faso. As a result of such noticeable progress, the country's rank shifted from 164th in 2008 to 154th in 2010 (World Bank (2011b)).

Moreover, the country has reduced the tax rate and the number of taxes on businesses activities and put in place simplified and harmonized payment procedures. Documentation requirements for import and export have been reduced. The execution of contracts and the granting of building permits have also improved. In addition, the opening of a Single Window for business property in Ouagadougou and Bobo-Dioulasso allows a simplification of procedures and formalities, reduces time and costs in setting title and Operations mutation.

On the Transparency International Corruption Perception Index, in 2010, Burkina Faso was ranked 98th over 178 countries, was first among the less corrupted countries in the WAEMU zone and 5th within the ECOWAS zone (behind Cape Verde, Ghana, Liberia and the Gambia). On the other hand, in 2010, Burkina Faso made more effort in pursuit of peace in Togo, Côte d'Ivoire and Guinea. Its mediation contributed to a gradual return of peace and increased stability in West Africa.

The role the country played in the Peace and Security Council of the African Union from 2007-2010 gave it the opportunity to share its experience with other African countries in the field of peace and international security and to contribute to the efforts of peace developed by the African Union. As a result, the country was awarded the Flame of Peace in Addis Ababa during the 14th ordinary session of the Assembly of Heads of State and Government

The organization of 'Annual Communities' day reflects the willingness of authorities to promote integration and a positive interaction between Burkina Faso and other communities living in Burkina Faso.

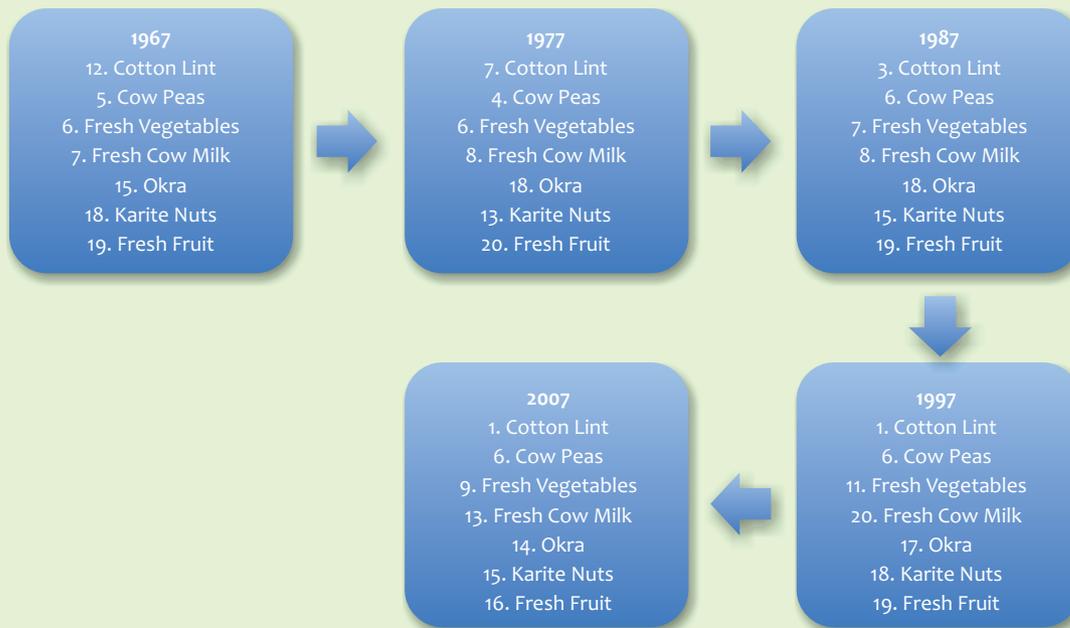
Burkina Faso has signed and ratified numerous treaties and conventions adopted within the framework of the African Union, ECOWAS and UEMOA. The country devotes 0.5% of customs duties levied annually as its contributions to the following sub-regional organizations (CILSS, WAEMU, Liptako-Gourma Authority (ALG)) as well as continental organizations (such as African Union and CAMES).

Source: World Bank, 2011b; Transparency International, 2010.

There should be a heterodox vision of agriculture for development redefining the roles of producers, the private sector, and the state. Production is mainly by smallholders, who often may not be the most efficient producers, even when supported by their organizations. Sometimes these organizations cannot capture economies of scale in production and marketing, labor-intensive commercial farming can be a better form of production, and efficient and fair labor markets are the key instrument for reducing rural poverty. A redistributive fiscal stance then becomes necessary to provide social

safety nets in the event of any spikes, and rising inequality. Considering the whole value chain in agriculture can also help unlock much needed productivity gains. For example, the value chain in cotton production has allowed Burkina Faso to become a leader in a number of process steps because of its focus on building policy capacity in the agricultural area (Figure 2.7). The use of science and biotechnology in particular, has allowed the country to move its cotton lint exports from the rank of number twelve in the world in 1967 to number one in 2007.

FIGURE 2.7
Transforming Agriculture – Burkina Faso rank in World, by commodity 1967-2007



Source: Developed using Export Data taken from FAOSTAT

Ordinarily, the private sector drives the organization of value chains that bring the market to smallholders and commercial farms. The state—through enhanced capacity and new forms of governance—corrects market failures, regulates competition, and engages strategically in public-private partnerships to promote competitiveness in the agribusiness sector and support the greater inclusion of smallholders and rural workers. Africa should seize the renewed global international interest in its agricultural transformation to solve one of the structural yet most intractable problems in the region's long-run growth and development. The recent food price crisis creates an urgent impetus for agricultural transformation in Africa,

so the macroeconomic and development gains achieved so far could be entrenched and deepened.

2.3 Food security and African development prospects

It is a widely shared position that broad-based and sustained agricultural growth holds the key to overall growth and development in Africa (Gabre-Madhin and Haggblade, 2003; Dorosh and Haggblade, 2003; Sahn et al., 1997). For most countries in Africa, agriculture will continue to drive exports and economic growth for several years to come with significant implications for food security.

Africa's food security situation has been worsened by the increasingly tight global markets — with adverse implications for the poor who spend a large fraction of their incomes on food — thereby stoking overall inflation, creating fiscal pressure, and above all, social instability and generally retarding progress toward the achievement of the MDGs. After an uneasy lull, the World Bank food price index has raised alarm on the resurgent food price inflation across the world, showing that food prices have surpassed their 2007-08 levels, mainly for sugar, wheat, soybean, and maize (World Bank, 2012). The global food price crisis, often conspiring with high youth unemployment, is stoking social instability across the world, notably the Middle East and North Africa that have already seen the dramatic fall of three governments, but also as seen in earlier riots in countries such as Mozambique, Cameroon, Guinea and Senegal.

Fuelling the food price crisis is the fact that global agricultural supply has not been increasing adequately enough to meet the surging global demand for agricultural commodities, driven chiefly by rising demand for food (and animal feed) in emerging markets; as well as that for agricultural feedstock to sustain the biofuel industry, itself a consequence of the sustained rise in international oil prices. As a result, there has been a steady reduction in the global stocks of key agricultural commodities,⁴ leading to excessive volatility in prices in response to external shocks especially in the major agricultural commodity producers of the world. The adverse external shocks are exacerbated by protectionist policies such as export bans as countries try to control domestic prices, such as recently happened in Russia and Pakistan for wheat, with a direct implication for world prices since these are large-country exporters.⁵ Similarly, the political instability in Cote d'Ivoire, the largest cocoa producer in the world, saw

world cocoa prices rise by over 14% by January 25th 2011 since the disputed election which marked the onset of the political crisis.

Indeed, even predating the global food price crisis, there was professional concern that the world would not be able to feed the projected 9 billion people by 2050, at the current rate of technological change as manifest in the declining yields of most cereal crops, increasing water scarcity thanks to global climate change, and the increasingly binding land resource constraint. This specter of global food insecurity is an ominous one, breaking with the complacency of the previous three decades since the success of the green revolution, where food insecurity was perceived as a national and household phenomenon confined to developing countries (The Economist, 2011).

There has consequently been a rising global interest on Africa's farmland in response to the growing global demand for food and feedstock for biofuel production. International attention is particularly focused on the so-called Guinea Belt, which is billed as arguably one of the largest underused agricultural land reserves in the world — alongside similar tracts in Latin America including Brazil. The Guinea Belt is a vast loop of sparsely populated savannah of low to medium agricultural potential, measuring an estimated 600 million hectares, two thirds of which is arable, stretching round the Continent from West Africa to Mozambique. The Brazilian *cerrado* (savannah) and northern Thailand shared very similar initial conditions on the eve of their agricultural revolutions with the current conditions for the Guinea Belt, inspiring optimism that with the right investments and political will, a successful agricultural revolution could dawn on Africa notwithstanding the mammoth challenge involved (World Bank, 2010). Increasingly, there has been a rising wave of

foreign acquisition of African farmland by governments or foreign companies eager to secure their food supplies or the supply of agricultural feedstock for biofuel production. However, starting with the 2009 overthrow of the Madagascan government after a huge land deal with a South Korean company in 2008, there has been growing concern that the foreign acquisition of agricultural land could undermine individual land rights for the domestic population, let alone the opaqueness of these deals which throws into question their contribution to the social development of the countries given the latter's weak governance. Furthermore, the underlying business model to these land deals narrows the space for African countries to profit from international agricultural trade, notwithstanding the supposed technology spillovers, enhanced employment generation, and greater infrastructure development that the foreign land acquisition could bestow on domestic agricultural sectors. As a result, the World Bank (2011c) and its partners have taken leadership in investigating the scale and nature of the rising global interest in farmland, reaching the conclusion that land governance and administration should be improved or foreign land acquisition would undermine local land rights, especially for the poor, women and other vulnerable groups. This conclusion, has clear implications for capacity development for land policy administration.

2.4 Specialized capacities for

agricultural transformation

As discussed in Chapter 5, there are a number of capacity development initiatives that need to be undertaken for agricultural transformation and the achievement of food security in Africa. Agricultural transformation requires a multi-pronged approach that, among other things, improves the asset position of the poor, makes smallholder farming more competitive and sustainable, diversifies income sources toward the labor market and the rural nonfarm economy, and facilitates successful migration out of agriculture (World Bank, 2007a:9).

It is generally accepted that African social planners and leaders have not been lost to the urgency of agricultural transformation on the continent (Guvheya and Léautier, 2011). In 2003, African Heads of State and Governments made the Maputo Declaration on the Comprehensive Africa Agriculture Development Programme (CAADP) as the core pillar for agricultural transformation and food security — the goal being the elimination of hunger and reducing poverty through agriculture. CAADP is thus an African-led and African-owned framework for revitalizing agriculture in Africa at both the national, sub-regional and regional levels. African leaders agreed to commit at least 10 percent of their national budgets for agricultural development, and increase agricultural productivity by at least 6 percent in order to enhance agriculture's contribution to sustainable

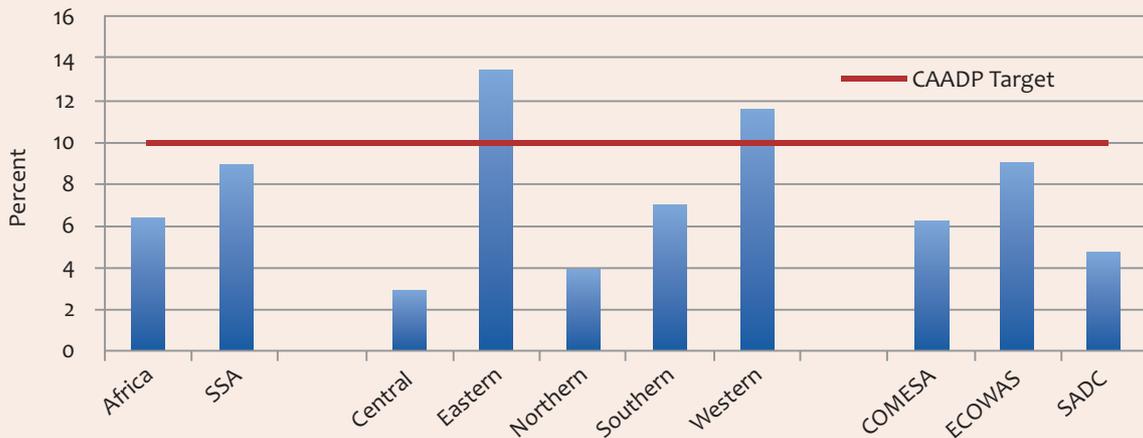
economic growth and the elimination of hunger and poverty. A CAADP multi-donor trust fund was founded and is managed by the World Bank to help coordinate donor action and raise resources for African agriculture. While considerable progress has been made at various levels, there is however quite some way to go in the full implementation of CAADP. Inadequate capacity for agricultural transformation has been singled out as one of the key causes of the delay.

Nonetheless, there have been considerable success stories so far in the implementation of CAADP across the Continent. This is all the more notable when juxtaposed with the widely shared understanding that improving agricultural productivity and efficiency is a long-term endeavor requiring not only major improvements in seeds and livestock and the way land is managed, but also a reform of mindsets, institutions and policymaking. As of November 2010, 25 countries had signed CAADP compacts

and incorporated them into their national agricultural agendas; 8 countries had exceeded the 10% budgetary threshold while most had made significant progress towards it; while 10 countries had met the 6% agricultural growth target and another 19 had achieved productivity growth of between 3 to 6% (NEPAD, 2010). There is however, much muted progress on regional coordination, itself a central feature of CAADP design, where African regional economic communities (RECs) were assigned the key task of promoting regional coordination and policy harmonization. Two RECs have been most actively involved in CAADP implementation, namely, the Economic Community of West African States (ECOWAS), the sub-region that has advanced furthest with implementation, and the Common Market for Eastern and Southern Africa (NEPAD, 2010). Figure 2.8 and Table 2.2 highlight the aforementioned progress across RECs graphically.

FIGURE 2.8

Average annual agriculture expenditure share in total expenditures, 2003-09



Source: Djibo, 2012

TABLE 2.2
Number of countries and RECs achieving selected Milestones

Region/REC	Focal point appointed	Stocktaking, Growth and investment Analysis undertaken	Round table held and compact signed	Investment plan drafted, reviewed and validated	Financing plan secured and annual review mechanism agreed upon	Execution of investment plan
Africa	39	31	29	21	3	5
Central	5	2	3	0	0	2
Eastern	12	10	6	6	1	1
Northern	2	0	0	0	0	0
Southern	5	4	4	1	0	0
Western	15	15	15	13	2	2
RECs	5	2	1	1	1	0

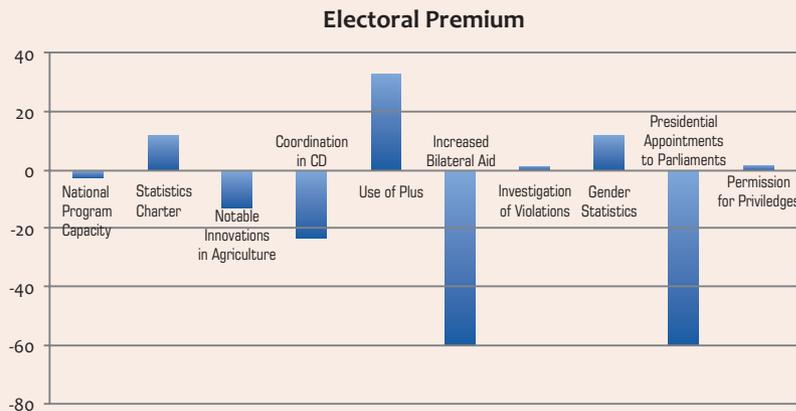
Source: Djibo, 2012

The CAADP framework recognizes the importance of enhancing the assets of farming households. This is because such assets are “major determinants of the ability to participate in agricultural markets, secure livelihoods in subsistence farming, compete as entrepreneurs in the rural nonfarm economy, and find employment in skilled occupations. Three core assets are: land, water, and human capital” (World Bank, 2007a:9). More often than not in Africa, these assets of the rural poor are squeezed by population growth, environmental degradation, expropriation by dominant interests, and social biases in policies and in the allocation of public goods. In many instances, farm sizes in many of the more densely populated areas are unsustainably small (e.g. Burundi and Rwanda), land is severely degraded,

investment in irrigation is negligible, and poor health and education limit productivity and access to better options. In some cases, it is more a matter of institutional development, such as enhancing the security of property rights and the quality of land administration without creating social polarization (e.g. Zimbabwe and South Africa).

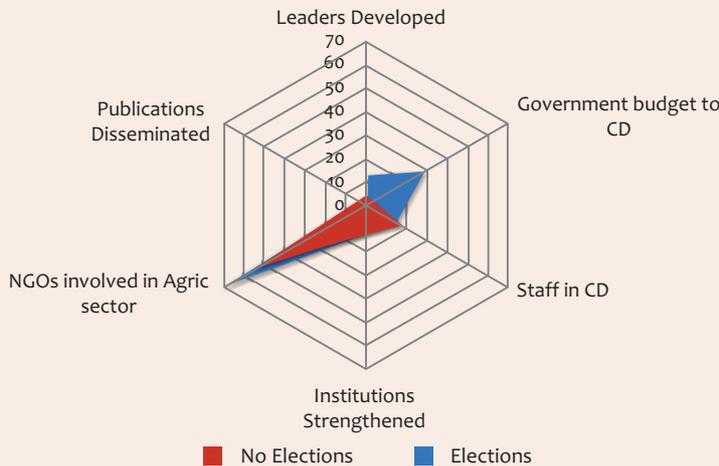
Figures 2.9 and 2.10 highlight the differences of achieving development results within and outside an election year. During an election year there is more focus on allocating funds, developing leaders, and involving Non-Governmental Organizations (NGOs) in sectors such as agriculture where the poor are engaged. Outside the election year there is more attention to strengthening institutions, staffing important

FIGURE 2.9
Difference between the achievement of development results during and outside of an election year



Source: Computed from ACI database 2012

FIGURE 2.10
Major activities during an election year



Source: ACI 2012 database

Infrastructure is yet another major capacity constraint that needs to be considered seriously. Even though the basic ingredients of a dynamic rural nonfarm economy are a rapidly growing agriculture and a good investment climate; linking the local economy to broader markets by reducing transaction costs, investing in

infrastructure, and providing business services and market intelligence; enhancing overall connectivity and communication are critical. For example, current Africa's investment in road infrastructure is estimated to be only comparable to 1960's rural India and 1980's China, leading to an estimated 40-60% of post-harvest loss by African farmers (Guvheya and Léautier, 2011).

The other area that requires attention is the establishment of adequate institutions with the appropriate incentives for change in the agricultural sector. These include investments in market infrastructure, institutions and related support services. Market development for agricultural transformation not only focus on food staples, traditional bulk exports, high-value-chain products, but also those related to inputs such as seeds and fertilizer. Innovative ways to deal with risks though appropriate insurance mechanisms have to be devised and accessible to farmers.

Another important area to have capacity for agricultural transformation is that of technology, training and research and development. The role

of technological change in economic growth and broader development has become an accepted fact since the model developed by Solow (1952) and subsequent followers. Yet the answers to the political economy questions of who really has access to new technologies, who adopts them, how quickly, and at what cost to society remain elusive. Since the “Green Revolution” there has been a lively and long debate on the growth, and particularly the distributional consequences, of technological change in the agriculture of developing countries. The main question being: what is the distributional consequence of technological change on technology adopters that is brought about through changes in relative output prices? Productivity changes consequent of technological innovation drive price and income adjustments to both directly and indirectly impact on poverty (Gabre-Madhin et al., 2002). The importance of technology is recognized in one of the CAADP pillars.

Finance is another major constraint on farmers – especially small scale farmers. For example, well-organized farmer organizations provide a matrix (framework) for mobilizing resources and financing agricultural research and extension, not least for attaining economies of scale (or the critical mass) in agricultural policy advocacy, bulk procurement and market bargaining, as well as credit market facilitation. Multilateral agencies are equally crucial in setting up agro-banks and ‘food-banks.’ Strategic partnerships are critical for leveraging resources for agricultural transformation, paying special regard to the key donors: bilateral and multilateral agencies currently funding agricultural development programs in Africa; and emerging-market South-South donors and philanthropic foundations. Financing agriculture should be done in light of emerging aid architecture.

One of the major emerging issues affecting Africa is that of climate change and how best the continent can adapt. Ringler et al. (2011) using a comprehensive climate change scenario (CCC), based on ensembles of 17 Global Circulation Models (GCMs) selected for their relative performance regarding past predictions of temperature and precipitation at the level of 20 x 20 grid cells, generated by a recently developed entropy-based downscaling model, found that climate change impacts vary significantly. While climate change impacts in the form of yield declines are less severe in Africa than in Asia, Africa is much more vulnerable to climate change. This is because Africa's adaptive capacity is extremely low, and is linked to acute poverty levels and poor infrastructure, as reflected in a high dependence on rain-fed agriculture. They argue that sub-Saharan Africa faces increased net food imports even under the historic climate scenario as a result of growing populations; faster economic growth than in the past; and growing urbanization, coupled with insufficient improvement in agricultural productivity; and conclude that climate change will lead to changes in yield and area growth, higher food prices and therefore lower affordability of food, reduced calorie availability, and growing childhood malnutrition in Africa. Chapter Six explores in detail, the threats and opportunities posed by climate change for agricultural transformation and food security in Africa.

2.5 Moving forward – Africa, agriculture and food security

If Africa is committed to reducing, let alone ending, poverty, food insecurity and achieve sustainable growth, the powers of agriculture for development must be unleashed. It must be recognized by all stakeholders that using

agriculture for development is a complex process. There is need for workable partnerships with existent actors on the ground wherever possible, especially at the regional level, creating new ones only when absolutely necessary. To this end, the African Capacity Building Foundation will seek to consolidate further its relationship with NEPAD, being both the implementing agency for CAADP and bestowed with the African Union mandate for capacity building in Africa. Also ACBF will court new partnerships, and strengthen existing ones, with institutions at the fore-front of agricultural research and policy in Africa and as well as beyond the continents boundaries.

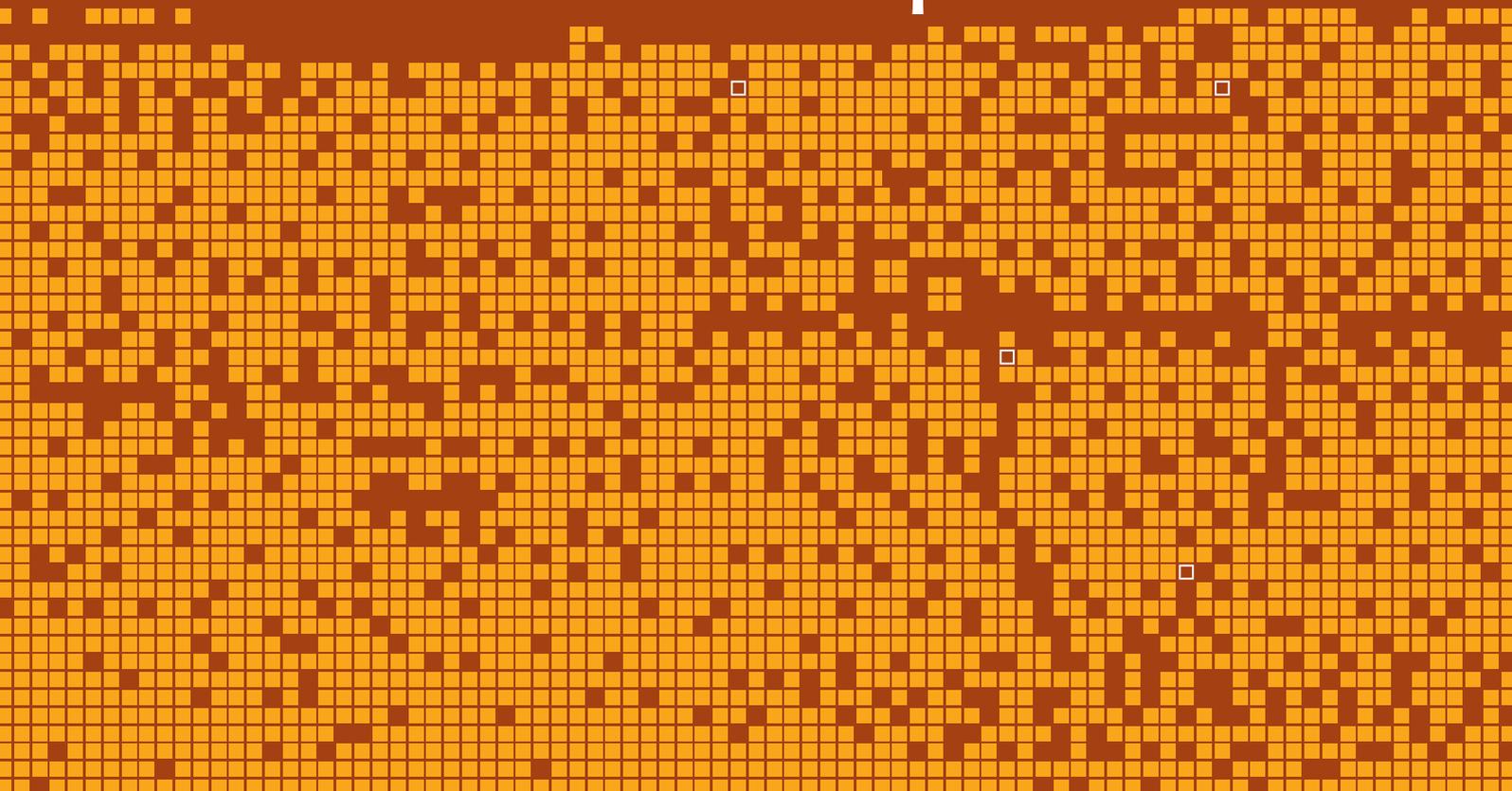
For the process to succeed, governments will also need to acknowledge that the many partners will demand broad consultations at country level to customize agendas and refine implementation strategies. It also requires agriculture work in synergy with other sectors. It needs building the capacity of smallholders and their organizations, private agribusiness, and the

state. It will also entail developing technologies and infrastructure for sustainable natural resource use, as well as savvy and strategic leadership.

Equally important, is that Africa learns from her own experiences in agricultural transformation placing a premium on knowledge management to harvest lessons learned, best practices, and their codification and wide sharing across the continent. African agricultural development clearing houses should be fostered to aid this cause, in addition to other tools of knowledge utilization such as agricultural development communities of practice. The regional university forum, RUFORUM, can be leveraged to great effect for sharing lessons learned, best practices, and new technologies (and collaborative scientific research) in agricultural development. Invariably, the positive transformation of Africa's agricultural sector for food security is linked to how comprehensively the aforementioned strategic choices are embraced.

3

The Status of Agriculture, Poverty Reduction, Sustainable Livelihoods and African Development.





3

The Status of Agriculture, Poverty Reduction, Sustainable Livelihoods and African Development.

3.0 Introduction

While many post-colonial African governments have widely recognized the role of agriculture in national development, and capacity development efforts for education and skills have been ongoing for several years, progress to attain food security has been slow. This is partly due to the adoption of approaches and institutions that do not have supporting mechanisms to utilize the capacities generated. Accordingly, a mapping of the underlying dynamic interrelations among poverty, sustainable livelihoods and agricultural transformation is critical if Africa is to formulate credible and relevant development policies and strategies. Characterizing poverty, hunger, vulnerability, and agricultural development in Africa – with explicit attention to issues of inclusion and equity – becomes essential. There is need to develop an understanding of the dynamics of sustainable livelihoods, and approaches that successfully promote them – while recognizing and supporting women's crucial roles, to address rural poverty and achieve agricultural development. What are the conditions (agronomic, socioeconomic, institutional, political, infrastructural, etc.) that need to be addressed to facilitate transformation of agriculture in Africa to promote sustainable livelihoods? This Chapter is therefore an examination of the causes and consequences of Africa's food insecurity, the policy hurdles, and the necessary interventions that can address the varying challenges that have contributed to this food insecurity. It is argued that putting in place appropriate capacity development initiatives can help alleviate the problem of food insecurity in Africa. In addition, food security efforts in African countries need to be complemented by food sovereignty principles that have at their core citizen participation, agrarian reforms, the promotion of property rights for local people, access by small-scale farmers to local and regional markets, and the putting of producers and consumers at the center of decision-making processes on food issues. The chapter seeks to delineate the link between the need for agricultural transformation – including urban agriculture, food security, poverty reduction – and African development.

3.1 Agriculture is critical – but why?

Guvheya and Léautier (2011) argue that there is now clearer consensus in the development fraternity that agricultural development is vital

for engendering rapid economic growth, poverty reduction and structural transformation for most countries in Africa. Many of Africa's economies are classified as agriculture-based, where agriculture is the major contributor to

national food security for most countries. In addition to being responsible for an important share of economic growth and employment, the sector is also an important earner of foreign exchange, notably through traditional commodity exports such as coffee, tea, cocoa, cotton, and livestock. As a result of globalization and increased access to markets, agriculture is increasingly contributing to economic growth through fresh-produce exports such as fruits, vegetables, meat and dairy products to high-value markets, especially in Europe and the Middle East. The dynamic growth of high-value fresh produce production is offering a historic opportunity for export diversification and prospects for poverty reduction to the extent that smallholders are involved in domestic and export value-chains for high-value fresh produce, either directly through production, or through participation in the associated labor markets. According to the World Bank (2007a:1), the sector accounts for “over 30 percent of gross domestic product (GDP) in Africa and employs over seventy percent of the population.” Empirical studies (Diao, 2010) have confirmed that agricultural GDP growth is twice as effective as other sectors at fighting poverty in countries that are at the lower rungs of development. The economic history of developed and emerging market countries suggests that no country has attained sustained economic growth without an antecedent or concurrent growth of their agricultural sectors, especially attention to the needs of women farmers.

As the FAO (2011:3) puts it, there is need for deeper analysis:

Governments, donors and development practitioners now recognize that agriculture is central to economic growth and food security –

particularly in countries where a significant share of the population depends on the sector – but their commitment to gender equality in agriculture is less robust. Gender issues are now mentioned in most national and regional agricultural and food-security policy plans, but they are usually relegated to separate chapters on women rather than treated as an integral part of policy and programming. Many agricultural policy and project documents still fail to consider basic questions about the differences in the resources available to men and women, their roles and the constraints they face – and how these differences might be relevant to the proposed intervention.

A more nuanced understanding is required to promote agriculture as the major driver of economic growth and development in Africa, especially in respect of the urgency to meet the poverty, hunger and environment related MDGs (World Bank, 2007a).

One of the immediate consequences of the underperformance of African agriculture has been the worsening food security situation on the continent, particularly in lieu of the structural changes currently affecting global markets for agricultural commodities.

Diao et al. (2007) outline a number of roles and implications of the agricultural sector in the development of Africa:

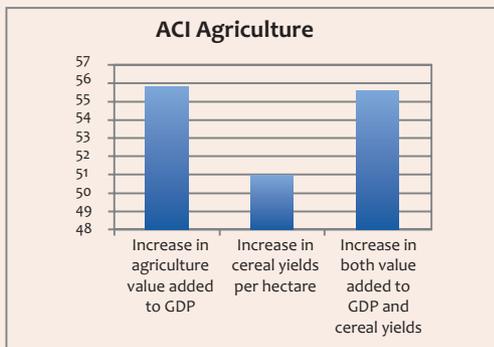
1. Paradigm shift in thinking about the role of the agricultural sector – early thinking about development perceived the agricultural sector as characterized by low productivity, traditional

technology and decreasing returns. Development therefore required sectoral adjustments from primary production toward the modern industrial sector where there is higher productivity and increasing returns. In this view, the agricultural sector's main role was rather passive, in providing food and employment. Development was thus conceived

in terms of the sectoral decline in agriculture and the evolving importance of the industrial and services sectors. The debate around the Malthusian population trap and the Lewis model (Lewis, 1954) were reflective of the views of the relatively passive role of agriculture in development. Figure 3.1 below shows the important link between capacity and agricultural

FIGURE 3.1
Agricultural Capacity and Performance

Capacity is important for increasing value and productivity of agriculture



Information systems are very important for increasing both agriculture value added and productivity. A good agricultural strategy can make the difference between high and low value added to GDP. Training and investment in innovation are important for raising farmer and land productivity. The private sector role is critical for raising productivity and increasing the contribution of agriculture to GDP.

Component of Capacity	Increase in agriculture value added to GDP (%)	Increase in cereal yields per hectare (%)
Information Systems	79.2	80.1
Private Sector Role	71.7	60.1
Training and Innovation	38.5	39.4
Agriculture Strategy	58.3	48.6

Source: Agricultural value added as a share of GDP and cereal yields per hectare from World Bank Data Finder. All other data from ACI.

2. Agriculture as an active sector in development – the Green Revolution is credited with demonstrating that, given relevant technology, traditional agriculture can be transformed into a modern sector. The Malthusian population trap would be broken by advances in mechanical and biological technology by removing constraints imposed by endowments in land and labor. Given backward and forward sectoral linkages, innovation in the agriculture sector can generate growth in other sectors ala Hirschman (1958). Johnson and Mellor (1961) suggested the existence of production and consumption linkages within the agricultural sector as well as

between agriculture and other sectors of the economy. Authors such as Gollin et al. (2002) empirically showed the importance of agriculture in early stages of economic development. Other scholars (Hazell, 1982; Hazell and Haggbalde, 1991; Binswanger, 1986) focused on the role of agriculture in rural, as opposed to national, development to investigate viz.: (i) imperfect/missing commodity and factor markets, (ii) rigidities in rural-urban factor mobility, (iii) high transport/marketing costs, (iv) existence of rural non-tradable sectors, and (v) rural unemployment and underemployment. Infrastructure is given a

primary role in galvanizing the nonfarm economy due to increases in demand from the agricultural sector to bring about agricultural-demand-led-industrialization (Adelman, 1984).

3. Nutrition and economic development – agriculture is an important sector due to its contribution to the nutritional health of a society. Inadequate and irregular availability of food increases the chances of malnutrition, lowers labor productivity and the quality of human capital (Fogel, 1994; Nadav, 1996). The agricultural sector has the potential to stabilize food production and enhance food security. Food crises undermine both political and economic stability with deleterious effects on the levels and efficiency of investments (Barro and Sala-i-Martin, 1995).

Another neglected area of debate is that of urban agriculture. A general consensus about the exact definition of urban agriculture does not exist. However, many researchers tend to define urban agriculture as any agricultural enterprise within or on the fringes of a town, city, or a metropolis that grows or raises, processes, and distributes food and non-food products (Moustier, 1999; Mougeout, 2000; Bryld, 2003). Some scholars have considered related practices, such as the production of agricultural goods by urban residents within officially defined urban spaces (Zezza and Tasciotti, 2010).

Yet others define urban agriculture as any farming activity occurring in built-up 'intra-urban' areas and 'peri-urban' fringes of cities and towns (Thornton, 2008). These varied definitions illustrate the peculiarity and diversity of urban agriculture and, therefore, the range of policies and actors affected by it.

Rigid conceptions that focus excessively on urban–peri-urban dualisms or rural–urban binaries may be useful on a range of scales, but they also gloss over important interactions that make rural and urban spaces interdependent and mutually constitutive (Tacoli, 1998; de Bon et al., 2010). Hence, a perception of urban agriculture as a dynamic concept is paramount, as is the recognition of the diversity of urban agriculture. Bryld (2003) argues that policymakers and scholars dealing with urban agriculture issues should not only consider the particularities of the setting but also understand that urban agriculture is not an isolated phenomenon. The practice is diverse and interconnected with various urban, peri-urban, and rural activities. Although scholars have difficulty providing a classification that neatly captures the distinctive characteristics of urban agriculture, classifications can be created by using a range of attributes, including the physical location of the activity, motives and gender of practitioners, scale of cultivation, kinds of crops, sources of labor, and land tenure issues, as

TABLE 3.1
Characteristics of Urban Agriculture (UA) and Peri-Urban Agriculture (PUA)

Attribute	Home subsistence farmers	Family-type commercial farmers	Multi-cropping peri-urban farmers	Entrepreneur
Location	UA–Backyard home gardening/farming	PUA–UA Open spaces and unused land spaces	PUA Unused land spaces	PUA Unused land spaces
Outlets	Home	Urban markets	Home + urban market	Urban market + export
Objective	Home consumption	Income for subsistence	Home consumption and income for subsistence	Additional income, leisure
Size	Usually < 100m ²	Usually < 1000m ²	Usually > 5000m ²	Usually > 2000m ²
Products	Leafy vegetables, cassava, plantain, maize, rice, goats, sheep, poultry, fruits	Leafy vegetables, temperate vegetables, poultry, sheep, milk	Staple food crops, local vegetables	Temperate vegetables, fruits, poultry, livestock, fish
Intensification ⁶	2	2–3	1	4
Gender	F	F + M	F + M	M
Limiting factor	Small size	Small size, access to inputs, marketing risks, water and services,	Access to inputs, fertility	Technical expertise, marketing risks
Land Tenure	Secured land access	Land insecurity	Land insecurity	Secured land access
Labor	Family labor	Family and hired labor	Hired labor	Hired labor

Source: Modified from Moustier and Danso (2006)

Urban agriculture in Africa has a great potential to enhance the wellbeing of urban residents, including meeting the food needs of a burgeoning urban population. Africa's urban population is projected to increase from 39% in 2005 to 53% in 2030 (Table 3.2). Even though the projected urban population growth rate seems to indicate a slight decline (as shown in the table), this rate nonetheless will translate into a dramatically high increase in urban population when

compared to developed regions. Such growth is expected to significantly increase household food demand in urban areas at the same time as rural-urban migration is contributing to a declining rural agricultural productivity due to loss of farm labour (Lee-Smith, 2010). It is within this context that urban agriculture stands to play a strategic role not only enhancing urban food and livelihood security but also in meeting overall national food self-sufficiency.

TABLE 3.2
Total and Urban Population in Africa, 1950 – 2030

Year	Population (millions)			Average annual rate of change (per cent)			
	1950	1975	2000	2005	2030	1950-2005	2005-2030
Total Population	225	416	812	906	1463	2.54	1.92
Urban population	33	105	294	347	742	4.29	3.04

Source: Tibaijuka (2009)

4. Household food security and nutrition – Urban agriculture is already demonstrating enormous potential in enhancing the welfare of poor urban populations in some cities of certain African countries (Maxwell, 1995; Lourenco-Lindell, 1996; Mwalukasa, 2000; Nugent, 2000). For example, a significant number of people in cities such as Accra and Dar es Salaam increasingly depend on crops grown in public spaces for food and income (de Zeeuw et al., 2010). Urban agriculture contributes to improved food availability and nutritional status. Resources freed by self-production of food can be utilized to complement household diets by providing other nutritious food items such as fish, fruits and vegetables (Bryld, 2003). This means that urban agriculture can contribute to food diversification through increased availability of household disposable income (Zezza and Tasciotti, 2010). With more diverse foods available, households become more food secure (Swindale and Bilinsky, 2006). Thus self-grown food can reduce the challenges that the urban poor face, especially the dangers of meeting their household food and nutrition security entirely through the market.

The ability of urban agriculture to supply fresh perishable products such as vegetables is in line with Von Thunen's agricultural land use model (de Bon et al., 2010). Vegetable supplies from within 30 km to urban areas in African countries

attributes 70% of the source of these foods to urban agriculture. The figures for the supply of vegetables are significantly higher in Asia (de Bon et al., 2010), signifying the potential for growth and expansion of this sector in African cities.

5. Urban food security and HIV/AIDS – Urban agriculture plays an important role in improving nutritional status of households affected by HIV/AIDS who tend to be more food insecure. As urban areas in Africa continue to account for an expanding number of people living with HIV/AIDS urban agriculture can be an important source of nutritional security (Gillepse, 2006). Enhanced food security in these households can also contribute to increased adherence to HIV/AIDS treatment. This means that urban agriculture can contribute to efforts toward reduction of the spread of HIV/AIDS.

The location of food producing areas within and around cities significantly cut the cost of transportation usually leading to reduced market prices of food. This makes it more affordable for poorer households to access food sold in urban market centers. Indeed, several studies on African cities have shown that urban agriculture provides a large proportion of food consumed in households (Moustier and Danso, 2006; Cofie et al., 2003; Nugent, 2000; see also Table 3.3).

TABLE 3.3
Percentage of Household Food Consumption provided by Urban Agriculture

City	All food items	Vegetables	Milk/Poultry/Eggs
Brazzaville		80	
Dakar	-	70-80	65-70
Dar Es Salaam	-	90	60
Harare	60	-	-
Kampala	60	-	-
Kumasi	58	90	-
Lusaka	20-30	-	-
Nairobi	50	-	-
Yaounde	-	80	

Source: Moustier and Danso (2006); Cofie et al. (2003), Nugent (2000)

6. Food price/supply stabilizer – by complementing rural production, urban agriculture can also stabilize food prices on the market (Moustier and Danso, 2006). As African countries depend on food produced in rural parts to feed national populations, including those living in urban areas, urban agriculture can play a strategic role in cushioning market prices and/or supplies especially during times when rural production is unexpectedly low due to poor rains. Other instances where urban agriculture can provide stability to market prices of food include occasions when rural supplies are limited or cut off by transport problems (e.g. heavy rains) or conflicts. In addition urban agriculture can reduce a country's dependence on food imports, further preventing excessive foreign exchange losses.

7. Employment/Income – In the insufficiency of formal jobs in many African cities, urban agriculture is increasingly becoming an important source of employment for the urban

poor (Table 3.4). The mismatch between the mounting urban populations and the availability of employment opportunities in Africa, especially in the wake of weak industrial and manufacturing sectors, renders urban agriculture a vital source of employment. Urban agriculture is a particularly important source of employment for people who may not successfully compete for formal sector jobs due to their low skill levels. It is estimated that 40% of urban dwellers in Africa are involved in agricultural and related sectors (Zezza and Tasciatti, 2010), including not only the urban poor but also the not-so-poor willing to increase their income. Agricultural production can help all types of countries generate jobs, especially those who need to raise the level of productivity (see Figure 3.2). Reportedly, in some cities such as Libreville, Kumasi and Lusaka, the proportion of urban dwellers in agriculture far exceeds the continental average (Cofie et al., 2003). Thus, just as agriculture provides the bulk of rural

employment in Africa, urban families without formal employment can enhance their labor productivity by engaging in urban agriculture.

Increasing productivity of labor is central to achieving MDGs especially the goal of reducing poverty (Goal #1).

FIGURE 3.2
Unemployment levels and per capita agricultural production

Low per capita agricultural production	Medium per capita agricultural production	High per capita agricultural production
<ul style="list-style-type: none"> • Data span of 28 years • Per capita agricultural production of 37.89-98.36 • Average GDP growth of 2.17% • Unemployment 22.57% 	<ul style="list-style-type: none"> • Data span of 26 years • Per capita agricultural production of 100.4-108.61 • Average GDP growth of 4.52% • Unemployment 26.75% 	<ul style="list-style-type: none"> • Data span of 19 years • Per capita agricultural production of 116.5-147.23 • Average GDP growth of 4.67% • Unemployment 23.59%
 <p>Mauritius</p>	 <p>South Africa</p>	 <p>Morocco</p>

Source: Developed using data from Africa Development Indicators

Reducing unemployment is vital for addressing other MDGs. However, this does not mean that urban agriculture is exclusively an activity of the poor. There is evidence of participation by better-off groups who carry out farming in order to supplement or diversify their diets. Others also engage in urban agriculture on a larger scale with a primary goal of making profit. For example, Jacobi et al. (1999) found that while

vegetable growing was common in all income groups in Dar es Salaam, the better-off had larger farms and tended to produce for the market. Similarly, in urban and peri-urban areas of Monrovia, different groups of people including youth (amidst high unemployment) engage in various forms of farming, but the middle class tend to be particularly market-oriented in their farming activities (UNDP 2006b).

TABLE 3.4
Percentage of households involved in urban agriculture (UA) and related monthly incomes

City	% of Household in UA	Monthly income per farm size (\$)	General Net Income per month (\$)
Accra	46	40-57	27
Bamako	-	10-300	24
Bangui	-	n.d ⁷ -320	22
Banjul	-	30-n.d.	26
Bissau	30	24	12
Brazzaville	25	80-270	53
Cotonou	-	50-110	36
Dakar	-	40-250	46
Dar es Salaam	20	60	24
Douala	16	-	-
Freetown	-	10-50	13
Kampala	30	-	-
Kumasi	57	35-160	27
Lagos	-	53-120	27
Libreville	80	-	-
Lomé	-	30-300	26
Lusaka	45	-	-
Maputo	37	-	-
Nairobi	30	10-163	33
Niamey	-	40	17
Ouagadougou	36	15-90	25
Takoradi	-	10-30	27
Tamale	26	-	-
Yaoundé	35	34-67	53

Source: Moustier and Danso (2006); Dreschel et al. (2006) and Cofie et al. (2003)

8. Spreading livelihood risk – Urban residents who engage in agriculture in African cities do so to meet more direct goals such as reducing household expenditure on food, increasing incomes, or dietary diversification. However, large segments of the urban populace also pursue urban agriculture in order to mitigate the negative effects of unforeseen circumstances. As Africa's urban socioeconomic and political environments tend to be volatile and highly unpredictable, this means that families tend to face increased levels of uncertainty regarding

present and future livelihood security. As part of insurance against risk, families tend to engage in a range of routines and activities within as well as outside domestic spaces, with farming being one of possible measures to cover themselves against such threats. Thus, urban agriculture can reduce vulnerability of poor families to shocks.

9. Stimulating niche markets – Increased demand for urban agriculture produce can in turn stimulate other economic activities through forward and backward linkages. For example,

increased customer base spread in different parts of the city may give rise to the need for wholesale or retail services of farm products such as fruits and vegetables. The fresh cut flower market is an area of growing demand for urban agriculture. Such market chains have emerged in some parts of African cities such as Brazzaville, Bangui, and Bissau (de Bon et al., 2010). This creates entrepreneurial opportunities for groups of people who have the transport and logistical capacity to buy these farm products from farmers wholesale and sell them to retailers for resale. Similarly, urban agriculture can also create backward linkages in terms of increasing demand for seed and other farm inputs. This can lead to emergence of groups of private traders who can provide these services.

Urban agriculture, therefore, cannot be considered as having only a marginal contribution to a nation's economy. Instead, urban agriculture should be viewed as an economically viable activity. As summarised in Box 3.1, its

contributions to food security, in particular, need to be considered and planned for as a central component of wider national development strategies. However, for its contributions to be fully realized, constraints, such as the lack of adapted regulations and policies in African states and city planning, need to be addressed. Urban agriculture plays various roles that go beyond ensuring food and livelihood security discussed in the preceding sections. For example, urban agriculture can contribute to a better balance between built and green areas. In addition, in the absence of urban agriculture cities would incur additional costs associated with maintaining these spaces. Using trees for shade and energy (charcoal, wood stoves) could have a potential when looked at as a sustainable forestry solution for cities where residents use charcoal stoves. Also, use of food and farm waste for generating biogas provides new opportunities in green energy. Urban agriculture can again offset some of the environmental footprint that comes from transporting food over long distances.

BOX 3.1

The Role of Urban Agriculture for Food Security

- Reduce urban food deficits in the face of Africa's rapid population growth and changing consumption patterns
- Household food security for urban poor unable to achieve food security from the market
- Nutritional diversification for urban residents
- Nutritional security for HIV/AIDS-affected families thereby contributing to ARV treatment compliance
- Generate foreign exchange savings and eases fiscal pressures, especially among food-import dependent countries
- Increase disposable income among urban employed and unemployed alike
- Contribute to employment
- Contribute to emergence of niche markets
- Stabilizer of market prices of food

Source: Arku et al., 2011

3.2 Debating food security and food sovereignty

While much has been written about food insecurity in many African countries, what is missing is a discussion of the capacity building measures needed to promote food security on the continent. The appropriate capacity development measures, defined as institutional infrastructure, comprehensive program of education, skills training, professional development activities, and other systemic approaches to improve or enhance the performance of personnel within a sector or institution (Development Associates Inc., 2003), to promote food security in Africa seem not to have been adopted. While an important antecedent to the emergence of food security as a template mechanism was the post-war thought that stressed national food self-sufficiency in developing countries (Boyer, 2010: 322), the need for food security became a matter of concern and shot to prominence in the international community following the oil crisis and the concomitant world food crisis of 1972-1974. The focus on food security was to increase even further following the drought and famine that many African countries had to grapple with in the early part of the 1980s. The concept and idea of food security has evolved over the past few decades in recognition of changes in the perspectives among policy makers, governments, international agencies and others focused on addressing issues centred on the challenges facing the agriculture sector in various parts of the world. It is not surprising that there are a number of definitions for food security. As Ehrlich et al. (1993:3) argue, a nutritionally secure society has the ability to provide its entire people with diets adequate to

sustain work and other normal daily activities. This means that individuals and society have buffers against inadequate harvest due to regional drought or other climatic events and against difficulties in obtaining food through international trade.

Based on this definition, it can be stated that the main aspects and dimensions of food security are food availability, food access and acquirement, as well as food utilization for individuals at the household level. Food availability deals with the actual supply of foodstuffs in any country from local production or imports. It involves sufficient quantities of appropriate and necessary types of food from domestic or local sources. According to the International Fund for Agriculture Development (IFAD, n.d.), food access and acquirement refer to the ability of households to acquire food for personal consumption through production, exchange, or transfer. This means that individuals in a household have adequate sources of income to purchase or obtain the levels of appropriate foods needed to maintain consumption of an adequate diet or nutrition level. It also involves the ability to cope with shocks, as well as the ability to improve and maintain the level of acquirement. Food access and acquirement are important because not having the resources to buy may contribute to food insecurity even when enough food is produced (IFAD, n.d.). Finally, food utilization involves the appropriate use based on knowledge of basic nutrition and care, food processes and storage techniques, as well as adequate water and sanitation. It entails the situation where there is actual biophysical consumption of food and whether or not that food has adequate nutritional properties to meet the basic health needs of any given

population (Tweeten, 1999: 475; Jenkins and Scanlan, 2001; IFAD, n.d.). Despite the different definitions and dimensions, underlying all is the idea that food security is about the ability of households to easily have secure, quality and culturally acceptable access to sufficient food for a healthy life as and when they need it. This Report, thus, adopts the perspective of Devereux and Maxwell (2001) in conceptually defining food security as the success of local livelihood strategies to guarantee access to sufficient and nutritious food at the household or family level for a healthy life.

While food security is about having access to sufficient, safe and nutritious food, the idea of food sovereignty emerged and developed in the 1990s as a reaction to the perceived failures and weaknesses in the approach to attaining food security. There was growing concern by international civil society that the knowledge, priorities and aspirations of small-scale producers, and other citizens whose livelihoods depend on food provisioning, were rarely included in policy debates on the future of food, farming and development (Edelman, 2003). Thus, the idea of food sovereignty was launched in the 1990s by the global farmers' movement and transnational coalition, La Via Campesina. The focus of food sovereignty, which adopts a rights-based approach, is more on access to productive resources (Windfuhr and Jonsén, 2005), and the international framework and factors that contribute to food insecurity, hunger, malnutrition and undernourishment (Boyer, 2010). The need for food sovereignty in Africa has received a lot of attention because of its ability to provide the base from which local decision-makers and professional organizations can regain leadership in defining and directing

policies (SWAC, 2006). Indeed, the Declaration of Nyéléni, which occurred in 2007 at the International Forum for Food Sovereignty at Sélingué, Mali, defined food sovereignty as the right of people to have a healthy and culturally appropriate food produced through ecologically sound and sustainable methods and the right to define their own food and agricultural system. This Report, thus, operationally defines food sovereignty as the process of restoring sectoral policies and public intervention in the agricultural sector (SWAC, 2006), as well as placing food producers at the centre of the agricultural system rather than the demands and expectations of the big businesses and corporations, the market, and international forces (Boyer, 2010).

3.3 Causes of food insecurity- review of evidence

(a) Policy Failures

While food insecurity occurs in many parts of Africa, the extant literature is replete with divergent conceptual and theoretical perspectives and paradigms to explain it. Hence, not only will it be impossible to be exhaustive in terms of the factors behind food insecurity, but also it is important to point out that rather than one singular perspective, there is a diversity of reasons and causes of food insecurity in Africa. One of the earliest theories advanced to explain food insecurity in Africa was offered by Robert Bates (1981, 1988). Arguing from a rational choice perspective, Bates (1981, 1988) asserts that while most Africans dwell in the rural areas and make a living in farming and the agricultural sector, the policies undertaken by their governments often go against the interests of the farmers, and this for him contributes to a

decline in food production to feed citizens. According to him, African governments generally try to increase agricultural supplies by means of costly and inefficient state-run projects, and subsidies for farm inputs, rather than raising prices (Leys, 1996: 44). With support from the urban elites and interests, governments pursue policies that take resources away from the agriculture sector to advance the supposed industrial development goals of their countries. The nature of government policy involved the extraction of rents and other resources from the agricultural sector through the activities of various marketing boards who determined prices offered to farmers, most of which were below the prices on the world market. In addition, African governments adopted the policy of subsidizing farm inputs like machinery, fertilizer and seeds which are more often used by large-scale farmers as opposed to small-scale ones (Bates, 1981, 1988). While such inefficient policies by governments created market distortions and the misallocation of resources, negatively impacted the collective welfare, and were thus economically irrational, Bates (1981, 1988) suggests that the policies bring political benefits that enable the political leaders to hold onto power. The collective welfare would have been best served by allowing prices for farm produce to rise in response to conditions of demand and supply. However, because large-scale farmers are few and they benefit from subsidies on their input, and urban workers are concentrated and more easily organized and benefit from cheap food (Leys, 1996: 45), African governments pursue such policies because it is politically rational for them.

In sum, declining agricultural output that contributes to food insecurity in Africa is part of

the wider pattern whereby governments of all ideological persuasions have tended to favor projects in urban areas or on highly mechanized export agriculture at the expense of small-scale farmers (Cheru, 2002: 109). Central authorities naively believe that they are better placed to make key decisions on agricultural policy than illiterate peasants. As a result, poor policies and institutional failures have undermined the productivity of peasant farmers and contributed to food insecurity in Africa. The low prices granted to farmers fuel the downward spiral in agricultural output as the farmers switch to other more lucrative activities outside of the formal market (Cheru, 2002: 94-95). Given that inappropriate and inefficient state-led policies serve as a hindrance to the overall socio-economic development of African countries, Bates (1981, 1988) implies that it is important that African countries pursue a much more neoliberal and market-friendly approach in their agricultural policy. Thus, by reducing the bias against the agricultural sector and 'getting the prices right,' the supply response by farmers will dramatically improve and set the foundations for a well-functioning market (Cheru, 2002: 92) that can also help attain food security in Africa.

The argument by Bates (1981, 1988) has however, come under criticism. As Leys (1996:45-46) points out, Bates (1981) represents low producer prices as 'exploitative' for peasants and assumes that the resulting surpluses cannot be used to invest in the creation of a more diversified economy that could ultimately serve the interests of agriculture producers. Moreover, Bates (1981) is criticized for relying on 'stylized facts' rather than a systematic analysis of comparative evidence to support his argument and conclusions. This means that he simply proposed

a general or common pattern, whose accuracy or validity was supported only by reference to, rather than general examples from, various countries (Leys, 1996: 46).

(b) Institutional, structural and health-related challenges

Aside from the Bates' rational choice paradigm, there is the perspective and argument by Cheru (2002) that many African countries face the challenge of being food secure because of the lack of investment in agriculture production, insecure land tenure system, the lack of political will, as well as inadequate support services and infrastructure. According to Cheru (2002), land degradation is becoming a major factor pushing poor peasants in Africa off the land. Environmental degradation, desertification around fertile lands that stem from global warming and climate change, overgrazing, and biodiversity loss have worsened the food insecurity situation of many African countries. In particular, the depletion of groundwater, decreasing of croplands, and the dying of livestock has meant increasing poverty, food insecurity and the subsequent movement of the farming population. In addition, Cheru (2002) notes that productivity decline in agriculture and food insecurity can be explained by the lack of extension services and the absence of efficient research and inadequate training opportunities. For example, the Development Associates, Inc. (2003) report on Mozambique that was prepared for USAID concluded that farmers in that country lacked well-prepared researchers, basic skills in areas important to farming, trained technical extension specialists serving rural areas, as well as basic business and management skills. In Mozambique, as is the case in many African countries, the provision of extension services is small, and the majority of

farmers have low technical education. This is exacerbated by inadequate marketing and transport services. Because of transport bottlenecks that stem from the poor state of roads, short and expensive supply of motorized transport services, farmers cannot market their goods or access basic supplies in the major cities (Development Associates, Inc., 2003).

Coupled with the above, the lack of proper storage facilities leads to the situation where many African farmers lose a significant amount of harvested crops to pests and insects (Cheru, 2002). According to the FAO/World Bank (2011) report, *Missing Food: The Case of Post-harvest Grain Losses in Sub-Saharan Africa*, which was produced in collaboration with the United Kingdom's Natural Resources Institute, losses occur when grain decays or are infested by pests, fungi or microbes and physical losses are only part of the equation. Losses can also be economic, resulting from low prices and lack of access to markets for poor quality grain, or nutritional, arising from poor quality or contaminated food. Physical grain losses prior to processing, which range from 10 to 20%, contribute to high food prices by removing part of the food supply from the market. They also have negative environmental impacts as land, water and non-renewable resources such as fertilizer and energy are used to produce, process, handle and transport food that no one consumes. Indeed, post-harvest grain losses in sub-Saharan Africa stand at around US\$4 billion a year. This lost food, the FAO/World Bank (2011) notes, could meet the minimum annual food requirements of at least 48 million people. In Eastern and Southern Africa alone, food losses are valued at US\$1.6 billion per year, or about 13.5% of the total value of grain production. While

no similar regional loss estimates are available for Central or West Africa, assuming losses of a similar magnitude, the value of post-harvest grain losses in sub-Saharan Africa could total US\$4 billion a year out of an estimated annual grain production worth US\$27 billion (2005-2007 annual average). This is roughly equivalent to the value of annual cereal imports in the region during the same period. Given the near doubling of global grain prices since 2005-2007, the value of current losses, according to the FAO/World Bank (2011) is likely much higher.

As noted earlier, another trend of great concern for farmers and food security in Africa is the HIV/AIDS epidemic (Jayne et al., 2010: 1391). de Waal and Whiteside (2003) have argued that the food insecurity that has bedeviled much of Southern Africa for example, was distinct from the conventional drought-induced food shortages with respect to those vulnerable to starvation and the course of impoverishment and recovery. For them, food insecurity in Southern Africa was attributable to the HIV/AIDS epidemic in the region. In their argument, they hypothesized that caring for HIV/AIDS infected and affected individuals take the productive adults away from formal work. The implication and consequence is that there are fewer working adults, especially in the agriculture sector, and that in turn contributes to a decline in agricultural production and food insecurity. In sum, household labor shortages attributable to adult morbidity and mortality; the loss of assets and skills from increased adult mortality; the burden of care for sick adults and children orphaned by AIDS have all contributed to food insecurity in the Southern African region. This argument is consistent with household survey evidence from Kenya, Zambia, and Rwanda

which showed significant adverse impacts on the crop output, assets, and non-farm income of households incurring the death of a male household head (Jayne et al., 2010: 1392).

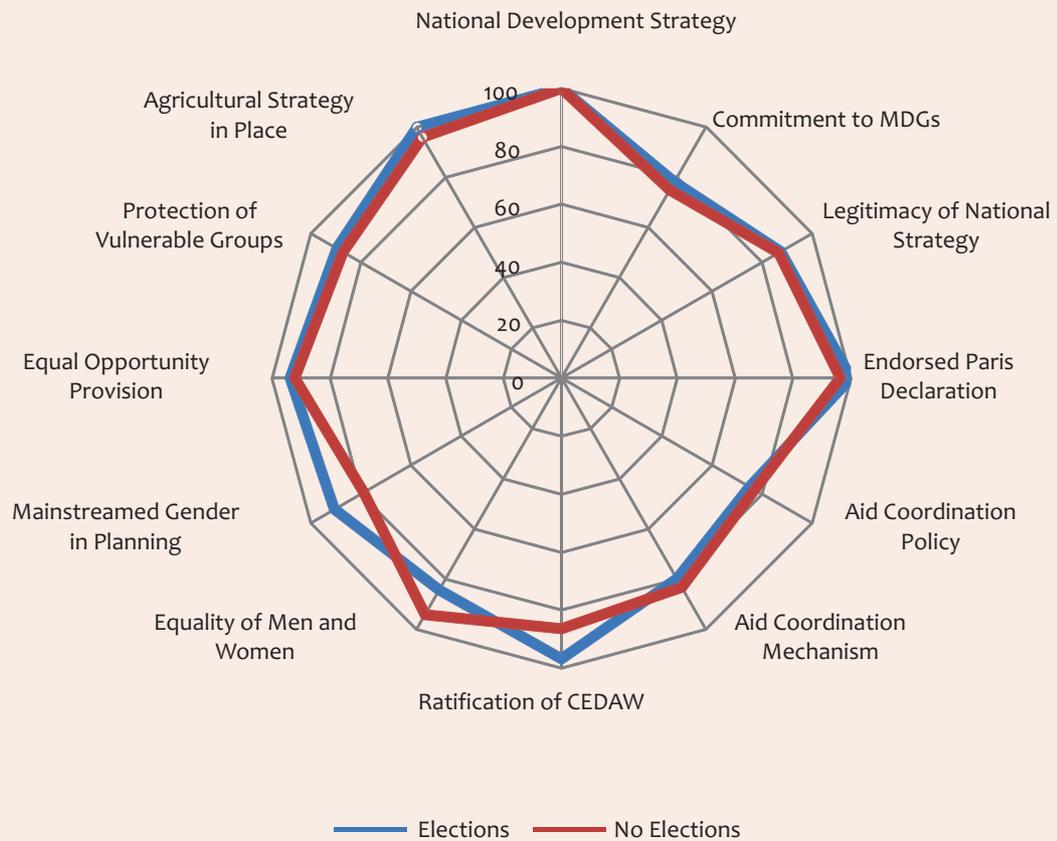
(c) Maldistribution, natural hazards and political crisis

Another reason for food insecurity in Africa and other parts of the developing world has centered on increasing mismanagement and maldistribution of food supplies. Ehrlich et al. (1993: 3-4) note that the persistent widespread food insecurity and chronic undernourishment result from maldistribution of otherwise abundant food supplies and that better distribution would solve the hunger problem. For them, outright starvation today is primarily a problem of food distribution failures, often precipitated by political turmoil in an already vulnerable, poorly nourished population as in the tragic situation in Somalia and a few years ago in Ethiopia and Sudan. Similarly, the political crisis and the post-election violence of 2010 in Cote d'Ivoire hindered food supply and food security in parts of the country, as well as in neighboring countries like Burkina Faso and Mali that are heavily dependent on Cote d'Ivoire for food supplies. Also, in Egypt, disruption to food stocks, loss of manpower and population movements which arose from the political turmoil of 2011 has affected food security in the country. The inability of farmers to get access to seed, fertilizers and other resources because of political instability has affected both the short and long-term future of agricultural food production, food security and income generation. In effect, food insecurity can also be explained by political crisis and maldistribution resulting from poverty and related economic factors. So the question is: does democracy lead

to improved policy design? Evidence from the ACI field survey shows that countries that have had an election in the year prior to data collection have outperformed those that have not in all twelve measures of policy capacity except those related to presence of an aid coordination policy

and mechanism, and embodying the principles of equality of men and women in the national constitution or appropriate legislation (see Figure. 3.3). The data supports the conventional wisdom that external influence through aid declines under democracy as do some rights of

FIGURE 3.3
Does democracy lead to improved policy capacity?

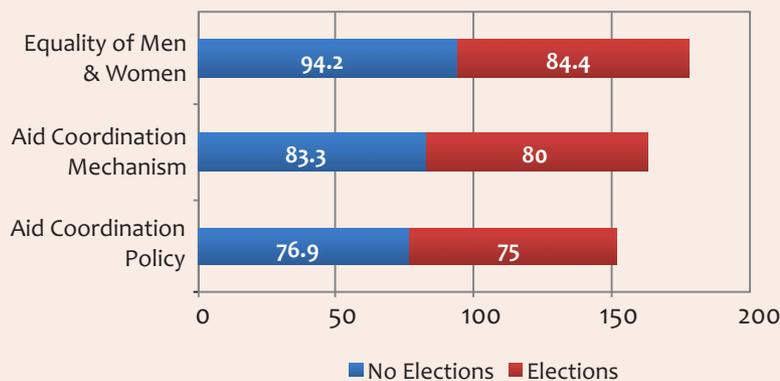


Source: ACI database 2012

Finally, one cannot ignore the fact that natural hazards and droughts that stem from the lack of seasonal rains do contribute to food insecurity in many parts of Africa. The last two years has seen some countries in the Horn of Africa (Somalia, Djibouti, and Eritrea) as well as parts of East Africa (Kenya, and Uganda) experience the worst droughts in decades. Poverty, the successive failed rains and pasture shortages, together with an unstable social and political environment that can be traced to increasing civil strife and conflict, as well as the absence of good governance have combined and contributed to serious food crisis and food insecurity in the Horn of Africa. In the face of the worst drought in more than half a century and the official declaration in July 2011 by the UN of a famine in some areas of southern Somalia, militant groups like al-Shabab banned and

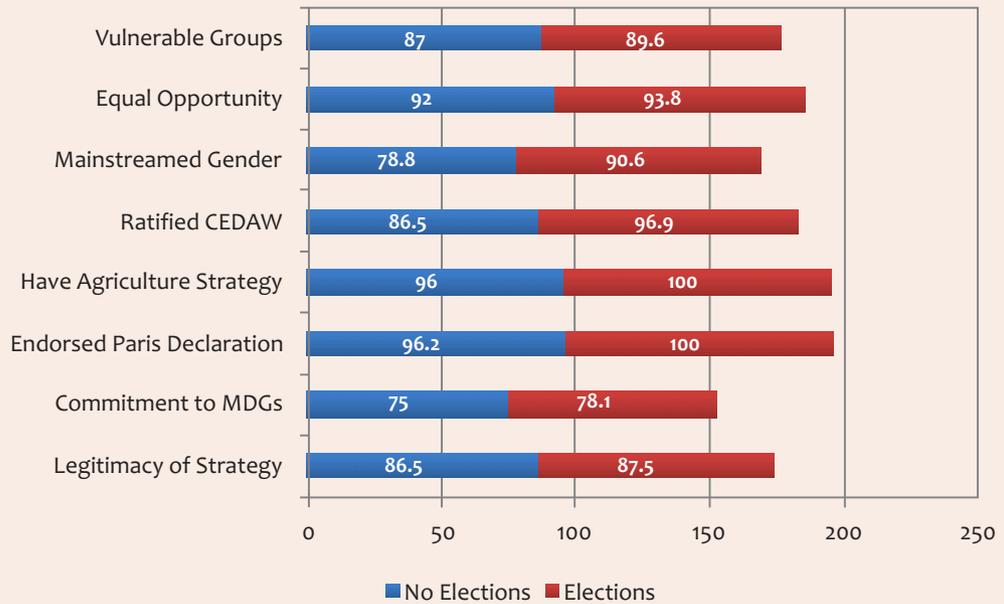
denied some aid organizations like UN's World Food Program and Mercy Corps access to areas in southern Somalia to provide much needed food to starving people. This shows the extent to which food insecurity and famine, as Brunel (2007) argues, is a political tool and can be used as a weapon of war by some militant groups. So, does democracy lead to better policy implementation capacity? Countries with elections under perform those with no elections in the areas of: equity, aid coordination mechanism and policy (Figure 3.4) Countries with elections out-perform those with no elections in: vulnerable groups, equal opportunity, mainstreaming gender, ratifying CEDAW, developing agricultural strategy, endorsing the Paris Declaration, committing to the MDGs and having legitimate strategy (Figure 3.5).

FIGURE 3.4
Countries with Elections under-perform those with no elections.



Source: ACI database 2012

FIGURE 3.5
Countries with elections out-perform those with no elections



Source: 2012 ACI database

(d) International conditions and factors

While the domestic factors that contribute to food insecurity in Africa cannot be ignored, it would be disingenuous not to take into consideration the international dimensions of the problem. One such international factor relates to the efforts to promote biofuels. Montefrio and Sonnenfeld (2011) have pointed out that governments throughout the world have expressed their commitment to promote biofuels by formulating and enacting new policies and laws. Countries like Mexico, Paraguay, Peru and Philippines have mandated both the production of biofuels and their blending with fossil fuels sold in retail fueling stations. While these policies are seen as crucial to advancing environmental policies by curbing greenhouse gas emissions, reducing reliance on

fossil fuels, satisfying domestic energy needs in the face of rising oil costs, and mitigating climate change (Montefrio and Sonnenfeld, 2011; IFPRI, 2011), critics note that this has the propensity to undermine food security and also force up global food prices. Oxfam (2008) has pointed out that the promotion of biofuels does not help food security because at a time when food prices are increasing, the United States and European Union (EU) use as much as 15% of world maize production to make fuel. Similarly, biofuels absorbed around 20% of sugar cane in 2007-2009, 9% of oilseeds and coarse grains and 4% of sugar beet. Thus, not only have biofuels sparked a fierce “food versus fuel” debate since a spike in food prices in 2007/08 that triggered riots in some developing countries, but they have also come under increasing scrutiny for encouraging

deforestation, a side-effect that can sometimes make their carbon footprint bigger than that of fossil fuels (Dunmore, 2011). In addition, biofuels increase stress on water resources and habitats and accelerates the release of soil carbon into the atmosphere, potentially undermining efforts to reduce greenhouse gas emissions that many governments hope to achieve through the use of renewable fuels and alternative energy sources (IFPRI, n.d.). In sum, not only can ethanol and biofuels production lead to extensive environmental problems, but also critics point out that to use agriculture land for production of goods other than food is unethical because it is wrong to produce anything else but food when people are starving (Swedish FAO Committee, 2009).

In addition, there is the argument by Daily and Ehrlich (1996) that colonialism played a role in the current food security predicament in many African countries. According to this perspective, colonial rule led to foreign businesses taking over the arable and fertile lands of Africans, and then pushing them to areas that were less fertile. With many of the big foreign businesses employing the land to produce primary products like cocoa, tea, coffee and cotton for exports, the less fertile land available to Africans to produce food was simply unable to sustain the needs of the local population. Consequently, many post-colonial African states imported food products to meet the needs of the population. This restructuring of the economies of African countries undermined the agricultural self-reliance that they hitherto enjoyed (Daily and Ehrlich, 1996). This situation has recently been worsened by the increasing sale of land and agricultural resources by African governments to foreign nations such as Korea, China and India.

While often presented as way of addressing food insecurity in Africa, unfortunately, many of the foreign acquisitions and deals seem to be only interested in taking advantage of the available land and establishing bases in Africa to enable them to feed the population of their home countries. Aside from that, Boyle and Holben (2006) attribute food insecurity in Africa to the nature of international trade and the concomitant debt of many countries on the continent. For them, the increasing prices of imported manufactured products relative to the primary products exported by African countries means that there is an unequal terms of trade between African countries and the rest of the world. The consequences are increasing payments on interests to the West; funds that could have been used to provide social welfare needs or improve agricultural activities and reduce food insecurity.

3.4 Consequences of food insecurity

Whatever the causes, one thing that is undoubtedly clear is that food insecurity has a number of negative consequences. First, food insecurity contributes to inadequate dietary intakes, reduced dietary diversity, and acute malnutrition, which also has implications for the ability of individuals to properly manage medical situations and conditions. In addition, it limits the choices that people have about education, as well as the options that they have about work as well as earn an income. Furthermore, the negative consequences of food insecurity are evident in the fact that it can lead to poor physical, psychological, socio-emotional and cognitive development of people, and especially children's school attendance and adults' long term income-earning ability (Drimie and Casale,

2009: 30). In addition, food insecurity leads to socio-emotional and behavioral problems such as stress and anxiety, and also affects human development. According to Drimie and Casale (2009:31), food insecurity affects the ability to recover from various stressors and other socioeconomic shocks, and also adequately plan or act for the future. They note that children suffering from food insecurity do not have access to adequate foundations such as sufficient investment and attention to human capital development that are essential to achieving a stable existence in a fast changing political economy. Aside from that, Jenkins and Scanlan (2001) note that food insecurity and malnutrition represent a major impediment to the socioeconomic development and growth of any society because they affect the ability of the population to live and maintain normal lives and be economically and socially productive. It is in this regard that there is the need to urgently increase food production to alleviate the widespread food insecurity in the region (Kijima et al., 2011), as well as overcome the negative consequences of food insecurity.

3.5 Agriculture and poverty – young people, women and livelihoods

Agricultural transformation in Africa should promote sustainable livelihoods and contribute to eradication of poverty, a moral and ethical imperative rooted in principles that govern the United Nations. To live a life free from poverty and hunger is a fundamental human right enshrined in the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights, and the International Covenant on Civil and Political Rights.

Poverty is also a violation of social justice

standards, such that socioeconomic policy should address issues of vulnerability, discrimination and segregated development.

Poverty is a multidimensional phenomenon that was characterized in the Program of Action of the 2005 World Summit for Social Development (United Nations 2006, resolution 1, annex II) as follows:

Poverty has various manifestations, including lack of income and productive resources sufficient to ensure sustainable livelihoods; hunger and malnutrition; ill health; limited or lack of access to education and other basic services; increased morbidity and mortality from illness; homelessness and inadequate housing; unsafe environments; and social discrimination and exclusion. It is also characterized by a lack of participation in decision making and in civil, social and cultural life (para. 19) (UN, 2009).

Following the Millennium Summit of 2000, eradicating poverty has been central to national and international policy agendas and actions. The overarching goal of the MDGs is to halve world poverty between 2000 and 2015, with targets for key dimensions of poverty, hunger, disease, lack of shelter, and exclusion. The ultimate development goals are improving living conditions and empowering people to participate fully in the economic, social and political spheres.

Estimates of extreme poverty in developing countries vary by data source, method of calculation, and assumptions used – making direct comparisons problematic. According to

the World Bank, extreme poverty in developing countries decreased from 28% in 1990 to 19% in 2002, and was projected to fall to 10% by 2015 (World Bank, 2006a). Results to date have been positive in East Asia and the Pacific, where the target of the MDGs has already been achieved, and in South Asia, where progress is on track. But the proportion of people in Africa, particularly sub-Saharan Africa (SSA), who live in extreme poverty, has changed little since 1990, and remains at about 44% (World Bank, 2006a; IAASTD, 2009b). Another recent estimate found that the incidence of poverty in SSA fell marginally from 54 to 51% between 1981 and 2005 (UN, 2009). Yet another source suggests a dramatic decrease in extreme poverty in the world, from over 1.3 billion in 2005 to under 900 million in 2010 (Chandy and Gertz, 2011). For SSA, the percent living in poverty was 54.5% in 2005 and 46.9% in 2010. Despite progress, poverty is increasingly viewed as an African problem.

Poverty reduction requires a combination of economic growth and a reduction in inequality. Progress in meeting the MDG poverty target is seriously threatened by the worst financial and economic crisis since the Great Depression of the 1930s, which followed immediately after the surges in energy and food prices pushed another 115 million people into conditions of chronic hunger in 2007 and 2008 (FAO, 2009b), as well as hurt a large proportion of the lower and middle classes in developed economies (UN, 2009). The economic recession had a severe negative impact on export revenues, foreign direct investments and foreign migrant remittances received by developing countries (FAO, 2011). Based on the World Bank's new international poverty line of US\$1.25 purchasing power parity dollars a day in 2005, contraction of the world

economy by 0.5-1.0% would add another 60 million people to the ranks of the poor in developing countries (UN, 2009). Poverty and inequality are closely related, and income and wealth differentials have been rising internationally and within countries where more than 80% of the world's population lives. The poorest 40% of the world's population accounts for only 5% of global income, while the richest 20% accounts for 75% (UN 2009). Income and non-income inequalities are high across Africa (Okojie and Shimeles, 2006). The GINI coefficient, a measure of inequality that ranges from 0 to 1, reveals that Africa (0.444) was second only to Latin America (0.493), and is followed by East Asia and the Pacific (0.381), South Asia (0.319) in the 1990s (IAASTD, 2009a).

The number of undernourished people in the world was estimated as 1.02 billion in 2009 (FAO 2009a). Of these, nearly 90 percent were in Asia and the Pacific (642 million) and Africa (265 million), including the additional 100 million people pushed into hunger in 2009. Hunger encourages child labor, leads to withdrawals from schooling - particularly of girls, prompts out-migration, prostitution, child trafficking, and permanent destitution, and fuels conflicts (Lele et al., 2010). The impact is most severe in Africa, where many countries are highly dependent on imported cereals (in some cases for up to 80 per cent of dietary energy supplies) and undernourishment is already widespread (FAO, 2009a). Problems of children being underweight in Africa are higher in rural (24.0%) than urban areas (16.8%), and among the poorest quintile (28.8%) compared to the richest quintile (15.3%) (FAO, 2011). Africa's aggregate agricultural performance has lagged at the same time that it confronts the most daunting demographic

challenge of any developing region. Annual flows for African agriculture fell from US\$2 billion in the mid-1980s to US\$1 billion in early 2000s (Haggblade et al., 2010a, 2010b).

While one billion people are currently hungry every day, approximately the same number of people were estimated to go hungry every day in the late 1950s, even though the world's population has more than doubled in the past half century. Thus, substantial progress has been achieved in increasing global food production. However, rapid degradation of the world's natural resource base, changes in rainfall and moisture availability due to global climate change, and volatility associated with closely integrated international markets militate against undue optimism. Learning from real successes in agricultural development in Africa and elsewhere is urgently needed and can provide useful guidance in the way forward.

3.6 Sustainable livelihoods, diversification and dynamics

The concept 'livelihoods' refers to the resources - tangible and intangible - and strategies that individuals and households use to meet their needs (produce food, income, etc.) and accomplish their goals. Livelihoods involve households making choices, taking into account the natural and institutional environments, to combine resources in different production and exchange activities, generate income, meet various needs and goals, and adjust resource endowments to sustain the process. Chambers and Conway (1991:6) provided the most widely used definition:

A livelihood comprises people, their capabilities and their means of living,

including food, income and assets. Tangible assets are resources and stores, and intangible assets are claims and access. A livelihood is environmentally sustainable when it maintains or enhances the local and global assets in which livelihoods depend, and has net beneficial effects on other livelihoods. A livelihood is socially sustainable which can cope with and recover from stress and shocks, and provide for future generations.

Access and rights to assets (resources), particularly natural capital (land for agriculture and grazing, forests, water, etc.) and the conditions and security of access to these assets fundamentally affect the livelihoods of the world's poorest households. Other key resources are human capital (health, education, training, skills, labor power); physical capital (technology, infrastructure, moveable property); social capital (relations of cohesion, trust, and reciprocity; networks; organizations; leadership; linkages among organizations and communities); financial capital (savings, credit, etc.); political capital (connections to agents of institutions of governance in the political and administrative systems); and, cultural capital (worldview, values, norms, identity).

The stock of productive assets that households and individuals control largely determines their ability to escape from poverty or to avoid it despite adverse shocks. In a larger sense it determines their structural position in society. Productive assets are the durable inputs used to grow crops and generate income. They also serve as collateral for credit. Endowments of assets such as labor, land and livestock influence households' ability and willingness to risk

investing in emerging opportunities. The socioeconomic mobility or immobility of households and individuals over time reflect their initial asset positions, the incomes and security that their assets generate, variation in households' experience of shocks, and their propensity to take up promising new technological and market opportunities (Barrett et al., 2006).

Just as small scale farming households strive to operate integrated farming systems with diverse crops and livestock that meet an array of needs (food security, nutrition, income), diversification of income earning activities is important for many households in rural Africa. Their livelihood portfolios are diverse and evolving, and can be considered as systems that generally involve an integrated set of economic activities as they adapt to changing domestic and external circumstances, adding or dropping some activities while continuing others. These may include small-scale rural non-farm enterprises, non-farm employment, and migration (commuting, temporary, seasonal). Diversification of livelihood activities can reduce risks and vulnerability, and overcome the 'consumption-smoothing' problem created by the seasonality of output in rain-fed agriculture. It can also be part of a strategy to accumulate assets.

Virtuous spirals of accumulation typically involve diverse livestock ownership, engagement in non-farm self-employment, and diversity of on-farm and non-farm income sources (Ellis and Freeman, 2004). Better off households tend to diversify in non-farm business activities (trade, transport, shop keeping, brickmaking) or salaried employment. With the introduction of improved technologies or new crops, political and economic reforms, new opportunities are

accessible and attractive only to relatively better-off households. Those with relatively large initial holdings of land, livestock and adult male labor power often systematically enjoyed better yields and terms of trade and accumulated wealth and remained secure in their livelihoods (Barrett et al., 2006). The poor tend to diversify in casual wage work while remaining heavily reliant on subsistence crop production (OECD 2006). While wealthier households are able to smoothen consumption, poorer households often do not use the few assets they possess to stabilize consumption, instead holding on to their limited assets, even if it entails reduced food intake (Barrett et al., 2006).

Economic diversification levels are higher and more complex than official statistics indicate. According to Ellis and Freeman (2004), the contribution of non-farm sources to rural household income was roughly 60% in South Asia, 50% in sub-Saharan Africa, and 40% in Latin America (OECD, 2006). The significance of diversification may be multidimensional, both in the short and long term. More diversified household livelihoods may provide more capital to invest in new agricultural technologies and resource improvements and be better able to withstand shocks and risks (IAASTD, 2009a). Conversely, small farms that diversify may prioritize non-farm activities which provide more regular income, thereby giving lower priority to farming and may not take up promising new technology options that compete for their available labor time. More broadly, institutional settings shape property rights and access to infrastructure and social support services. Recent attention to technologies and markets for rural poverty reduction has increased analysis of geographic and socio-political factors that

condition uptake of improved technologies and market access (Barrett et al., 2006). Control of resources determines household resilience when food production and incomes fluctuate in response to changing economic conditions or natural disasters. Options in livelihood strategies are affected by economic, social and cultural considerations (e.g., what is considered appropriate according to gender, age, status). The range of livelihood 'choices' is generally more restricted among the asset poor. Moreover, some livelihood strategies may compete for the same resources (Hanson, 2005). Tradeoffs among different components of the resource endowment illustrate why simple or short-term definitions of poverty, hunger and food security provide an incomplete understanding of household's livelihood strategies. This has important implications for economic sustainability, environmental sustainability and social equity (IAASTD, 2009b).

Sustainable livelihoods approaches (SLAs) to rural development represent an evolution in development thinking but also a significant breakthrough by focusing on lives rather than project resources and outputs. SLAs embody principles that have emerged through critical reflection on decades of successful - and unsuccessful - rural development experience. Key principles are: being people-centered (primarily households and communities); starting with a focus on strengths rather than problems and needs; taking a long-term perspective (retrospective and prospective); operating in a participatory, socially inclusive, and dynamic (flexible and responsive) manner; utilizing a holistic (multidimensional and multi-level) perspective; and explicitly committing to long-term sustainability. The unique contribu-

tions of SLAs involve understanding the portfolio of livelihood activities (producing food and earning income), improving access to critical resources, strengthening capabilities and social protection to effectively utilize resources, building a diversified set of assets, reducing vulnerability to risks (shocks and stresses), and increasing resilience (Ellis and Freeman, 2004, 2005).

The variety of livelihood activities and strategies - within agriculture and involving other sectors of the economy - affect the quantity and composition of resource endowments over time. Livelihoods depend not only on current incomes but on how individuals, households, and nations use resources over the long term. Physical and financial capital are critical and their stocks and flows can be measured relatively easily. Equally important but less easily measured are sustainable use of natural capital and investment in human and social capital. Yet the quality and quantity of the household's resources depend, at least in part, on the consumption and investments made previously. For example, a household makes decisions about how much of its income to spend on food, health care or education (each of which affects the quality of its labor resources), how much to spend on seeds, fertilizer and other agricultural inputs, and how much to save or invest in other ways. "Once we recognize the dynamic interaction between household resources, choices, and outcomes, it becomes clear that a more complete understanding of hunger and poverty requires not only a broader understanding of the factors that affect them, but also a longer-term perspective on how they interact over time" (IAASTD, 2009b:27). This means that social and spatial factors have also to be taken into account

to define poverty, which increases the complexity of its quantitative measure.

Different resource endowments and different goals imply different incentives, choices, and livelihood strategies. For example, two households that have the same endowments of land, labor, and materials may choose different cropping strategies if one household does not have access to savings, credit or insurance and the other one does. In this case, the first household may choose to plant a safe but low yielding crop variety while the second household will plant a riskier variety - expecting higher yields while at the same time knowing that additional financial capital could help sustain income (and consumption levels) even if it were to suffer a poor harvest. Likewise, different livelihood strategies and different weather and market conditions imply different outcomes, which in turn imply different endowments. In the example just mentioned, the first household may suffer smaller losses in a drought year, but also [experience] smaller gains in average and good years. Even when both households suffer losses, their coping strategies might differ. The first, in order to meet consumption needs, might be forced to sell assets. If many other households are in a similar position, asset prices might fall, making it even more difficult to exchange them for sufficient food. Households with sufficient food or financial reserves, by contrast, may be in a position to buy assets at discounted prices, increasing not only their own ability to survive future droughts but also the degree of inequality in the region (IAASTD, 2009b:29-30).

Sustainability can be understood in terms of maintaining or increasing a household's ability to produce desired goods and services - which may or may not involve maintaining or increasing the

level of each particular component of the household's resource endowment.

Vulnerability and resilience are key SLA concepts. The concept of vulnerability captures the likelihood that people will fall into poverty because of economic shocks or personal mishaps. Small scale farmers are very aware of their vulnerabilities to multiple risks – including direct drivers (diseases, pests, climate, natural disasters) and indirect drivers (markets, infrastructure and external inputs). Therefore, they adopt diverse risk-minimizing and mitigating strategies (IAASTD, 2009b). Vulnerability to these risks is a result of poverty and socioeconomic position, influenced by social dimensions such as income levels, asset ownership, ethnicity, age, class, and gender (World Bank, 2009a). Resilience refers to the capacity of an individual, household or community to cope with a stress or shock, overcome adversity or adapt positively to change. The ability to 'bounce back' from negative experiences (drought, flood, illness, injury, or death), rather than lose income and assets, may reflect the innate qualities of individuals or be the result of experience and learning. Resilience can be developed and enhanced to promote greater wellbeing. It is a complex construct with many interrelated factors: experience, learning, sense of purpose, positive outlook, social networks and support, infrastructure, and support services (Hegney et al., 2008).

Because commonly used poverty measures are generally static, they tend to miss this dynamic aspect of poverty. Unlike poverty, which is assessed after the fact, vulnerability “focuses on assessing the extent of the threat of poverty or low well-being, measured *ex ante*, before the veil

of uncertainty has been lifted” (Dercon, 2005). Vulnerable households deal with shocks by selling assets, which are very difficult to rebuild, by reducing food consumption in terms of quantity and variety, and reducing or eliminating health and education expenditures. These *ex post* coping mechanisms have long-term negative effects on quality of life and long term viability of livelihoods (FAO, 2011). Practical Action has developed the framework 'From Vulnerability to Resilience' for analysis and action to reduce vulnerability and strengthen the resilience of individuals, households and communities. It sets out the key factors that contribute to peoples' vulnerability, explains the links between these factors, and includes ideas for action to strengthen resilience (Pasteur, 2011).

For many, the core component of SLA frameworks concerns access to and control over assets. However, the real value of SLA frameworks concerns much more than assets. SLAs reflect an integrated conceptualization of 'structure' and 'agency' that is essential in addressing poverty. They involve identification and multi-sectoral analysis of contextual factors, conditions and trends (demographics, environment, markets, policies), institutions and organizations that influence access to and use of livelihood resources, the portfolio of livelihood activities (food production and income earning), and outcomes in terms of well-being and sustainability (Hussein, 2002).

SLAs are being applied and adapted to a range of different development challenges – particularly community-driven development, making markets work for the poor, food security, disaster-risk reduction, and climate change adaptation. “The language has changed so much

in the last 15 years – from thinking about an 'adequate' and 'decent' standard of living to 'livelihoods strengthening,' 'livelihoods diversification' and beyond that linking to discourses on climate change, resilience, and power – these all present big steps forward” (Turrall, 2011:1). Earlier criticisms are resulting in changes in practitioners' methods and areas of work to increase accountability to local populations, not just donors. These include: greater emphasis on understanding cultural and social contexts and on organizational learning to improve outcomes; commitment to changing power relations related to control over assets between men and women, commercial and political actors, and community organizations and local governance structures; and willingness to engage in policy making processes in ways that link micro and macro arenas.

3.7 Gender and livelihoods

Despite their central role in agricultural value chain across Africa, women are faced with many factors that constrain their effective participation in achieving food security. Women are typically marginalized at household, production and consumption levels. They are usually responsible for most activities in agricultural production, but are often prohibited from making household decisions about land selection, labor and expenditures (FAO, 2011). The general lack of access to credit and microfinance makes it harder for women to hire labor, access new technologies, purchase inputs such as fertilizer and improved seed varieties that could increase yields, grow crops that require cash investments, or buy land. Women often have limited access to markets for cash crops, as markets generally are established and

maintained through relationships among men. Agricultural production and household management leave women 'time poor.' The use of improved farm implements and appropriate mechanization can increase productivity, reduce drudgery, conserve labor and ensure timely farm operations while mitigating pressure on women. However, adoption of strategies that primarily benefit women may be inhibited by men, who often have greater decision-making power. Gender differences in access to and control over assets also dictate power asymmetries and negotiating power between men and women within the household and community (World Bank, 2009a). When women are not prohibited from accessing land, labor and credit, their management skills result in adoption of new input packages and yields that are similar to those of men (IAASTD, 2009a; Haggblade, 2010). Significantly, addressing the 20-30% yield gap between women and men farmers due to input differentials could increase aggregate domestic production by 2.5-4%, and reduce the number of undernourished people by 12-17% (FAO, 2011).

The vital role of women farmers requires measures to increase their managerial and technical capacity and to empower them to play a dynamic role in implementing future improvements at market, institutional and policy levels (Dixon et al., 2001). The failure to incorporate women's roles in implementing technological change has three interrelated consequences with significant implications:

First, there is loss of adaptive efficiency from not taking their operational knowledge into consideration; second, there is a reduction in women's household bargaining position accompanied by an increase in their

work. Third, there are lower adoption rates due to their lack of access to technology and training and failure by the proponents of the technology to address women's time constraints” (IAASTD, 2009a:42).

Mainstreaming gender analysis in project design, implementation, monitoring and policy interventions is thus an essential part of implementing an integrated approach in agricultural development (IAASTD, 2009b).

Women's access to land and their degree of land tenure security on private and communal lands can be improved through the implementation of land policies and laws oriented towards equal rights for men and women. Although many countries are at an advanced stage in the formulation of gender sensitive policies, laws, and other instruments, implementation is slow (e.g., women received only 20% of land under the recent Zimbabwe land reforms). “To catalyze implementation, reforms can be accompanied by mechanisms such as the harmonization of laws related to inheritance, marriage and property rights. In addition, political will and clear guidelines and benchmarks for monitoring implementation to allow appropriate authorities, including citizens, to hold governments accountable in this regard are more likely to lead to successful implementation of land reforms” (IAASTD, 2009a:108). It is noteworthy that village land councils in Tanzania which settle land disputes are comprised of seven members, at least three females (Ikdahl, 2008). Ethiopia's land certification process has also been hailed as effective, low-cost, rapid and transparent, and gender equity goals have been advanced because land administration committees at the local level are required to

have a least one female member. Ethiopia's land program also requires that certificates for women bear their photographs to help retain control over their land.

Despite lingering cultural biases, progress has been made in a number of African countries (Ethiopia, Ghana, Malawi, Zambia and Zimbabwe) in terms of improving women's access to productive resources. Recent diversification in food production in Malawi away from green revolution technologies (hybrid maize) to traditional, female entitled crops (roots, tubers and legumes) was initiated by women. Women now dominate the supply of fresh produce and its sale in daily markets found in towns, cities and along transport routes and weekly rural circuit markets. This has also opened a range of small, medium and micro enterprise opportunities, again largely dominated by women, in agro-processing, and in the production and sale of food and alcohol. Strengthening of gender entitlements was crucial in lessening impacts of southern Africa severe drought 2001-2002. In Zambia, women drove crop diversification that made alternative staple crops available, women had disposable income from market gardening and small enterprises to purchase imported maize, and women initiated vegetable gardens that would enable the maintenance of nutritional security at household level (Charman, 2008).

Creation of community-level water harvesting facilities and land rehabilitation initiatives are an important element in Ethiopia's Productive Safety Net Program (since 2005) that reaches 7

million chronically food-insecure individuals (FAO, 2011). In Kenya, women farmers pooled their land parcels and organized themselves to establish savings associations, improve access to land, credit and information, and obtain better trade terms with stockists and traders. Recent evidence from Malawi confirms that increasing women's – but not men's – access to credit increases total household expenditures on food and improves the long-term food security of young female children (Hazarika and Guha-Khasnobis, 2008). Improved gender equality in access to opportunities and returns to assets not only improve nutrition, health and education outcomes, but can also have a long-lasting impact on economic growth by raising the level of human capital in society.

The most significant impact of livelihood initiatives has been through fostering women's organization and participation in farmer organizations. State commitment to mainstreaming opportunities for women - with support from NGOs, has facilitated women's entry into farmers clubs and groups, enabling women to access institutional finance, inputs, and support in marketing (Charman, 2008). In Malawi's farmer organizations, women are strongly represented in most district and national organizations (apart from dairy cooperatives and tobacco clubs). These representations are particularly strong in the poultry sector. An important underlying change for advancing women's rights in Ghana, Rwanda and Zambia is reform of inheritance laws regarding property and agricultural land. Thus,

changes in both state and market are essential to improve livelihood opportunities for women, reduce poverty, and improve food security and household level well-being.

3.8 Land, soil fertility management, and irrigation

Small farms of less than two hectares occupy 60% of the arable land worldwide, constitute 90% of the world's 525 million farms, and contribute substantially to global farm production. In Africa, 90% of agricultural production is derived from small farms (IAASTD, 2009b). Average farm size varies considerably by region: Africa 1.6 hectares (ha), Asia 1.6 ha, Western Europe 27 ha, Latin America and Caribbean 67 ha, and North America 121 ha. Geography and natural resource endowments represent a series of concerns and challenges for agriculture in Africa. Only 8% of Africa's land is arable and permanent cropland. Africa's geological stability has resulted in a high proportion of low-fertility soils. In the absence of volcanic rejuvenation, cycles of weathering, erosion and leaching on the continent over the years have left soils inherently low in nutrients. There is a wide diversity of soil types, differing dramatically in their ability to retain and supply nutrients to plants, to hold or drain water, to withstand erosion or compaction and to allow for root penetration. About 55% of the continent is considered unsuitable for cultivated agriculture. Of the remaining land, 16% is considered high quality, 13% medium, and 16% of low potential. Over 40% (95 million hectares) of land in SSA has been degraded to the point of greatly reduced productivity (Livingston et al., 2011). Approximately 25% of soils in Africa are acidic, and deficient in phosphorus, calcium and magnesium with often toxic levels of aluminum (Cleaver and Schreiber, 1994; IAASTD, 2009a). Its

tropical climate precludes freezing winter temperatures that in temperate latitudes help to control pests and fracture soil clods and plow pans to facilitate plant root development. Endowed with a paucity of domesticable plant and animal species, African farmers have operated with a restricted agricultural genetic base (Haggblade et al., 2010a). Last but not least, given the continent's limited irrigation potential, most farmers depend on rain fed cultivation often under difficult climatic conditions.

Efforts to improve soil fertility are necessary, though it is recognized that no single approach is sufficient. Although many farmers have developed soil management strategies to cope with the poor quality of their soil, low inputs of nutrients, including organic matter, contribute to poor crop growth and the depletion of soil nutrients (IAASTD, 2009a). Integrated soil fertility management, utilizing techniques that conserve and concentrate soil moisture and organic matter and apply organic fertilizers (compost, manure, green manure) and reasonable quantities of inorganic fertilizers is an approach adaptable to locally available resources (IAASTD, 2009a). Involving farmers in soil fertility research improves the likelihood of recommendations that are more relevant to farmers' situations (CIAT, 2002). On-farm experiments with farmers are more likely than on-station research to identify green manures with food or forage uses that are best suited and will be adopted by farmers, and can facilitate estimation of realistic rates of return to different technologies (IAASTD, 2009a).

Many improved agronomic management practices that do not involve recurrent input or marketing subsidies can effectively boost farm

productivity. Some ready examples can be cited (Haggblade, 2010:325-326; IAASTD, 2009a:18):

- dry season minimum tillage enables improved timing of key on-farm operations, better moisture retention, improved fertilizer responsiveness, and long-term soil fertility maintenance;
- timely planting, weeding and surveillance can help limit damage from pests and diseases;
- managed fallows of two years using carefully selected varieties of leguminous shrubs, followed by two or three seasons of staple food production, enables farmers to supplement soil nitrogen levels biologically, thus reducing reliance on inorganic fertilizers; and
- natural resource management, integrated soil fertility management, soil and water conservation, and conservation agriculture are broad sets of practices.

While the most dramatic yield increases result from improved management practices combined with new input packages, realization of such increases is complicated by on-the-ground-realities in Africa. Many new technologies have been and are being introduced with great promise of increasing agricultural production. Dissemination of new input packages can raise productivity while essentially maintaining conventional management practices. However, adoption tends to be slower for management intensive production packages because behavioral change requires greater levels of extension support. Farmers commonly cite problems (non-availability, late delivery, prohibitive prices) with inputs (hybrid seeds, fertilizers, pesticides), and weak or non-existent extension services (IAASTD, 2009a). Interestingly, while women consistently have

less access to these inputs than men, improved fallow and conservation farming techniques which emphasize careful labor management and minimize cash inputs appear to attract women adopters as readily as men (Haggblade, 2010). Because investments in better natural resource management yield payoffs over the long term, they require secure long-term property rights over resources. Inadequate land tenure structures are still a major obstacle to sustainable agriculture and rural development in many countries (Haggblade, 2010a, 2010b, IAASTD, 2009a). Formal land title is not required for farmers' long-term investments, but that individual farmers truly perceive their claims to farming land as sufficiently secure to invest in adoption of new technologies. Women's weaker rights to land and tenure security are a constraint to meeting sustainability and development goals. More research is needed on how land tenure systems and property rights can be developed that benefit women and minority groups such as pastoralists (IAASTD, 2009a).

Table 3.5 overleaf contains descriptive information regarding the area and population in nine major farming systems in Africa. The three most significant farming systems are (1) mixed cereal and root crop, (2) mixed maize, and (3) root crop. All were assessed as having medium to high potential for agricultural growth and poverty reduction (Dixon et al., 2001). The assessment characterized the relative importance of household strategies for poverty reduction. In mixed cereal and root crop systems, the most appropriate strategies are intensification, increasing farm size, and diversification. In mixed maize systems, diversification is most strongly encouraged. In root crop systems, diversification and intensification are recommended. Tree crop

systems also have medium potential for growth and poverty reduction, and are favored for intensification. For most other systems, there is little scope for intensification, diversification, increasing farm size, or increasing off-farm income; instead, it is expected that many living in such systems will find employment outside agriculture.

The Pan-African Land Initiative aims to develop a land reform framework and guidelines to facilitate the formulation and implementation of land policies. Led by the African Union in collaboration with the Economic Commission for Africa and the African Development Bank, a series of sub-regional consultations designed to ensure that regional realities and initiatives inform the continental framework. This consultative process, involving key stakeholders in land and natural resource issues, can ensure the necessary political will for the adoption and implementation of the framework and guidelines in accordance with NEPAD's African Peer Review Mechanism framework (IAASTD, 2009a).

Community-based natural resource management (CBNRM) approaches view local people as capable of managing lands and natural resources through locally devised rules based on specific contexts and procedures. They strengthen and support local institutions to effectively use and manage natural resources. Successful CBNRM requires genuine proprietorship - the right to use resources, and determine rules of access, modes of usage, and distribution of benefits. Some important ecological, economic, and institutional achievements across

Africa are (Roe et al., 2009):

- In Namibia communal land conservancies cover more than 14% of the country, involve over 200,000 people and earn US\$ 2.5 million per annum. Key wildlife resources have recovered and illegal use of wildlife has fallen.
- In Zimbabwe, CAMPFIRE generated \$20 million in revenues for local communities and district governments 1989-2001, with 40,000 km² of communal land being managed for wildlife production. Stakeholders have adapted to the current economic and political crises by forming new types of relationships to maintain wildlife production systems on communal land.
- In Tanzania, more than 3.6 million hectares of forests and woodlands are managed as Village Land Forest Reserves, entirely under the control of locally elected village governments, or as co-managed forests between villages and either local or central government.
- In Kenya, development of community-level wildlife-based tourism ventures on communal and private land is making a major contribution to national conservation efforts.
- In Cameroon, revisions of forestry laws have enabled community associations and cooperatives to acquire exclusive rights to manage and exploit 5,000 ha of customary forest, under a 15-year contract, resulting in the creation of 100 new Community Forests.
- In Ghana, 200,000 hectares of forest have been demarcated under the Community

TABLE 3-5
Farming Systems, Potential and Relative Importance of Household Strategies for Poverty Reduction in Africa

Farming Systems	Land Area (% of region)	Agric. Pop. (% of region)	Principal Livelihoods	Potential for Agricultural Growth	Potential for Poverty Reduction	Relative Importance of Strategies for Poverty Reduction				
						Intensification	Diversification	Increased Farm Size	Increased Off - Farm Income	Exit from Agriculture
Pastoral	14	7	Cattle, camels, sheep, goats, remittances	Low - Medium	Low	10	10	10	20	50
Agro-Pastoral	8	8	Sorghum, pearl millet, pulses, sesame, cattle, sheep, goats, poultry, off-farm work	Low - Medium	Medium	20	20	20	10	30
Mixed Cereal - Root Crop	13	15	Maize, sorghum, millet, cassava, yams, legumes, cattle	High	Medium	35	20	30	10	5
Mixed Maize	10	15	Maize, tobacco, cotton, cattle, goats, poultry, off-farm work	Medium - High	High	20	30	20	20	10
Root Crop	11	11	Yams, cassava, legumes, off-farm work	Medium	Medium	25	30	20	15	10
Tree Crop	3	7	Cocoa, coffee, oil palm, rubber, yams, maize, off-farm work	Medium - High	Medium	40	15	15	20	10
Forest Based	11	7	Cassava, maize, beans, coco, yams	Low - Medium	Low	25	20	40	0	15
Highland Perennial	1	8	Banana, plantain, ensset, coffee, cassava, sweet potato, beans, cereals, livestock, poultry, off-farm work	Low	Low	10	20	10	20	40
Highland Temperate Mixed	2	7	Wheat barley, tef, peas, lentils, broadbeans, rape, potatoes, sheep, goats, livestock, poultry, off-farm work	Medium	Medium	10	30	20	10	30
Others	27	15								

Source: Livingston et al. (2011) and Dixon et al. (2001)

Irrigation has long been seen as an option for improving rural livelihoods in Africa by increasing crop production (Table 3.6). The steady increase in the amount of agricultural land irrigated worldwide in the last 50 years has mostly

occurred in Asia, where irrigated land has increased from 27% to around 36%. In contrast, only 11% of land is irrigated in Latin America and the Caribbean, and about 4% Africa (Livingston et al., 2011; World Bank, 2007a).

TABLE 3.6
Irrigation Potential – Selected African Countries

Country	Irrigation Potential (ha)	% of Potential Used
DR Congo	7,000,000	0
Liberia	600,000	3
Angola	3,700,000	6
Burkina Faso	165,000	28
Kenya	353,060	31
Senegal	409,000	37
Zambia	523,000	49
Botswana	13,000	61
South Africa	1,500,000	100

Source: Mazur, 2011a

While there is considerable potential to expand irrigation in Africa, opportunities vary greatly across the region, due to differences in rainfall, renewable water resources and land. While some areas have high irrigation potential, they also receive abundant rainfall, making irrigation less crucial; others receive less rain, but have less water from which to draw. An important consideration in any expansion of irrigation is access to fresh water supplies and aquifers, and possible overtaxing the recharging capacity of such areas. One-third of the irrigation potential is concentrated in two very humid countries: the Democratic Republic of the Congo and Angola (Livingston et al., 2011).

Experiences to date with irrigation in Africa reveal mixed results. Massive investments in formally structured irrigation schemes during the 1970s and 1980s did not meet food

production targets, had extremely high costs, and revealed technical and management problems that remain unsolved. Organized efforts by funders and governments to accelerate development are predominantly 'top down' with limited farmer participation and inadequate understanding of markets. Modern piped irrigation technologies (trickle/drip or sprinkle) can raise the productivity of water and labor, but are afforded mainly by richer farmers growing cash crops (vegetables, fruits, flowers). Expansion of irrigated agriculture has often been at the expense of other water users, biodiversity, ecosystem services, fisheries and wetlands.

Nonetheless, smallholder irrigation has demonstrated success stories, particularly where farmers have made the investments themselves. Successful smallholders generally use simple technologies (water harvesting,

swamp irrigation, spate irrigation, flood plain irrigation using seasonal water and shallow aquifers, hill irrigation, and groundwater irrigation), have secure water supplies over which they have full control, and are funded by farmers' own resources. More successful technologies improve existing farming systems rather than introduce radically new ideas. The broader context for technology uptake includes: market-driven demand for agricultural produce; a well-designed technology that is appropriate and affordable for local farming and manufacturing systems; a local private sector capable of mass producing reliable equipment; and effective private sector distribution networks (Kay, 2001).

Small-scale does not mean simple. Complex social, economic, technical and institutional issues surrounding smallholder irrigation schemes, making each unique and demonstrating the importance of getting the mixture right. Moreover, farmers' participation as 'owners' not 'beneficiaries' is essential in planning, implementation and evaluation (FAO, 2000). In Chitora, Zimbabwe, a successful farmer-managed small-scale scheme irrigates nine hectares with drag-hose sprinklers since 1994. The government extension agency Agritex provided training, extension services, and all the inputs for the scheme, including seeds for the first growing season. Young farmers (mid-20s) were involved from planning to implementation, and now have full responsibility for operation, maintenance, and financing. They grow high value horticultural crops for markets in Harare, earning four times more than unskilled laborers in town. Their Irrigation Management Committee enforces by-laws, coordinates activities, and manages finances. The farmers' sense of 'ownership' and

responsibility are essential elements. In contrast, the large scale (216 ha with 154 plots 0.5-1.5 ha) Ngezi Mamina, Zimbabwe, a government-built (mid-1990s) and run irrigation scheme, had difficulty getting farmers to 'own' the scheme constructed without their input 'for their benefit.' Gravity-fed sprinklers draw on a dam to irrigate low value crops with few high value vegetables. There are regular disputes between farmers and government which still runs the scheme and pays for electricity, water and services (Merrey et al., 2008; Kay, 2001).

Institutional reform of large-scale irrigation schemes also heralds some encouraging successes. In the 1970s, Mali's Office du Niger large irrigation scheme was in disarray as a result of highly centralized top-down management. In the 1980s, its mission was redefined - introducing strong private sector incentives in its management, empowering farmers, and building a strong coalition of stakeholders. The scheme's greater efficiency quadrupled yields, and overall production increased by a factor of 5.8 between 1982 and 2000. Attracted by employment opportunities, the area's population increased by a factor of 3.5, and poverty fell more than in other areas (World Bank, 2007a).

Communal irrigation can also work well, with 700 successful small (<20 ha) village schemes established in the 1990s in Senegal. Typically, 40-80 equal size plots are supplied by an open channel system fed by 15 kW (20hp) engine pumps from the Senegal River. Farmers cleared bush and dug canals, and requested assistance from the local government for site survey, equipment for construction, pump-set, and pipes. Elements of success include (Diemer and

Huibers, 1996):

- Pursuit of a clear economic objective;
- Selection of sites not usually used for agriculture;
- Construction through investment of labor by farmers (using donor-funded equipment); and
- Full autonomy for each village scheme – hydraulically, operationally and managerially.

Even success can generate some problems. The introduction of treadle pumps resulted in significant (six fold) income gains in Zambia due to increased area irrigated, crop varieties grown, and cropping intensity (three crops annually). Higher yields created a market glut when most farmers grew the same crops at the same time. Their ability to exploit distant markets was limited by transport costs and poorly developed feeder roads in remote rural areas. Another challenging element concerns increasing equity and security, goals in almost all irrigation projects. In Tanzania and Ghana, one-third of irrigated plots were allocated to women. In addition, women contributed much of their labor towards scheme construction to assure themselves of a plot or extra income. Men generally decide land tenure issues in The Gambia, Mali, and Senegal, despite project initiatives (Kay, 2001).

3.9 Conclusion

As is relatively well-known, poverty in Africa has remained pervasive – and especially in rural and peri-urban areas and among women. Promotion of agricultural transformation that markedly increases production, productivity, and incomes in Africa and constitutes 'development' as

reflected in the Millennium Development Goals requires serious, thoughtful attention to poverty reduction and sustainable livelihoods among smallholder farmers. Smallholder households' ability and willingness to invest in emerging opportunities requires assistance initiatives that are consistent with their goals and values. This involves support for diverse livelihood activities that can: strengthen resilience and reduce risks and vulnerability of individuals, households and communities to shocks and stresses; reliably increase incomes; and facilitate accumulation of various types of valued assets. Meaningful assistance begins with analyses of current portfolios of livelihood activities and fully understanding strengths before identifying vulnerabilities, problems and needs. It involves removing barriers and improving access to critical resources, strengthening capabilities to effectively utilize resources, and social protection.

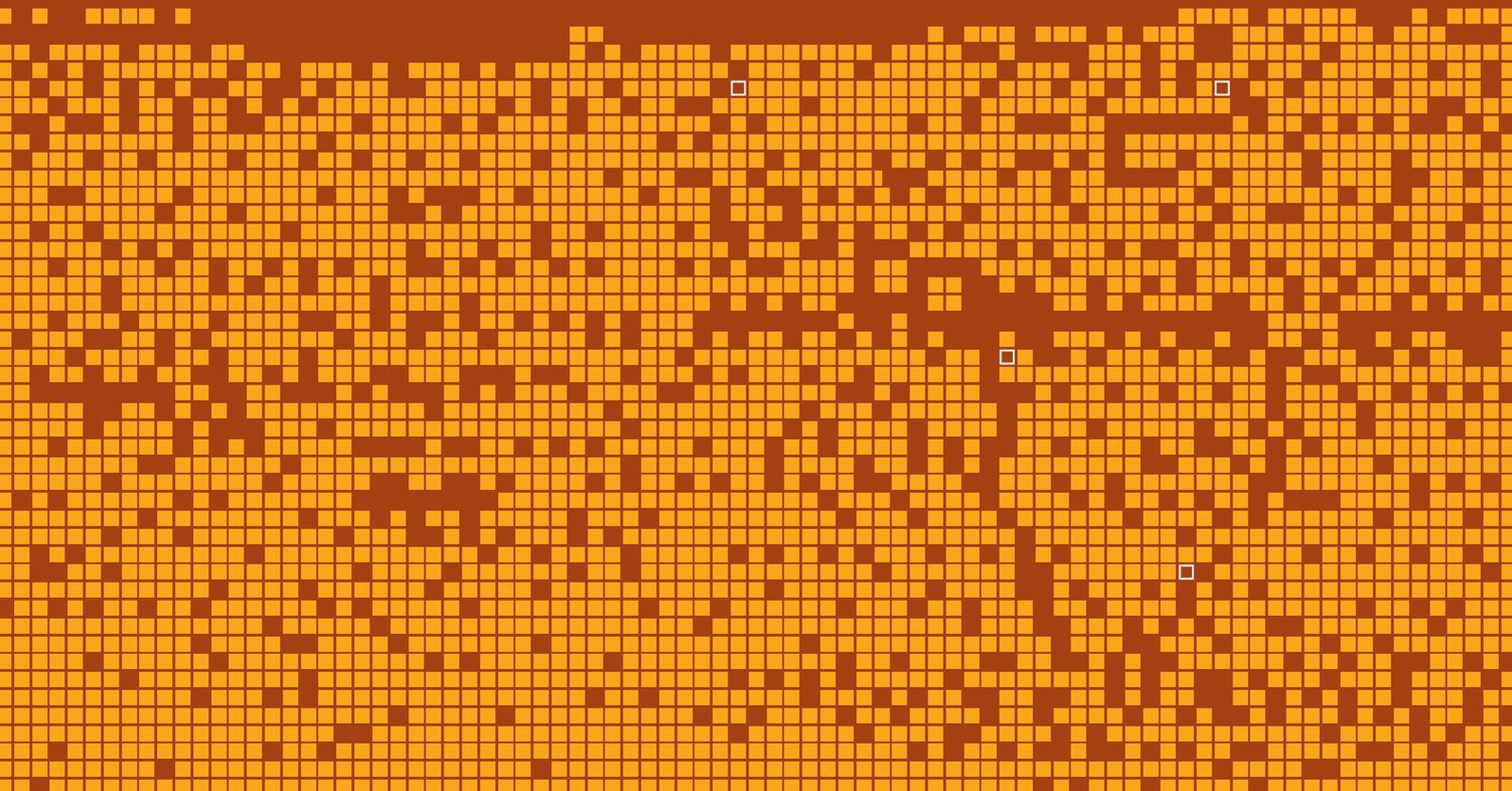
Given women's central roles with both food and cash crops, and their management skills for utilizing new input packages and producing yields comparable to those of men, it's essential to ensure that women are able to effectively access land, education, agricultural extension, credit, inputs, and small business assistance programs. This requires concerted effort to overcome cultural and institutional barriers, and improve laws related to inheritance, marriage and property rights. Women's access to land and land tenure security can be improved through implementation of land policies and laws oriented towards equal rights for men and women. Efforts by governments and civil society to foster formation and strengthening of women's organization and participation in farmer associations will prove beneficial. More

than that, women should be key players in participatory processes involving communities and other stakeholders to set public investment priorities and deliberate policies. Formal land title is less important than farmers' understanding that their claims to land are sufficiently

secure to invest in new technologies. Better understanding of the link among these various factors will make African countries be better prepared in their attempts to transform the agricultural sectors and achieve food security and food sovereignty.

4

Agricultural Policies in Africa and the Role of the State





4

Agricultural Policies in Africa and the Role of the State

4.0 Introduction

There is considerable consensus on the significance of the agricultural sector to national development in most, if not all, African countries (Bruntrup, 2011; Diao et al., 2007; World Bank, 2007a; NEPAD, 2003, 2001). The sector not only contributes to the economy, but it is also essential to socio-cultural and political relations. Agriculture provides a direct source of employment and livelihood for a sizeable proportion of the society, contributing to gross domestic production and essential for creating value as well as wealth (Chuhan-Pole and Angwafo, 2011; World Bank, 2007a). Agriculture provides employment, and is therefore a source of income. The performance of the agricultural sector has implications for addressing the food security needs in particular and human security in general. There is therefore a general understanding and expectation that the development prospects in Africa are inextricably linked to the performance of the agricultural sector. This Chapter reviews the nature of agricultural policies and role of the state in their development in Africa.

The focus on policy and the state is well placed in extricating the key questions and critical factors driving performance of the agricultural sector and its contribution to development results. The policy-state interface allows us to draw conclusions on several dimensions of capacity; mainly policy capacity and implementation capacity. The kinds of skills and capabilities needed to effectively manage the sector and its contribution to development are also identified through focus on the policy-state interface, thus making it possible to comment on issues of capacity development (see Chapter 1).

4.1 Rethinking agricultural policies - context and problem

Since independence, there has been a long list of policy initiatives that were supposed to bring new perspectives and approaches to Africa's development. Most of the initiatives were proposed by African institutions, sometimes, in partnership with their global partners, including bilateral and multilateral institutions. More of these initiatives have emerged recently.

An initial point of departure was the influential Organization of the African Union-sponsored 1980 *Lagos Plan of Action*, which was followed by the World Bank 1981 study, *Accelerated Development in Sub-Saharan Africa*, that launched the region's structural adjustment program. Furthermore, at the beginning of the current millennium, the African Union in 2001 launched the *New Partnership for African Development* (NEPAD) and the subsequent *Comprehensive Africa Agriculture Development*

Programme (CAADP) in 2003. Another initiative is the UN (2003) Millennium Development Goals (MDGs), in which member states of the world body pledged to, by 2015, among other things, eradicate extreme poverty and hunger for major segments of the population and forge global partnerships for development. Finally, there is the World Bank's (2007a) *World Development Report 2008: Agriculture for Development*, which, as the title indicates, was exclusively devoted to agricultural issues.

While the overall motivation of these initiatives to promote global development is laudable, the nature and impact of global development varies among countries and within populations in respective countries. The African continent is one region of the world where the fruits of global development are yet to reduce inequality and its harmful effects. Africa's development malaise informed the profound statement a decade ago by Tony Blair, the then British Prime Minister, when he opined that the "state of Africa is a scar on the conscience of the world" (cited in Mann, 2001). Blair therefore established the Commission for Africa (2005) to offer him some policy guidance on the region when Britain assumed the presidency of the Group of Eight (G8) industrialized countries in 2005. While it is customary for national leaders, in the lead-up to G-8 Summits, to stake out an agenda that includes Africa the real issue is the extent to which G8 policy announcements are consistent to the development agenda of African countries let alone there being consistency in implementation of the announcements (G8 Research Group, 2006; Maxwell, 2005; Booth, 2005).

There is no dispute about the fact that there has not been a shortage of development policy initiatives on Africa. However, Africa's

development prospects, even in the face of numerous policies, remain fragile and uncertain (United Nations, 2011a; Seck and Busari, 2009; Taeb and Zakri, 2008; Johnson, 2007; Smith, 2006). The fragile nature of African development therefore suggests, among other factors, policy and institutional failures. African agriculture suffers not only from institutional inefficiencies, but also bottlenecks in the access to resources and rewards and a general failure of policy. The need to focus on and address problems in African agriculture, if only to better address the development nightmare in the region, is that several African countries continue to make international headlines when it comes to global discussions on food insecurity (United Nations, 2011b; Suresh, 2009; Kidane, Maetz and Dardel, 2006; Smith, Alderman and Aduajom, 2006; Rosegrant et al, 2005). For example, on July 20, 2011, the United Nations announced that the persistent and widespread drought in the Horn of Africa has led to famine in parts of Somalia, Kenya, Ethiopia, Uganda and Djibouti. This is not the first time the Horn of Africa has experienced human suffering and food insecurity. When the World Food Program launched the Africa Hunger Alert Program on December 16, 2002, the focus was both on the food situation in the Horn of Africa and southern Africa (Malawi, Mozambique and Zimbabwe). Since agriculture continues to assume a critical importance in the political, economic and social relations in many, if not all, African countries, it is valuable to examine how the aforementioned policies impact African agriculture and contribute to the achievement, for example, of the MDGs in Africa. Therefore, the performance of the agricultural sector is instructive to understanding the extent to which African countries can attain any of the United Nations-sponsored MDGs; especially, the

goal to eradicate extreme poverty and hunger by 2015 (United Nations, 2011a; World Bank, 2007a; Rosegrant et al., 2006; UNDP, 2003).

Indeed, the agricultural sector in Africa, its contribution, problems and prospects to national development is the source of several studies (Bates and Block, 2011; Chuhan-Pole and Angwafo, 2011; Devèze, 2011; FAO, 2011; Mason et al., 2011; Rauch, 2011; Anseeuw, 2010; Resnick and Birner, 2010; de Janvry and Sadoulet, 2010; Anderson and Masters, 2009; Diao et al., 2007; Oya, 2006; Poulton, et al., 2006; World Bank, 2007a, 1994, 1989, 1981). There are two related issues in the vast literature on African agriculture that are germane to this Report: the role of the state in agriculture and the agricultural policy framework. The African state, like many others, is involved in setting the policy framework for the agricultural sector, because of the sector's importance to the national economy. State involvement in agriculture highlights the political context of agricultural policies, a context that has implications for the performance of agricultural policy. The specific aspect of agricultural policy in this Chapter is how policy frames access to agricultural resources and rewards. The success of agriculture, like any other form of economic activity, depends on what resources and rewards are available to agricultural groups. Agricultural resources include land, labor, water supply and inputs like pesticides and fertilizers. Other resources include knowledge, technological innovations and diffusion, agricultural credit, infrastructural support (research, communications and market networks) and foreign exchange.

Given the role of the state in the agricultural sector and its critical role in society, the basis of access to resources for agriculture implicates the

state and highlights the political context of agricultural policy. The continuing role of the state in agriculture and the persistence of agricultural problems in Africa lead to questions about the nature and structure of the state, its capacity, as well as broader social forces, particularly farmers, in the initiation of agricultural policies. This Chapter thus seeks to examine the relationship between the state and agricultural policy in Africa. The working assumption is that the state is not an autonomous institution. Hence, it is useful to situate an analysis of agricultural policy in a broader context of state-society relations and forces in contemporary globalization.

4.2 Debating the conceptual framework

The state is not an autonomous institution. It has to work with the broader society in initiating and implementing agricultural policy. However, in the last three decades, there have been changes in the role of the African state in the economy, due to or in response to globalization; changes that have implications for agriculture in the global south as a whole (Jobodwana, 2011; Anderson and Valenzuela, 2007; Gibbon, 2007; Moore, 2007; Pupilampu, 2006). The changing role of the state has, theoretically, opened up the policy arena to other actors. Specifically, non-state actors or non-governmental organizations (NGOs) of different stripes (national or international) and motivations (non-profit or for-profit) have become major players in the agricultural policy terrain (Davis, 2010; Rizzo, 2009). Agricultural policy has therefore become a contested site between the state and non-state actors, a contest that has given rise to unpredictable outcomes with respect to farmers' access to

agricultural resources and rewards (Berry, 1993a).

This Chapter, in examining the relationship between the state and agricultural policies in Africa, addresses three-related questions. First, what are the relative capacities of state and non-state institutions in the formulation of agricultural policy? Second, what are the implications of the changing role of the state, due to or in response to globalization, for agricultural policy? Finally, what is the extent of participation by farmers in crafting agricultural policy?

4.3 The State, African agriculture and globalization: an overview

The role of the state in the agricultural sector and the status of the sector in Africa has been the source of several studies: three distinct perspectives can be identified – the internalists, the externalists and the new international division of labor (Satgar, 2011; Yusuf, 2009; Mkandawire, 1989; Lofchie, 1986). The first two perspectives mirror the nature of the debate on African agriculture in the 1970s and 1980s and will be briefly reviewed. The third perspective, emerging since the 1990s, is tied to the growing significance of globalization in an understanding of contemporary agriculture and will be examined in relative detail.

Briefly stated, the internalists contend that agricultural policies of the postcolonial state, especially in agricultural markets and prices, account for the problems of African agriculture. Agricultural policy, according to this perspective, distorts the market for agricultural produce in an attempt to placate the articulate urban

population. Because the markets are not free, producers are not adequately rewarded, and that creates disincentives for production. The perspective specifically attributes agricultural problems to marketing and pricing policies pursued by African states. The essential aspect of this argument is the role of African governments in agricultural markets through state marketing boards. State marketing boards are monopsonies, that is, single buyers for many producers and sellers. The boards set the buying price and use "their market power to keep the price paid to the farmer below the price set by the world market, [and in so doing] they accumulate funds from the agricultural sector" (Bates, 1981:12). While the policy is to generate funds for national development, subjecting agricultural markets to extensive control also "lowers the returns farmers can expect from production for the market, both in absolute and relative terms" (Bates, 1984:252). Farmers, as rational actors, respond to low prices by withdrawing from the market and decreasing production. In effect, pursuing policies that sap resources from agriculture to address non-agricultural needs, undermining the future growth and development of the agricultural sector.

The argument by the internalists has some obvious implications. First, it is important to adequately reward farmers, as producers of agricultural goods. Satisfactory rewards will motivate agricultural producers to enhance and invest in their productive capabilities for the eventual benefit of the society at large. Second, state marketing boards have to be restructured so that agricultural producers can be able to better reap the rewards of their labour. Finally it is in the interest of the state to leave the

agricultural marketing primarily to the invisible forces of the market, since the free market is a good-mechanism that can influence the allocation and rewards of agricultural goods. These implications were critical in the agricultural aspects of the structural adjustment programs that many African countries pursued in the 1980s (World Bank, 1994, 1981, 1989). However, the consequences of these reforms are still being debated and remain contentious.

Externalists, on the other hand, view agricultural policy in Africa as the inevitable outcome of colonial and neo-colonial structures of dependency and underdevelopment (Osaghae, 1985; Amin, 1973). Colonial agricultural policy, under the guise of the free market, the externalists argue, promoted the export of agricultural crops for the import of industrial and consumer goods. Externalists do not deny the role of internal policies in the agricultural crisis. Drawing on insights from the Latin American structural dependency debate, externalists rather maintain that internal policies result from external forces. The Latin American dependency debate has several variants (Larrain, 1989; Palma, 1981). Briefly stated, development in Latin America is explained through trading relations between the region and developed industrial markets. Extending this debate to the African scene, agricultural policy performance is traced to colonialism and neo-colonialism. These processes, externalists contend, incorporated previously self-contained units of production into a world capitalist system (Amara and Founou-Tchuigoua, 1990; Gakou, 1987; Wallerstein, 1985). Externalists also point to wide fluctuations in agricultural prices compared with imported industrial goods, fluctuations caused by the demand elasticities of agricultural exports. This unpredictability is worsened by the

introduction of synthetic products produced cheaply as substitutes for natural commodities, giving rise to an "unequal exchange" (Emmanuel, 1972) in which many African countries have to export ever more raw materials to import a given level of industrial goods (Lofchie, 1986).

The argument by the externalists also has some noticeable implications. First, there have to be fundamental changes in the structure and nature of relations at the national level between the state and producers, as well as other social groups in the agricultural sector. Changes at the national level will provide a catalyst for changes also at the global level of the capitalist world economy. Second, African countries will have to find novel ways for a broader participation of the citizenry in social and political processes. Finally, leadership and problems of institutional inertia have to be addressed, not only to deal with the divergence of interests between the state and social groups, but also the coincidence of interest between powerful internal and external forces relating to their participation in the global economy, albeit each participates for a different set of reasons.

As stated earlier, the debate between the internalists and externalists occupied the academic discourse in the 1970s and 1980s. However, by the mid-1980s, African agriculture was still in crisis and the need for a new framework was becoming increasingly clear. The early 1980s was marked by, among other things, the increasing debt of developing and developed societies, a global depression and the ascendancy of the international financial institutions (IFIs), specifically the World Bank and the International Monetary Fund. This is the context of the structural adjustment program

(SAP) as outlined by the influential World Bank (1981) *Accelerated Development in Sub-Saharan Africa* (also known as the Berg Report). The ideas of the IFIs and thus key aspects of the Berg Report (for example a minimal role of the state in the economy) were decidedly neo-liberal and consistent with what is often termed as the “Washington consensus” (Williamson, 2000). There are remarkable areas of consistency between the structural adjustment program and globalization (Puplampu, 2003). For example, both stress a minimal role of the state in the economic sphere and a renewed emphasis on free markets as well as the private sector or non-state actors. Hence, the third strand in the literature on the state and African agriculture, known as the new international division of labor theory, deals with the political, economic and socio-cultural aspects of globalization and the related implications for African agriculture.

Globalization, underpinned by the dramatic changes in communication technologies, has given rise to changes in political, economic and socio-cultural institutions and relations (Steger, 2009; Scholte, 2005; Held and McGrew, 2004; Smith, 2006, 2003; Hoogvelt, 2001; Schuurman, 2001). The political aspects of globalization include a minimal role of the state in economic and social issues, and an enhanced role for non-state actors under the broad rubric of the private sector. Thus, there are, at least, reductions in the autonomy of the state. Economic globalization can be seen in the internationalization of the production system, the prominent role of private sector institutions and an unparalleled mobility of financial capital, relative to labor. The socio-cultural aspects of globalization entail consumption and claims about the emergence of global culture and related assumptions about the standardization of cultural practices.

The agricultural sector in Africa is not immune to these changes, and analysts have addressed the implications of the changing role of the state in African agriculture, and the nature of African agriculture in an era of globalization (Satgar, 2011; Prabhakar, 2010; Yusuf, 2009; Baffes, 2009; Juma, 2008; Gibbon, 2007; Puplampu, 2006; Gross, 2006). Globalization of agriculture can be related to the three aspects of agricultural organization – production, marketing and consumption. At the angle of production, globalization of agriculture has given rise to new farming arrangements, such as contract farming and a renewed role for transnational agro-based companies. Contract farming involves the cultivation of plants and animals under conditions determined by the “changing profit conditions of global capitalism” (Watts, 1990:149). The farming system utilizes technology as both a means and an end. As a means, technology introduces “distinctive work routines” (Watts, 1990:149) and the end result is to produce agricultural goods that would fit the requirements for industrial inputs.

Major transnational agro-based companies in Africa include Unilever, British American Tobacco, Dole, Pamol, Compagnie Fruitière and Del Monte, who have established contract farms in Ghana, Côte d'Ivoire, and Cameroon. Many contract farms produce for the export of off-season exotic fruits like (bananas, pineapples), vegetables (tomatoes, cucumbers), agro-based industrial inputs (oil palm) and fresh-cut flowers (roses, lilies) (Vagneron, Faure, and Loeillet, 2009; Riisgaard, 2009; Danielou and Ravry, 2005; Konings, 1998; Daddieh, 1994; Jaffe, 1994). These production systems characterize the emergence of “New Agricultural Countries” (NACs) (Friedman, 1993:45-47). The marketing

aspect of globalization of agriculture also involves transnational agro-based corporations like Unilever, Nestle, Tate and Lyle, Lonrho, Compagnie Fruitière and lately some local private actors, especially in the pineapple market (Vagneron, Faure, and Loeillet, 2009; Danielou and Ravry, 2005; Dinham and Hines, 1983). The pineapple market in West Africa, for instance in Ghana, mirrors the marketing aspect of global agriculture. Local actors (Farmapine, Koranco and Tongu), and subsidiaries of transnational corporations (Golden Exotics), have, through the Sea-Freight Pineapple Exporters of Ghana (SPEG), established the infrastructure (for example, storage facilities at national airports and seaports) for the speedy movement of fresh horticultural crops to overseas markets. In the process, some of these companies have integrated the production and marketing aspects of agriculture.

There is an increasing reliance on biotechnology in producing some of the above export crops. Pineapple producers in Ghana are using tissue culture to produce crops that will satisfy the quality standards of the export market, and researchers in Ghana are also examining how to develop a variety of cocoa that will be resistant to the swollen shoot virus through mutagenesis using gamma irradiation (Essegbey and Puplampu, 2007). In Egypt, researchers have used plant tissue to produce maize and tomato resistant to stemborers and Gemini viruses respectively (Komen, Mignuoma and Weber, 2000). Uganda has embarked upon field trials of GM bananas, cassava and cotton (Wamboga-Mugirya, 2010). Notwithstanding the examples above, there are only three noteworthy African countries involved in the cultivation of agricultural biotechnology crops. The three countries are: South Africa (maize, soybean and

cotton); Burkina Faso (cotton); and, Egypt (maize)(James, 2010). South Africa, for example, is the only African country among the leading developing countries (China, India, Brazil and Argentina) involved in the cultivation of a biotech crop, while Burkina Faso had the second largest proportional increase (126%) in the biotech hectareage in the world (James, 2010:6).

The marketing aspect of agro-based transnational corporations link the production and marketing of agricultural products to global consumption patterns. On one hand, fresh, frozen and processed fruits, vegetables, and plants are airlifted under “just-in-time” conditions to wealthy markets in the North for their growing multicultural populations. On the other hand, imported processed food items are making their way to the emerging retail supermarkets giants like Shoprite, Pick 'n Pay, Metro Cash and Carry that dot the urban landscape in several African countries (Weatherspoon and Reardon, 2003; Reardon et al., 2003). The unfolding marketing arrangements require a focus on quality control systems in the transportation and delivery of agricultural goods for the market. The question then is whether or not the farmers will be able to afford the required investment or whether the agro-based transnational corporations will preside over both the production and marketing processes and what that might mean for the economic returns to farmers.

Another aspect of globalization that affects African agriculture is the emergence of non-state actors, specifically regional-based and global or multilateral institutions. Examples of the former include the African Union (AU), European Union (EU) and the European Union-Africa Caribbean Pacific commission (EU-ACP), while the latter is

best represented by the World Trade Organization (WTO). As noted in Chapter 2, the African Union's principal policy positions on African agriculture are in the New Partnership for African Development (NEPAD) and the Comprehensive Africa Agriculture Development Programme (CAADP) (NEPAD, 2003, 2001). Both policy documents emphasize the significance of agriculture to shoring up the development possibilities in Africa.

NEPAD (2001:30-32) situates both the physical and human setbacks of African agriculture within an internal and external framework to account for the decreases in "agricultural supply and incomes in the rural areas, leading to poverty." The document reiterates how improving "agricultural performance is a prerequisite of economic development on the continent. Furthermore, the policy document makes a specific reference to "institutional support in the form of research centres and institutes, the provision of extension and support services ... [to] boosts the production of marketable surpluses." In recognizing institutions "as an integral part of the process to increase agricultural productivity" (Puplampu, 2006:239), the document acknowledges the role of the state and argues that the "regulatory framework of agriculture must also be taken into account, including the encouragement of local community leadership in rural areas and the involvement of these communities in policy and the provision of services." Finally, NEPAD argues that there "is an urgent need to diversify production and the logical point is to harness Africa's nature resource. Value added in agro-processing... must be increased ... through a strategy of economic diversification based on

inter-sectoral linkages" (NEPAD, 2001:38).

The Comprehensive Africa Agriculture Development Programme (CAADP) outlines four major pillars of investment to address problems in the region's agricultural activities: a) sustainable land and water management systems; b) rural infrastructure and market access; c) food security; and finally, d) pushing the boundaries of agricultural research, technology, dissemination and adoption (NEPAD, 2003). Two subsequent pillars have also been identified: strengthening capacity for agriculture and agribusiness, and information for agricultural strategy formulation and implementation (Bruntrup, 2011:84). As a working document, CAADP's success is contingent on several factors. Three important factors are the role of regional economic communities; the allocation of resources for institutional capacities; the sense of ownership and mechanisms for participation by society at large (Bruntrup, 2011). Implicit in these three factors are issues of enhancing human and institutional capacity in the agricultural sector, tapping into and utilizing information and knowledge systems to ensure that the goals of CAADP are consistent with broader global development objectives, for example, the UN-sponsored MDGs (Omilola et al., 2010:4).

Any analysis of CAADP has to be situated against the 2003 African Union Maputo Declaration. At the Second Ordinary Assembly of the African Union in July 2003, African Heads of State and Government endorsed what became known as the Maputo Declaration on Agriculture and Food Security in Africa (African Union, 2003). In the Declaration, African leaders committed "to the allocation of at least 10 percent of national

budgetary resources to agriculture and rural development policy implementation within five years” (African Union, 2003). Thus, by 2008, African governments were supposed to allocate 10 percent of national resources to the agricultural sector. The commitment was also part of the African Union's attempt to ensure that the development strategies in Africa are consistent with the first goal of the MDGs which is to cut global poverty and hunger in half by 2015 (UNDP, 2003).

The WTO represents both a policy and an institutional framework to establish a predictable and a rule-based global trade. Its activities are consistent with one aspect of the MDGs – the call to forge global partnership for development. However, since its inception in 1995, the WTO has become like the child whose birth everyone thought would herald peace to world trade, but who was immediately received with disdain, scorn and almost strangled to death at birth. The WTO is an off-shoot of the conclusion of the multilateral Uruguay Round (UR) of trade negotiations in 1994 under the GATT. It is deeply involved in the on-going attempts to craft a new policy framework on global trade, including agriculture and services, but has been confronted with several difficulties in launching a comprehensive trade round, let alone a meaningful discussion on global agriculture. As far as African agriculture is concerned, the WTO's 1999 Seattle Ministerial meeting, the 2001 Doha Development Agenda and several others (2003 Cancun Summit, the 2005 Hong Kong Ministerial Conference) were remarkable for their failures. Underpinning these failures, as the subsequent case of African cotton farmers will demonstrate, is not only the politics of agricultural markets, but also the structural location of specific countries in the

global political system. The lack of progress has persisted leading to the Eighth Ministerial Conference of the WTO held in Geneva, Switzerland from 15-17 December 2011 (United Nations, 2011b). These failures have persisted despite the resolve of the WTO, to address the one issue of importance to Africa and other developing countries – agriculture (Panitchpakdi, 2002).

In developing the measures of agricultural capacity, this Report focused on three significant aspects of the WTO's Agreement on Agriculture, namely market access, domestic support to producers, and export competition (Morrison and Sarris, 2007; Diaz-Bonilla, Frandsen and Robinson, 2006; Anania et al, 2004; WTO, 1995). Briefly stated, market access aims at reducing both tariffs and non-tariff measures; such as the role of state agricultural marketing boards or trading enterprises, minimum import prices, and import levies. Marketing boards, specifically, were presented as the likely tools that governments would use to “circumvent WTO rules on market access and subsidies[because of] their ability to use their exclusive marketing powers to compete unfairly in export markets” (Miner, 2001:104). The policy objective here is expanding market access by removing barriers that make it difficult for economic actors to participate fairly in agricultural markets. The question therefore is the extent to which countries abide by WTO provisions on agriculture and the impact on farmers.

The final aspect of globalization of agriculture that is integral to agricultural capacity is the governance structure and its impact on agricultural producers. The governance structure can be gleaned from the changing role of the state in globalization and the emergence

of various non-state actors, from national producers' associations, to regional groups like the African Union to multilateral entities like the WTO. In essence, agricultural producers, as an interest group, will be faced with some challenges in an era of globalization. Halpin (2005) advances a thesis, which although geared to agricultural groups in the global north, has some utility for addressing the case of agricultural producers in Africa. The thesis also situates the source of the challenges agricultural producers will be confronted with as either from above or below (Coleman, 1997). To be challenged from above implies “whether the policy environment, including the state, remains supportive of 'partnerships' and the 'insider' oriented groups they encourage” and challenge from below focuses on “whether changes among the farming constituency have affected the ease by which they are organized, and the capacity for groups to generate resources and capacities valued by the state” (Halpin, 2005:19).

The preceding highlights the significance of globalization to an understanding and analysis of agricultural policy in Africa and the ensuing link globalization has on agricultural capacity. Such an analysis, by definition, will focus on the relationship between the state and non-state actors in the policy arena. Accordingly, an examination of the relative capacity of state and non-state institutions in the agricultural policy arena in an era of globalization is key. If agriculture is to continue to play a vital role in African development, then it is crucial to situate it in the broader context of globalization, which would define its role and will also shape outcomes. Globalization is also integral to an analysis of agricultural producers and their engagement with the policy process; particularly farmers' access to agricultural resources and

rewards. Before addressing these questions, the next section presents a critique of the prevailing perspectives on African agriculture, in order to propose an alternative framework.

4.4 Critique of prevailing perspectives and alternate framework

The three perspectives covered in the previous section provide answers to some aspects of agricultural policy failure in Africa. While the internalists focus on the state, they cannot explain the failure of policies adopted. A major problem of the internalists' approach is that their analysis does not pay any attention to historical factors and power relations. The criticism of the state's role in marketing boards, for instance, needs to be placed within a historical context. The postcolonial African state simply inherited the marketing boards from their colonial counterpart. Established by the colonial state, marketing boards served as an important institution in the accumulation of revenue needed for the reconstruction effort in Britain and other European countries after the Second World War. Even though some of these funds were later available to postcolonial governments, the role of these institutions in the accumulation of revenue is worth stressing. In setting up these institutions, the colonial state demonstrated that power, and not the notion of free market, is critical to the understanding of agricultural policy (Kay, 1975; Bauer, 1963). Cash-strapped postcolonial governments, having observed that state power can be used to control marketing boards to generate funds, continued with the practice originating from the colonial era.

The externalists rectify the ahistorical and apolitical analysis in the internalists' framework,

pointing to historical circumstances and the power dimensions of agricultural policy in Africa. However, many African countries attained political independence four or more decades ago. African agricultural policy cannot possibly be "explained" solely from an external historical perspective. A continued focus on external forces can serve only as an excuse for policy failure in Africa. Further analysis is required on a number of questions. For example, what factors account for some of the continuities between colonial and postcolonial agricultural policy? Where does the postcolonial state stand on the coincidence of interests between internal and external forces? Externalists have not provided satisfactory insights into these questions (Kiely, 1995; Moore and Schmitz, 1995; Brewer, 1990). Analysis of the historical relationship between imperialism and capitalist development in Africa has been treated in a mechanical and dogmatic fashion (Nyang'oro, 1989; Callaghy, 1988; Lubeck, 1987).

One has to unbundle the "new international division of labour theory" as the basis for the analysis of agricultural capacity, particularly in the policy and implementation dimensions. The perspective purports to signify a paradigm shift in the understanding of African agriculture. However, the novel aspects of the perspective include the qualitative differences wrought by technology, for example, biotechnology and its application to agricultural organization at the levels of production and marketing. Another key aspect of this perspective, is the changing role of the state in agriculture under globalization. In terms of how this perspective frames agricultural activities, "there is no doubt that contract farming [for example] resembles the historical plantation system in colonial Africa" (Puplampu and Tettey, 2000:258-259). The

historical agro-based transnational entities continue to determine the structure and nature of production systems in Africa. Finally, the perspective also links African agriculture to external forces and thus is extraverted in nature. In spite of differences in analysis, the three perspectives are consistent on the importance of the agricultural sector and the state's role in the sector. The consistencies within the perspectives, against the backdrop of agricultural problems in Africa, call for an alternative framework.

4.4.1 *The sociological analysis of agricultural policy*

To engage in a sociological analysis of policy performance is to analyse the disjunction between stated policy objectives and outcomes. Two lines of policy analysis can be identified. In one approach, policy makers cite "obstacles to implementation" (Schaffer, 1984:181) as reasons for poor performance, and do not account for their lack of understanding on why policies do not achieve stated objectives. Policy makers contend that farmers, for example, "refuse" to use new technologies. Problems in setting the policy and research agenda, the power play between institutions involved in agenda setting, and the lack of representation of the farmers' viewpoints within the policy context are not addressed. Policy analysis from this approach or what Clay and Schaffer (1984:3) call the "mainstream" approach does not raise these questions, and is of limited value in explaining policy performance.

The other analytical framework realizes that policy makers usually do not state their real intended objectives, and what may seem as poor policy performance may be achieving unstated

goals. The key issue in this framework is the sociological analysis of power. Keen (1994), in a provocative study, offered a thorough and sophisticated analysis of the famine in Sudan between 1985 and 1989. The political regime, Keen (1994) argues, was unable to transcend the long-running sectarian conflicts between the north and south. It used famine in the south-western corner as state policy to contain these conflicts. Thus, the famine benefited some groups at the expense of others, an important insight for exploring policy performance. Put differently, "[e]ven as policymakers 'fail' to achieve stated goals, it is quite possible that they are achieving other, unstated goals" (Keen, 1994:9). The question, therefore, is "not why public policy 'fails.' It does not always necessarily or completely do so...Public policy is, after all, what it does [and does not do]" (Schaffer, 1984:189).

Social and political pressures prevent the state from serving as an effective institution in agricultural policy. Exploring these social and political pressures requires a "fundamental rethinking of the role of states in relation to economies and societies" (Skocpol, 1985:7), and reconceptualizing the state as a complex institution made up of individuals and interest groups with diverse links to society. The nature of state and society relations should be the core of any attempt to explain agricultural policy in Africa (Migdal, Kohli and Shue, 1994; Chazan et al., 1992; Rothchild and Chazan, 1988).

The African state's involvement in agriculture is predicated on political rather than economic reasons (Bates, 1983; 1981). As major employers, African governments are naturally interested in how much the urban worker spends on food,

because urban protests over the scarcity of food can lead to political instability. However, the provision of cheap food and other politically-inspired practices constitute an implicit acknowledgement that governments are aware of their obligations to the citizenry. To undertake these activities would require revenue. As such, governments face challenges not only in terms of how revenue is extracted, but also how to ensure that extraction does not solicit a violent reaction. In other words, there are limits on state power. To understand these limits, in the context of agricultural development policy, means exploring the dynamics of state-society relations over conditions of access to the resources that generate the revenue in the first place.

With conditions of access to resources and rewards as the main issue in this Chapter, the analysis of policy within the context of power and the socio-cultural processes will afford us a better opportunity to understand agricultural policy. Such an analysis will, for example, enable one to look beyond prices of agricultural produce, and focus on farmers' access to productive resources, patterns of control over output and marketing (Berry, 1993b). Given the importance of agriculture, the question is not whether or not the state should intervene, but what kind of intervention will enhance policy performance (Hansen, 1989:191). When the pace of commercial agriculture accelerated since the colonial era, changes occurred in the availability of resources (for example labour, land and credit). The challenge for the state is how to structure the relationship between policy and agricultural groups. Given that the colonial and postcolonial state obtained their revenue from export crops production, both emphasized the enhancement of "a political order that would facilitate and

underpin the spread of export crop production" (Boone, 1994:113). When governments pursue politically advantageous policies and at the same time, are concerned about the impact of those policies on society and producers at large, they are aware of the limits of state power. The complexities of state and society interactions led to varying levels of policy performance and "inconclusive encounters" between farmers and

agricultural policies (Berry, 1993a:45). Inconclusive encounters in the sense that although the state initiates policies, the consequences of policies are uncertain and cannot be understood or explained from their stated aims (Berry, 1993a:46). The policies are heavily influenced by group "interests and contrasting ideological positions that have prevailed within, or were in control of, the state apparatus at any point in

TABLE 4.1
A Sociological Analysis of Agricultural Policy in Africa: An Analytical Framework

Levels of Analysis	Selected Issues in State and Society Relations	Policy Outcomes
Nature and Structure of the State/Non-State	Strong and weak Institutional structure for administration Collaboration with and resistance by farmers	Short-term political gains and long-term difficulties Scarcity of qualified personnel Weak Institutions/Clientele and patronage
The State, Globalization and Agricultural Policy	The role of ideology Institutional structure for agricultural development Collaboration with and resistance by farmers	Market Conditions Production Focus Access to agricultural and non agricultural services
The State and Farmers	Social context of agricultural policies Institutional Presence Access to resources and rewards	Difficulties in initiation and implementation Differential impact and reactions from farmers Food insecurity

Source: Puplampu, 2011a

4.5 Politics of agricultural marketing and agricultural marketing politics in Africa

At the height of the agricultural crisis in Africa in the 1980s, there was considerable consensus among analysts of various ideological perspectives about the negative role of state agricultural marketing boards. Therefore, under the SAP, the policy argument was that state interference in the market distorts price signals. Consistent also with economic globalization, the state had to "free" agricultural market, by withdrawing from it, so as to improve the incentive structure for export agriculture. Since the mid-1980s, several African governments have restructured their state-owned agricultural marketing boards. Overall four main patterns have emerged: (1) eliminate all marketing boards (Nigeria, Tanzania, Uganda) or the boards for some specific crops (Madagascar, Kenya, Niger); (2) allow producer prices to reflect world market prices and reform some aspects of the board (Benin, Kenya and Malawi); (3) license private sector organizations to compete with marketing boards in crop purchasing and exporting activities (Zimbabwe); and, (4) partially privatize or straddle two or more of the patterns in search of an optimal or viable option in Burkina Faso (cotton), Ghana (cocoa) (World Bank, 1994). Recent assessments of restructured agricultural marketing and inputs supply institutions in Burkina Faso (cotton), Mali (mango), Rwanda (coffee), Ghana (cocoa and fertilizer), Kenya (fertilizer) and Malawi (fertilizer and credit subsidies, controlled prices) did not indicate a full-blown privatization of agricultural markets and the supply of inputs, and the irrelevance of the state, but underscore the need to pay a closer attention to the local context of the policy framework, human resource issues and

institutional capacity, than a strict adherence to the theory of free agricultural markets and inputs supply (Ariga and Jayne, 2011; Banful, 2011; Boudreaux, 2011; Dorward, Chirwa and Jayne, 2011; Kaminski, 2011; Kolavalli and Vigneri, 2011; Sangho, Labaste and Ravry, 2011).

Analysis of the outcomes of the two periods, especially the recent assessment of agricultural markets, provide some insights into the following: first, the nature of agricultural markets, their organization and the politics of their operations; second, the role of state and non-state actors, including the private sector in restructured agricultural markets in Africa; and third, the global divide between the north and south with respect to WTO provisions on agriculture, in particular market access and finally the governance and sustainability of agricultural policy. The overriding argument in economic globalization is the role of the market in the allocation and distribution of rewards. With reference to agricultural marketing, this means that the impersonal forces of demand and supply would set the value and reward for agricultural goods. A key aspect of the WTO Agreement on Agriculture on market access is the removal of non-tariff provisions, explicitly, state agricultural marketing boards (SAMB) in the export of tradeables (for example, cocoa, coffee and tea) and opening such activities to the private sector. However, the "varying levels of policy implementation are indicative of the dynamics [largely political aspects] of domestic policy implementation" in African countries (Puplampu and Tettey, 2000:260). The varying levels are also reflections of the political sensibilities and calculations that inform the operations of agricultural markets. In reforming the marketing boards, the argument was to open marketing activities to private sector

participation.

Many African states did not actually implement the reforms, and others implemented it in such a way that made it difficult for private sector investment (Jayne et al., 2002). Even if they did implement the reforms, there is “the question of whether [or not] private investors have the working capital, the human resources, and institutional capacity to cope with the vagaries of international commodity markets” (Puplampu and Tetley, 2000:261). These critical elements were found lacking in the privatizing of agricultural services in Tanzania and Ghana and the situation is not different in other African countries (Cooksey, 2011; Baffes, 2004; Nyanteng and Seini 2000). Perhaps, the persistence of problems, specifically with regard to input supply and distribution account for the re-emergence of such schemes in several African countries.

A number of African countries (Malawi, Nigeria, Tanzania, Kenya and Ghana) have reinstated fertilizer subsidies programs, even though the historical performance of fertilizer subsidies in the region has been mainly unsatisfactory (Morris et al., 2007). In the case of Ghana, which reinstated the fertilizer program in 2008, Banful (2011) shows how the problem has been politicized, such that fertilizer subsidy vouchers were targeted to farmers in districts that the ruling government lost at the ballot box. Even though the private sector was involved in the program at the retail end, it was the state or public sector that imported the fertilizer. In effect, the state was still a major actor and because of the political calculations that influenced the allocation of the fertilizer in the first place, the private sector was indirectly affected by the political considerations in the program. Consequently, the situation is one of

incomplete restructuring of agricultural institutions and this “has left an institutional vacuum ... [and] in many cases neither government nor the private sector has taken on these roles” (FAO, 2004a:24). Thus, the restructuring of agricultural markets has been accompanied by mixed results, some of which are poor outcomes. NEPAD (2009) noted several constraints, especially in the political and institutional realm, in African countries, in terms of compliance to the 2003 Maputo Declaration. Despite the high level of political endorsement of the Declaration, there is an inadequate political will that can inspire the priority that agriculture should assume in the national development strategy. As a result, agricultural sector policy strategies are insufficient, capacity issues in agricultural sector ministries remain and an overall lack of domestic policy ownership.

Consequently, the calls for a minimal state, market reforms and the private sector per se are not the only necessary and sufficient conditions that inform the productive behaviour of farmers. Unburdening farmers by removing the state from the agricultural marketing and the creation of a competitive private sector environment do not occur in a vacuum. Governments, irrespective of ideological or political orientation, are involved in agricultural policy in order to reap the contributions of agriculture to national development. The question is the extent to which restructured state institutions or the emerging private sector ones are tied to institutional capacity or sustainable institutions (Eicher, 1989; World Bank, 1989). A sustainable institution comes about when “domestic political support is mobilized to provide adequate domestic financing of all core salaries and operating expenses” of policy and research institutions (Eicher, 1989:1). To the World Bank

(1989:5), capacity development seeks “not just less government but better government.” The aspects of capacity development critical to this Report are the “restructuring of many public [agricultural] and private institutions to create a context in which skilled workers can function effectively, [and a] [p]olitical leadership that understands that institutions are fragile entities, painstakingly built up, easily destroyed, and therefore requiring sustained nurturing” (World Bank, 1989:54).

Beyond the politics of agricultural market restructuring, another major hindrance to institutional capacity is structural barriers (Abbott and Young, 2001:133-135). Such barriers include poor market infrastructure and information channels, and activities by transnational agro-based companies associated with contract farms (FAO, 2004a:24). Furthermore, farmers' incomes also depend on the world market for agricultural commodities. For the greater part of the 1980s and 1990s, international prices for most of Africa's agricultural exports (for example, cocoa and coffee) fluctuated drastically with long periods of price falls than increases (FAO, 2004a:9; Oxfam, 2002:153-154; World Bank, 1994:77-79). In view of the global economic recession in 2008, developing-country exports dropped 9 per cent in 2009, recovered in 2010 growing by 13% and expected to grow at 8% in 2011 and 2012 (United Nations, 2011b:xiii). For African countries that depend on the export of agricultural produce, high and volatile commodity prices mean increasing difficulties in relying on trade as a route to poverty reduction (United Nations, 2011b).

The desire of African governments to minimize dependence on mono agricultural export,

possibly, accounts for their support of contract farming, often with transnational agro-based companies at the helm. However, these same governments offer transnational agro-based companies monopsony control over the selected crop, retention of foreign exchange earnings and claims on imported production material. The companies accept government support, but the benefits do not flow directly into national economies, let alone benefit farmers. This is because transnational agro-based companies, the chief proponents of free market principles, are more than content with policies and practices that enable them to avoid the goals of such a market (FAO, 2004a: 30-31; Pupilampu and Tettey, 2000:261).

In the era of global agriculture, the activities of global multilateral and regional institutions can hamper agricultural policy performance (Muhammad, Amponsah and Dennis, 2010; Mausch et al., 2009; Pupilampu, 2006). First, activities of regional organizations on issues such as quota and quality can affect market access. Second, there are significant variations in the support system the African state provides to its farmers compared to what their counterparts in the global north extend to their farmers. There are several implications of the argument. For example, there is the question of the extent to which respective countries abide by WTO provisions on agriculture. There is the issue of the ability of the organization itself to forge a global compact on agricultural policy when it comes to north-south agricultural relations. Take the case of the African state and cotton farmers.

Castells (1997:243) argues that the state, in an age of globalization, may seem “to be losing its power, although, ... not its influence”. The significance of Castells' contention can be

demonstrated by the state's continuing role in agricultural markets. Even in Africa where the state is supposed to be on its way to oblivion, it is the only viable development partner in the region, notwithstanding the increasing preference for non-governmental organizations. The level of the state's power highlights its structural location in the global political economic system. The nature and location of the state and its relationship to global agricultural policies is best exemplified by cotton policies.

Cotton, produced in both rich and poor countries and integral to the global textile industry, has been providing a clear demonstration of the state advancing the national development agenda with respect to agricultural support. Theoretically, free impersonal market forces of demand and supply, and comparative advantage determine the allocation and rewards to cotton farmers. These principles are supposed to rationally discriminate and reward cotton producers on the basis of quality and other factors. However, cotton markets, like many other agricultural commodities, are not entirely free. For the greater part of the 1990s, world

cotton exports increased while revenues declined, a trend associated with other agricultural commodities like coffee, cocoa and banana (FAO, 2004a:20).

For African cotton farmers, the declines in revenue with increases in production and export bring home the theoretical limitations of free-market principles. Indeed, cotton “trade and production are highly distorted by policy” (Gillson et al., 2004:3). The nature and form of state agricultural policy and the related distortions in agricultural markets, informed by domestic politics, also reflect the nature of the global divide. Governments in developed (the EU and USA) and developing (Africa) parts of the world offer their cotton producers different levels and forms of support, regardless of WTO provisions on domestic support and export performance (Anderson and Valenzuela, 2007; Gibbon, 2007; Gillson et al., 2004; FAO, 2004a). Such forms of support would explain some of the differential results in the production of cotton by value across the world shown in Table 4.2 below. Burkina Faso, which ranks number one in the export of cotton ranks number 14 in the

TABLE 4.2
Transforming Agriculture: Top 20 Producing Countries of Cotton Lint in 2007

Rank	Country	Value (\$1000)	Rank	Country	Value (\$1000)
1	China	11,317,680	11	Australia	406,747
2	India	6,531,712	12	Egypt	335,492
3	USA	6,207,813	13	Nigeria	228,609
4	Pakistan	2,942,239	14	Burkina Faso	218,367
5	Brazil	2,013,801	15	Argentina	215,249
6	Uzbekistan	1,877,462	16	Mexico	215,249
7	Turkey	1,428,101	17	Tajikistan	206,342
8	Syria	541,835	18	Kazakhstan	163,992
9	Turkmenistan	460,188	19	Benin	161,748
10	Greece	445,344	20	Mozambique	139,884

Source: FAOSTAT, 2010

Support for cotton growers under the EU's agricultural policy, the Common Agricultural Policy (CAP), began in 1981 when Greece and Spain joined the union. The two countries "accounted for 2.5 percent of world production and 6 percent of world exports in 2001, but they accounted for 16 percent of world cotton subsidies" (Gillson et al., 2004:17). The subsidies include input factors like credit for machinery purchase, insurance and publicly financed irrigation schemes (Gillson et al., 2004:18). In the USA, support for farmers comes through various parts of the Farm Bills, which in 1996 offered, "direct payments to producers which were decoupled from production" (Gillson et al., 2004:16). Other aspects of the support include insurance, export subsidies and emergency payments.

Contrast the experiences of cotton producers in the EU and USA with their African counterparts (Jobodwana, 2011; Kaminski, Headey and Bernard, 2011; Tschirley, 2010; Moseley and Gray, 2008). African cotton farmers, although with low product costs, have not adequately benefited from the market. This is, in part, because of competition from other producing countries; particularly the USA where state support compensates for the high production cost. Cotton producers in African countries do not have governments with either the resources or the political will or both to offer them any meaningful support in the midst of lower world market prices. They therefore find themselves in a market situation distorted by various forms and levels of domestic state support.

The impact of state support on agricultural production is the fact that it disengages farmers from market signals, artificially decreases the cost of production and increases their ability to

export cheap agricultural goods to overseas markets. Ultimately, these practices lower agricultural prices and incomes for a significant number of farmers and make it difficult for African farmers to compete fairly in the international cotton market. Thus the world market prices for cotton, supposedly determined by invisible free market forces and beneficial to farmers worldwide participating on an equal playing field, is also influenced by the extent of support available to some cotton farmers. In sum, political forces continue to play a major role in determining market outcomes.

From the perspective of developing countries, the proposal by the Cotton-4 and the Cancun processes failed because WTO meetings are not transparent and are highly undemocratic. The meetings tend to cater to the needs of the powerful countries, leaving out the grievances of the less powerful ones (Hormeku, 2003). Given that the WTO is expected to establish a predictable and a rule-based framework for global trade, the case of the African cotton farmers might be a forerunner for other agricultural crops produced by African farmers. The WTO and the cotton problem, within the context of the MDGs, has implications for the extent to which the institution can be seen as a global partner for development in Africa. Not only are WTO initiatives ignored by powerful countries of the world, the organization also appears as a tool for extending the influence of powerful countries, a scenario that suggests its inability to forge a global partnership for development.

After the failure of the Seattle conference in November 1999, which was supposed to launch the Millennium Rounds of Talks, the Doha Round of November 2001 was billed as the

Development Round. The Round was expected to address agriculture and other development issues of importance to Africa and other developing countries. However, the Doha Development Agenda, after a decade of deliberations, has not been ratified (United Nations, 2011b). It is a well-known fact in policy analysis that it is better to focus on what policy makers actually do, rather than on declarations. Hence, WTO continues to make declarations while the problems identified above continue to persist. The cumulative effect of the WTO's record raises questions about the future trajectory of the organization and global trade.

Market conditions vary for agricultural exports. Moves towards market access, either through restructured marketing institutions, transnational agro-based companies or a diversified agricultural economy are insufficient factors that would necessarily improve agricultural markets, farmers' incomes and ultimately agricultural development. Non-tariff measures, in this case, institutional restructuring of state agricultural marketing boards, are not the magic bullet for successful market outcomes. Structural conditions also determine prices and rewards in agricultural export markets. These conditions, their origins and dynamics, with roots in the historical context have taken on new forms, but with predictable results in the contemporary global era. The extent to which the WTO can play the role of a partner in global development, via the MDGs, is tied further to the changing role of the state in agricultural production. This case was best illustrated with reference to African cotton farmers. Without addressing how agricultural policy impact agricultural groups in terms of access to resources and rewards, a minimal state

and a return to the market per se will be meaningless and ineffective measures.

4.6 Agricultural producers and governance: survival or sustainability?

African agriculture features one of the most vulnerable segments of its population – farmers. These farmers, particularly small-scale producers, are the major players in the production of national agro-food needs and export agriculture and are critical to discussions on national food security. Given the state's role in framing the national development agenda, the relationship between the state and farmers is essential for the sector and the national development effort. However, the relationship between the African state and farmers has been ambiguous at best. On one hand, the state values farmers, whether small or large, when they produce for external markets, because it reaps the benefits of agriculture for non-agricultural sectors and, ultimately, national development. The state therefore, in many cases prefers to organize the farmers and have farmers' organizations that “are subordinated to the dictates and political manipulations from the national level” (Puplampu, 2004a:130). On the other hand and despite their importance, farmers' groups in several African countries, relative to others, for example, in the industrial sector, have not been a force to reckon with in the policy arena, either as a response to or the result of lack of stability in agricultural incomes, the scattered nature of their location and other structural factors. This tenuous relationship between the state and farmers' associations began from the colonial era.

The essential point is that the colonial state

tolerated farmers' organizations and other forms of resistance, because the absence of such outlets or spaces would have generated numerous social and political problems which the colonial mandate could not afford. The colonial order was "managed by extreme caution" (Kay, 1972:9) and "proposals were abandoned on the faintest suspicion of [political] disaster" (Phillips, 1989:158). The political structure at independence comprised various coalitions (professional, middle, to lower class groups in urban areas and farmers in the countryside), fragile in their relations with the state (Ford and Holmquist, 1988). Groups that had a significant power base during the colonial era "had a stake in reproducing power *already achieved*. They [political elites, teachers, clerks and petty traders] correctly perceived access to the postcolonial state as a means of doing so" (Boone, 1994:121, italics in original). One group that was not effectively represented in this coalition was farmers in the countryside. However, the urban-based groups had roots in the farming communities in the countryside and did not hesitate to rely on such contacts to control the countryside or establish a political presence. Here is the context that accounts for the willingness of the postcolonial state to organize farmers (Beckman, 1976).

The changing role of the state in an era of globalization and the increasing importance of diffused actors and multilateral institutions in the economic sector present some unique opportunities and challenges for farmers' organizations (Held and McGrew, 2004; Scholte, 2005). The organizing points for analysis revolve around the extent to which when it comes to agricultural policy, the capability of agricultural producers are first, in decline, second, resilient and finally in adaptation and/or in transforma-

tion in an era of globalization (Halpin, 2005:20-22). The decline thesis suggests a loss of significance of agricultural producers in a global era, because of the changes in the role of the nation-state, and the emergence of multilateral institutions. These processes would undermine the need for the state to even bargain or compromise with agricultural producers, since the state itself is under tremendous pressure. The resilience argument presents a central role for the state, even if in a "more complex and multi-level world, and that associative processes of governance remain important in assisting national economic sectors to adapt to global change" (Halpin, 2005:21). This position points to a desire for partnership and various forms of cooperation between the state and agricultural producers. The adaptation and/or transformation thesis is that agricultural producers "may not merely adapt to new conditions, but fundamentally transform their existing structures, roll-over into new structures or be taken over or subsumed by new or existing groups" (Halpin, 2005:22).

The subsequent analysis will draw on two particular examples that highlight the relationship between the state and farmers in a global context: cashew nut producers in Mozambique and poultry farmers in Ghana (Nazneen et al., 2004; Maykuth, 2005; Christian Aid, 2005; Puplampu, 2004a; Hanlon, 2001, 2000). The agricultural policy adopted by Mozambique under SAP and consistent with globalization required the state to free itself from the market; this policy had a direct impact on the cashew nut industry. As an important part of the economy, the state benefited from the export tax on cashew nuts. Under the adjustment program, the World Bank argued that the industry, compared to others,

specifically Brazil and India, was inefficient, because “the value of the processed kernels was less than the value of the raw nuts had they been exported directly” (cited in Hanlon, 2000:34). From this position, the World Bank asked the Government of Mozambique to export only unprocessed cashew nuts and also abolish any laws that protected the industry.

The Government of Mozambique decided to stagger the export taxes imposed on cashew imports because of the considerable opposition from the cashew producers and trade unions who contested the World Bank findings and the policy proposals. There was a prolonged confrontation between the World Bank and the Government of Mozambique from the early 1990s to 2001 when the Bank modified and hence agreed to some of the proposals from the Government of Mozambique (Hanlon, 2001). A key arsenal that the Government of Mozambique used to defend its interest and that of the farmers is the use of subsidies by the global north, even as they talk about the need for “free” trade and market reforms. Indeed, the government noted how the EU subsidises its agriculture and then uses the IFIs to prevent Mozambique from protecting its cashew producers (Hanlon, 2000). The Mozambican authorities stressed the implicit double talk of global agricultural policies and used it to show the selective implementation of global agricultural policies.

The case of poultry farmers in Ghana started in 2005, when a two year-old parliamentary act that increased the import taxes on poultry products was overturned. The poultry farmers had in 2003 successfully convinced the Parliament of Ghana “that imports of cheap, subsidized chicken were killing local businesses – and raised tariffs on

imports” (Christian Aid, 2005:32). The parliamentary position was further affirmed by a high court judge, hence any proposal to suspend the tariffs had implications to undermine the will of parliament. The Ghana National Association of Poultry Farmers (GNAPF) and its membership were obviously troubled by the decision to suspend the tariff increases. According to GNAPF, the Government of Ghana caved in because of pressure tactics from the International Monetary Fund and the World Bank. The policy change raises questions about democratic governance, definitely the need for elected officials to address the needs their citizenry.

The two cases above highlight significant aspects of democratic governance, the nature of the state and role of agricultural producers in agricultural policy. At the heart of democratic governance is how institutions work on behalf of and in the interest of citizens at large. In both Mozambique and Ghana, the governments were legitimately elected by the citizens and were working to attain the interests of their citizens. In other words, given the democratic space for citizen engagement, poultry farmers lobbied the government to enact certain policies on their behalf. In Mozambique, the government, cashew farmers and other groups contested the position of the World Bank. The two cases therefore show how democratic governance can be utilized to address specific social problems, and in this case, in the agricultural sector, and thus show elements of resilience according to Halpin's (2005) model. The analysis also shows the continuing role of the state, even if in a different form. Hence, globalization of agriculture provides a context for not only the survival of farmers, but also a framework for

sustainability; especially in the policy process.

However, the two cases also show the limits of democratic governance in the global context. As the government of Mozambique clearly articulated, it is problematic when the same institutions charged with global governance are selective in terms of their policy implementation process. The Mozambicans did not understand why the European Union provides subsidies to agricultural producers, yet expect them to offer no support to their farmers. Similarly, the Ghana poultry farmers took issue with the fact that their government was more in tune with the demands of external forces than the interests of internal forces. In effect, issues of democratic governance are likely to assume a prominent role in how state and society relate at the national and global levels. This is because with African countries deepening and consolidating their democratic orientation, African policy makers, like their counterparts in more advanced democracies, also have the duty to listen to, respond to and address the needs of their constituencies (Stiglitz and Charlton, 2005).

4.7 Conclusion

The perennial bane of African agriculture is that it is not anchored in the society and is unable to address the basic needs therein. It is not an over-exaggeration to contend that the export focus had dominated the policy discourse of African agriculture. Globalization, as a contemporary discourse, simply reinforces earlier ideologies and practices. The analysis calls for rethinking the future of African agriculture and also draws attention to three main factors: institutional capacity; a focus on producers; and the broad issue of governance.

It is certainly superfluous to argue that it is people working in institutions that make change and development possible. Consequently, a call for institutions to carry through the agricultural policies is certainly not a novel position. However, the emphasis has to be on capable institutions. It is one thing to establish an institution, but quite another issue to have capable institutions. While the desire of African governments to establish agricultural institutions is a tangible expression of the importance of agriculture, most of the institutions do not have the sufficient and necessary resources for optimal performance. Perhaps, the politics of institutional creation accounts for the ineffective performance of institutions. Politics has to be tied to addressing the needs of the society at large. Given that agriculture is the cornerstone of the society, it behooves political leaders to take their work more seriously to ensure that institutions have the required resources to discharge their mandate (Savitch, 1998; Eicher, 1989). Therefore, the circumstances of farmers should be at the centre of the discourse.

African farmers, as their counterparts elsewhere, are a differentiated social group. Their differentiation, to a large extent, accounts for the nature of their relationship with policy-makers. Farmers who produce for the export market generally tend to fare better than those who produce for the domestic market, even though the benefits to export producers are not equal. While globalization, theoretically, opens up space for the involvement of farmers in agricultural policy, positive outcomes are not inevitable. While there is still the tendency to organize the farmers, “when and if farmers organize themselves, their impact on policy will

depend on how government perceives their activities. A well-defined system of governance in which both the policy making institutions and farmers possess power, and are able to exercise it, would provide a system of checks and balances” (Puplampu, 2004a:130). Perhaps, it will be prudent to revisit the idea of cooperatives, given that cooperatives in several African countries seem to have survived liberalization of agriculture and are devising novel ways to address the needs of their membership (Francesconi and Heerink, 2011; Bernard and Spielman, 2009; Barham and Chitemi, 2009; Wanyama, Develtere and Pollet, 2009). The agency of farmers, even within the cooperative framework, is dependent on the broader democratic and governance impulses at the national and global levels (World Bank, 2007a). At the national level, the democratic dispensation blowing across the African continent assumes the consolidation of competitive domestic politics in the policy area. The historical neglect or marginalization of farmers' association calls for a better framework to nurture such aspirations. The new framework should aim at coordination of activities across various sectors and institutions.

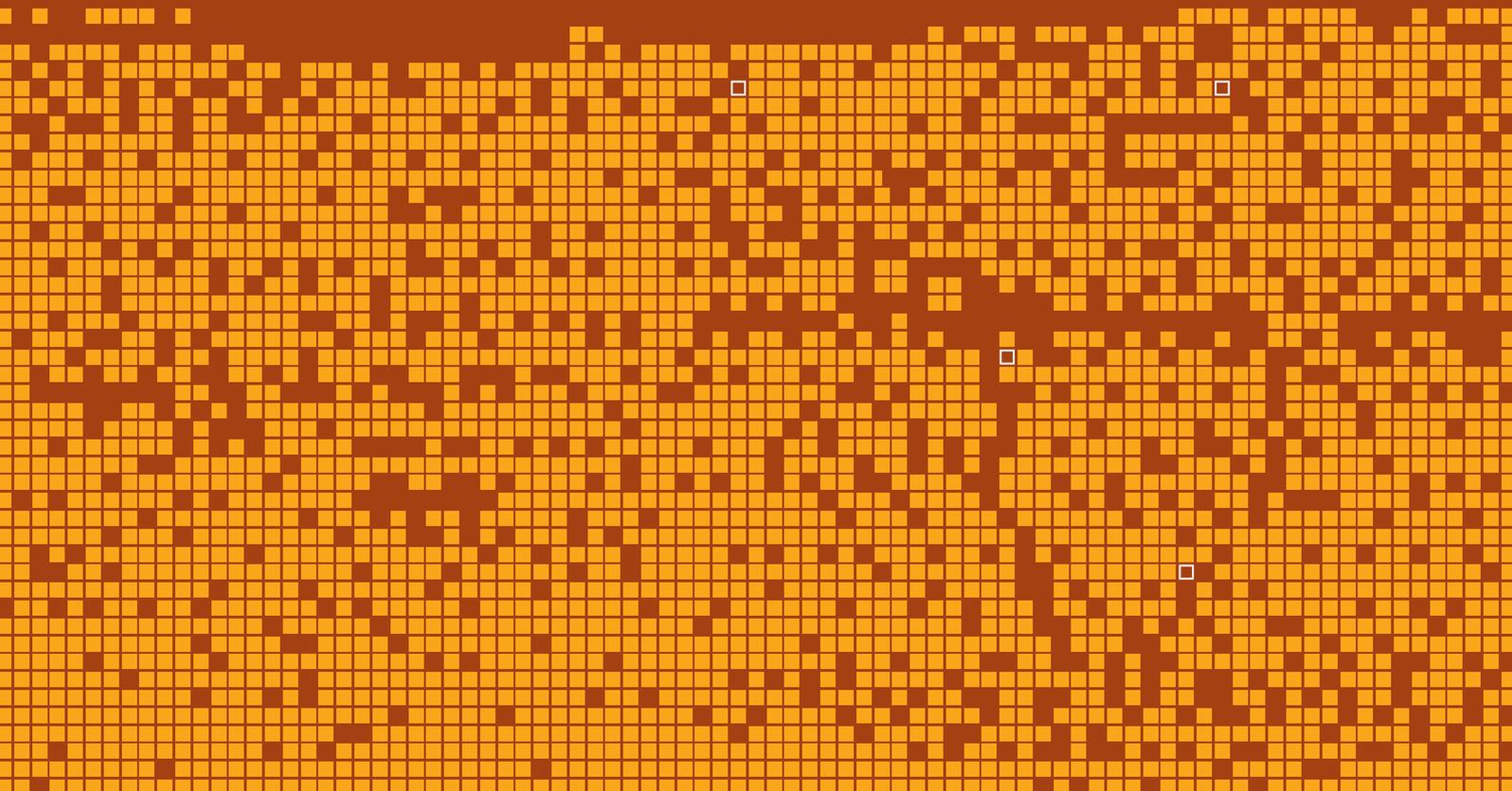
A deeper problem, however, remains at the global level. The preceding discussion on the WTO, World Bank, IMF with reference to farmers in Africa and other parts of the world demonstrates that subsidies undermine notions of free market or a level playing field. The situation brings governance into sharp focus. It is worrisome what African countries have to contend with as and when they want to extend or assume some degree of control over their activities for farmers. Since national development is not only about choices, but also the ability to implement those choices, the ability

of African governments to address their genuine aspirations of their citizens, in the face of global imperatives, is an issue that deserves the utmost attention. Indeed, it is becoming clear that the activities of global institutions, like the WTO, are not always consistent with democratic governance. Democratic practices have to be transferred to the workings of international agricultural institutions. It is essential to have democratic spaces “not only at the national level, but also at the international level so that the task of forging alliances and compromises of all actors towards the difficult but essential task of societal development can be attained” (Puplampu, 2006:245).

Finally, it remains to be seen whether or not “Africa can claim the 21st century” (World Bank, 2000) by making demonstrable strides in agricultural policy performance. The strategic balancing required in coordinating activities, accountability and transparency have been absent in the relationship between the African state and agricultural policy. The idea that agriculturally endowed African countries cannot produce enough food to feed their “citizens is a serious indictment of a theory and practice of development planning” that privileges export agriculture at the expense of domestic needs (Puplampu, 2004a:126). What is known is that assuming food items have to be imported, “great economies would be realized if those commodities [imported] or their equivalent, could be produced profitably at home, ... to replace imports” (La-Anyane (1963:194). It is still ironic that an agriculture-based region should continue to have problems relating to agricultural production and marketing and be unable to feed its people. This irony should not exist any longer. Political leaders, development practitioners and civil society must come

5

Investing in Capacity for Agricultural Transformation and Food Security





5

Investing in Capacity for Agricultural Transformation and Food Security

5.0 Introduction

As argued in the preceding chapters, the need for having a concrete strategy for agricultural transformation in Africa cannot be over-emphasized. Africa's food situation has policy makers and analysts increasingly concerned about the extent to which African agricultural systems can explore biotechnological innovations for production in particular and agricultural development in general. The interest in the relationship between biotechnology and the agricultural sector stems from the fact that the sector is critical to national development in most, if not all, African countries (World Bank, 2007a; NEPAD, 2001). Hence, there is a general understanding and expectation that any future breakthroughs with respect to African development will have to involve the agricultural sector. There are a myriad of capacities that need to be developed to ensure transformation of the agricultural sector. Given that it will be very daunting if not impossible to address all these issues, this Chapter will address a select number of key issues – biotechnology, infrastructure, agricultural financing and markets.

5.1 Biotechnology for agricultural transformation – the quandary

Several global and regional communities, towards the end of the last millennium, embarked upon policy and institutional initiatives to enhance development prospects in Africa. One global pact was the UN-sponsored Millennium Development Goals (MDGs), in which member states of the world body pledged to, among other things, eradicate extreme poverty and hunger for major segments of the population by 2015 (UNDP, 2003). Another goal of the MDGs was a call for global partnerships for development, stressing the need to utilize new technologies to transform agricultural

production systems for African development (Holt-Gimenez, 2008; Thompson, 2007; Africa Union, 2006; NEPAD, 2006; UNDP, 2003). The specific technology at stake is biotechnology. The case for biotechnology in African agriculture, however, predates the MDGs.

The World Bank (1989) made the initial argument about the extent to which biotechnology can benefit African agriculture against the background of the agricultural crisis of the 1980s and global trends in agricultural innovation and development (World Bank, 1991). The World Bank's earlier assessment found expression in subsequent global initiatives. The 1992 Rio Earth Summit (UNCED, 1993), UNEP's (2000) Convention on Biological Diversity, specifically

the Cartagena Protocol on Biosafety, the UNDP (2001) and the FAO (2004b) all identified the potential of biotechnology to bring about improvements in agricultural organization in the global south. At the regional level, African governments have also acknowledged the significance of biotechnology in African agriculture (NEPAD, 2003; 2001). The African Union (AU), through NEPAD, initiated several continent-wide programs in the agricultural sector in general, and biotechnology in particular (African Union, 2006). In view of the global and regional consensus on the role of biotechnology, many African governments, sometimes working with their international partners, have initiated policies and established institutions to better engage with or harness biotechnology for African agricultural development (Essegbey, 2008; Ayele et al., 2006; Ayele and Wield, 2005).

Despite the enthusiasm for policy pronouncements and the establishment of institutions, many African countries have not enacted biosafety rules to govern biotechnology. Biosafety, in particular, is an essential part of any policy framework on biotechnology, making the two concepts inextricably linked. Given their close relationship and sometimes interchangeable usage, biosafety, the legislative and administrative framework that seeks to minimize the potential risks stemming from biotechnology, is either initiated alone or as an integral component of biotechnology policy (UNEP, 2006:7). The extent of development in African countries of agricultural biotechnology has not been significant. South Africa, for instance, is the first African country to have initiated and launched its own national policy on biotechnology, as well as carry out trials on genetically modified organisms (Moola and

Munnik, 2007; UNEP-GEF, 2006a). South Africa was also the sole African country cultivating genetically modified maize, cotton and soya beans, before Egypt and Burkina Faso recently started the cultivation of maize and cotton respectively (Kumwenda, 2011; James, 2010).

While many African countries have signed the Cartagena Protocol on Biosafety, have guidelines on biosafety and have also drafted legislations on biosafety, only a few (South Africa, Malawi, Zimbabwe and Kenya) have actually passed laws to govern genetically modified (GM) organisms (Nature, 2010). The Nigerian Senate, for example, passed the country's biosafety bill in June 2011, but President Goodluck Jonathan is yet to give his assent to the bill (Johnkingsley, 2011). The policy vacuum loomed large in the decision by Zambia and Zimbabwe in 2002 and Angola in 2004 to reject shipments of GM maize from the USA (Scott, 2004; Njoroge, 2002). Since 2002, Zambia has been grappling with how to establish a policy on biosafety. In April 2007, Zambian policymakers adopted a biosafety bill and submitted it to Parliament for debate, only for the government in August 2007 to issue a statement rejecting a call for the country to use GM crops to reduce poverty and hunger (Malakata, 2007a,b). The famine situation in the Horn of Africa of 2011 compelled Kenyan authorities to allow the import of GM maize from South Africa, a move that has brought to light, once again, the contentious nature of agricultural biotechnology in Kenya (Kahare, 2011).

Indeed, it has been several decades since the World Bank (1989) held out the promise of how biotechnology would transform African agriculture and shore up the development

prospects of the region. However, the role of biotechnology in African agriculture, as in other parts of the world, including developed societies, has been ambiguous and sometimes met with outright resentment (Andrée, 2007; Taylor, 2007; Gaskell and Durant, 2002). In view of the foregoing, the question then is how to reconcile the view that biotechnology presents the “breakthrough technology for developing countries” (UNDP, 2001:E-2-1) with the minimal and ambivalent role of the technology in agricultural organization in Africa.

This Report acknowledges that technology does not function in a vacuum. It rather functions in a social context. The social context not only influences technology, but also shapes it. Indeed, there are complex issues in science-society relations that affect outcomes. These, for a number of reasons, take on an added significance in an era of globalization. The crisis of the African state due to or in response to globalization has given rise to a changing role of the state in setting the framework for biotechnology policy and institution. Specifically, the state now has to contend with a plethora of non-state actors of different stripes (national or international) and motivations (non-profit and for-profit) with regard to the role of biotechnology in Africa's agricultural transformation (Essegbey, 2008; Essegbey and Puplampu, 2007; Puplampu and Essegbey, 2004).

This Chapter, examines the social context of science and the implications for agricultural biotechnology policy and institutions, by addressing three-related questions: First, what accounts for the lag in establishing the required policy and institutional framework for biotechnology in Africa? Second, what are the

implications of changing state-society relations, in an era of globalization, for agricultural biotechnology policy and institutions? Finally, what are the barriers to farmers' utilization of agricultural biotechnology research?

5.2 The agriculture biotechnology debate and Africa: an overview

The discourse on agricultural biotechnology¹ can be broadly divided into proponents and opponents. The position of the proponents revolves around three main issues (Cherry, 2002; Omiti, Chacha and Andama, 2002; Wambugu, 2001). First, biotechnology can alter the genetic traits of a seed, and that would give African agriculture the necessary boost to contribute to increases in production, and offer farmers the possibility of producing high-yielding crops through, for example, drought resistant crop varieties. Biotechnology therefore has the best opportunity to address the periodic hunger and food insecurity that has become part of the African condition. Second, improvements in seed technology can make agricultural systems less laborious and more profitable in the long term. Third, the proponents contend that it is morally imperative to adopt biotechnology since transgenic technologies can increase food production in Africa, thus biotechnology researchers “cannot afford not to make the technology available to [African] farmers” (Puplampu and Essegbey, 2004:272).

The opponents counter the above arguments around three main issues as well (ETC, 2006; Maathai, 1998; Shiva and Holla-Bahr, 1996). First, biotechnology is unsafe because it poses a danger to human health and the environment. According to this argument, biotechnology,

which is equated to genetic engineering, can give rise to some allergies. A second related problem is the unknown and uncertain outcomes of biotechnology. Since technological innovations can lead to unintended consequences, the argument for the opponents is to proceed on the basis of the precautionary principle (Barrett and Brunk, 2007). The opponents cite the contamination of the entire USA corn market by StarLink and in Mexico in 2000 and 2001 respectively to bolster their contention. Finally, the opponents are of the view that biotechnology is not an appropriate technology to address the needs of resource poor African farmers, especially at the level of production. There is an implicit cost of the technology to farmers. "Today's world," George (1986:23) reminds us, "has all the physical resources and technical skills necessary to feed the present population of the planet or a much larger one." Therefore, to the opponents, biotechnology is not the magic bullet for agricultural production in Africa, and they underscore how multinational corporations involved in biotechnology research reap enormous profit. For instance, genetically-produced cocoa and vanilla flavors are undermining the export market for cocoa beans from Côte d'Ivoire and Ghana (Syngenta Foundation for Sustainable Agriculture, 2002; DaSilva, 2001).

This section acknowledges the views of the proponents and opponents of agricultural biotechnology, specifically, the political context of the technology and the implied power relations among the state, private actors (non-profit and for-profit) and farmers. The power relations, for instance, have implications for the cost of the technology which can affect the extent to which farmers have access to the

technology or utilize research findings. However, the Report contends that the debate has to be placed in a broader social context that also explores biotechnology in Africa within a framework of globalization and pays attention to the nuances in the relationship between power and knowledge² and other social aspects of science-society relations³. Perhaps, it is necessary to note that the role of biotechnology agricultural systems in the global north has had its difficulties. On one hand, the global north can boast of policy and institutions that can best engage and harness biotechnology for social development. For example, agricultural research systems⁴ (both public and private) are spearheading research and utilization of biotechnology research to improve production, marketing and consumption (Janssen, 2002; UNDP, 2001). The giant private biotechnology firms have their focus on temperate crops destined for markets in the global north (DaSilva, 2002). On the other hand, biotechnology has been a source of profound public resentment, particularly in Europe. The French activist, José Bové acquired celebrity status when he led a campaign against McDonald's, the popular global fast-food chain, and the destruction of genetically altered rice fields. Prominent Europeans like Prince Charles and musician Sir Paul McCartney both made critical remarks on the role of biotechnology in society. Western Europeans, particularly the British and French, have been critical and ambiguous about genetically modified food (Hodgson, 1999).

Public sentiment among North Americans (specifically Canada and the United States), mainly through organizations like Green Peace and some farmers' organizations, has been critical of GM foods (Eichenwald, Kolata and Petersen, 2001; Einsiedel, 2000). What is

remarkable in the global north is that various eminent and scientific bodies have acknowledged the potential and importance of biotechnology provided there is a regulatory framework that contained sufficient and enforceable safeguards (Nuffield Council on Bioethics, 1999). With contestations towards the safety of GM food for human consumption, the implications of the technology for the environment and the regulatory framework being proposed by government and private industry, technology has been a source of considerable controversy in global agricultural systems (Gaskell and Durant, 2002; Gaskell and Bauer, 2001).

The global controversy of biotechnology is further complicated in the African context by the peculiar form and processes that globalization takes on the continent. The interest here is the role of globalization in the lag in establishing the required policy and institutional framework for agricultural biotechnology in Africa, the changing role of state and non-state institutions in the policy arena, and barriers to farmers' utilization of agricultural biotechnology. If agricultural biotechnology is to continue to play a vital role in African development, then it is crucial to situate it in the broader context of globalization, which would define its role and will also shape outcomes. Analysts have examined the role of agricultural biotechnology, related innovations and the implications of the changing role of the state in African agriculture in an era of globalization (Sangho, Labaste and Ravry, 2011; Diagne et al., 2011; Baffes, 2009; FAO, 2004b).

The significant aspect of globalization of agriculture for this Report is the role of biotechnology in agricultural production. At the level of production, contract farming and

biotechnology are key aspects of globalization of agriculture (Watts, 1990:149; Vagneron et al., 2009; Rissgaard, 2009; Danielou and Ravry, 2005; Raikes and Gibbon, 2000; Konings, 1998; Little and Watts, 1994).

5.2.1 *Critique and alternative framework*

The debate between the proponents and opponents of agricultural biotechnology has been sometimes acrimonious and unfruitful. Proponents of agricultural biotechnology are correct in asserting the technical efficiencies of the technology with respect to drought resistant varieties of crops and less labor intensity in agricultural production. However, there is an unstated assumption that the technology is both a means and an end, and there is no attention to context. The significance of context was laid bare by the Green Revolution several years ago. It is therefore unfortunate, if not disingenuous, of the proponents to present agricultural biotechnology as a disembodied entity that will yield predictable outcomes in all and any social system. The opponents of agricultural biotechnology argue that Africa's resource-poor farmers cannot afford the cost of the technology, even though donor assistance might make that a little more manageable. What is not clear is how the cost of any change and development can be avoided. Another argument by the opponents is that the technology is inappropriate. If the technology is inappropriate, what kind of technology would be considered appropriate for African farmers? The ethnocentric tone of this argument is naïve and troubling. While the opponents are right to point out the health and uncertain outcomes of biotechnology, the call to shun the technology outright does not seem to be in the interest of the African farmers they purport to protect in the

first place. For example, Gockowski et al. (2011) have shown that fine flavor cocoa, the product of clonal planting material, is more profitable to cocoa farmers in Ghana than conventional production systems. Biotechnology, like any form of technology, will involve some benefits and risks.

What is not addressed by both perspectives and germane here is to find out the barriers that farmers are confronted with in their interaction with agricultural biotechnology. That line of inquiry has to focus on the policy and institutional framework since that would determine how agricultural biotechnology is harnessed and utilized, the choices that have to be made with respect to the regulation, risks, governance, the private sector, biosafety, technology transfer, the patent regime and issues of biodiversity (Thomson et al., 2010; Mugwagwa, Wamae, and Outram, 2010; Njoki, 2010; Makinde, Mumba and Ambali, 2009; Ayele, 2008; Munro, 2008; Essegbey, 2008; Eicher et al., 2006; Thomson, 2007; Kelemu et al., 2003; Alhassan, 2001, 1999). A more comprehensive effort is required to address the question of why several Africans have experienced significant time lags as they attempt to enact relevant policies or establish institutions that can incorporate biotechnology into the national agricultural development agenda (Puplampu, 2010; Kameri-Mbote, 2007; Eicher et al., 2006, Harsh, 2005; Cohen and Paarlberg, 2004; Morse, 2004; Thomson, 2004). This is because the policy vacuum has affected the choices that have to be made with respect to biosafety, the private sector, technology transfer, the patent regime, the risk, resistance and governance aspects of the technology. The emerging literature on agricultural biotechnology in Africa therefore makes a compelling case to transcend the current debate and focus on policy and

institutional issues.

The focus also has to be on broader questions of how citizens and society at large relate to scientific knowledge claims, derive meanings from, attach values and learn about the practices associated with science, particularly the risk and uncertainty of agricultural technology (Scoones, 2006; Entine, 2006; Leach, Scoones and Wynne, 2005). There are two specific models at play in the science-society literature: the deficit and contextual models. The deficit model proceeds on the assumed rationality and objectivity of scientific knowledge and expect farmers to trust biotechnology researchers or scientists and utilize research findings to their agricultural activities (Njoki, 2010; Rampton and Stanber, 2000). Scientists are thus above reproach, disinterested, blameless and infallible (Wynne, 1995). In light of such assumptions, the refusal of farmers to engage with the technology, for instance, is explained in terms of lack of knowledge.

The attitudes of farmers to biotechnology are perceived to flow from an ignorant and passive group who dwell on myths to shape their attitudes and worldview. These 'defects' farmers have about science can be 'cured' by deepening their knowledge and understanding of the technology (Collins and Evans, 2002). The deficit model privileges scientists or researchers; specifically, those in the national agricultural research system (NARS) (Jansen and Roquas, 2005). Furthermore, the "cure" of knowledge will come about through increased levels of participation by relevant social groups in agriculture, particularly farmers, in initiating biotechnology policy and establishing relevant institutions. What these assumptions fail to acknowledge is that science is not infallible, and

the knowledge of researchers is not the only source for farmers. Farmers have their own knowledge base and there is also the problem of institutional trust.

To move beyond the above assumptions, requires a framework that takes into consideration the basis of the relationship between knowledge producing sites (for example, national agricultural research systems) and farmers as end-users of research outcomes – hence the contextual model. This model places the individual in the social and cultural milieu, and takes into consideration prevailing knowledge forms in the society and knowledge about institutional processes (Wynne, 1995, 1991). For instance, it is critical to address whether or not farmers have any role in setting the research agenda, and that requires rethinking their participation in the NARS. In the contextual model, attention is paid to the complex relationship between power and knowledge, how that influences the research agenda, priorities or options of the research establishment, and how research findings are disseminated to farmers. The model implies an understanding of the nuances of knowledge creation and utilization. An understanding of what constitutes knowledge, and what does not, ultimately involves questions of power.

Foucault's (1983, 1980) sophisticated analysis of the relationship between power and knowledge provides an appropriate theoretical framework in the context model. Foucault submits that power designates a set of relationships between social actors, and “what defines a relationship of power is that it is a mode or action which does not act directly and immediately on others. Instead, it acts upon their actions” (Foucault, 1983: 220). Foucault demonstrates how the

subject is drawn into the power nexus through techniques like surveillance, which aim at creating a disciplined individual.

Another integral part of Foucault's work on power and knowledge is the issue of resistance. Resistance connotes the refusal to accept a “truth” that is constructed based on a specific body of knowledge. Any total or partial refusal to conform to the “truth” constructed by knowledge producing sites is an act of resistance (Wang, 1999). For instance, when farmers refuse to behave according to the “truth” constructed by and imposed on them by researchers that constitute resistance. Resistance by farmers can be visible or organized as well as invisible and subtle, hence the idea of “a plurality of resistances” (Foucault, 1990:26). Foucault's analysis of power and knowledge is significant in understanding the relations between knowledge producing institutions and farmers as end-users of research findings or policy pronouncements.

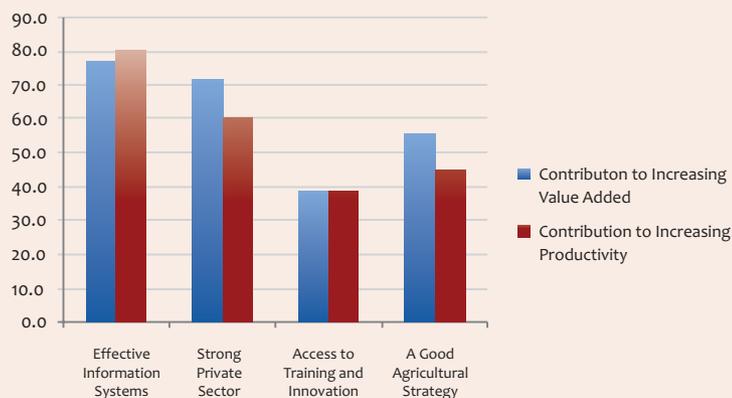
Implicit in the power-knowledge nexus and how farmers relate to agricultural biotechnology is the notion of perception or subjectivity with respect to risk and governance of biotechnology (Wafula and Clark, 2005; Aerni, 2005; Aerni and Bernauer, 2005; Bauer, Petkova and Boyadjieva, 2000). Subjectivity has several components. One component is how individuals and groups, and in this case farmers, derive meanings from social processes related to agricultural biotechnology. Another aspect of subjectivity is the extent to which individuals, and subsequently group behavior can be understood with respect to their sense of self. Self is an active entity and capable of deriving meanings from a given social situation. These meanings will be drawn from statements made by state and non-state

knowledge producing institutions. However, the meanings are interpreted according to the position (ascribed or achieved) of the individual or group and constitute the social construction of reality. The agency of farmers when it comes to interpretation and deriving meanings from agricultural biotechnology, the trustworthiness of institutional knowledge cannot be ignored. Farmers' agency is also related to risk and governance.

African farmers, often the most vulnerable group in the agriculture value chain, have to factor risk into their decision making process. The impact of technology is not neutral; hence a better understanding of risk is a rational human behavior. A governance structure with a verifiable and enforceable regulatory regime, genuine participation by relevant stakeholders, including farmers, would help provide a context

in which farmers would be more willing and better able to engage with biotechnology. What flows from the above review is not a question of whether or not biotechnology is good or bad for African agricultural development. Rather, it is whether or not there are effective policies and capable institutions that can initiate, monitor and engage agricultural biotechnology for national development. This line of questioning requires an analysis critically interrogating the nexus of science and society in terms of the initiation and consequences of science policy. Before addressing the empirical context of the above assertions, the next section presents an overview of agricultural biotechnology policy and institutions in Africa. It is therefore important to note that analysis of the ACI data shows that information systems had the highest contribution to increasing both agricultural

FIGURE 5.1
Information Systems Contribute More to Increased Agriculture Value Added and Productivity than Other Dimensions of Capacity



Source: ACI database 2012

5.2.2 Agricultural Biotechnology Policy and Institutions in Africa

The 1990s offered two contrasting pictures of the African condition. On one hand, the decade is generally considered the lost decade for African

development, following the mixed outcomes of structural adjustment policies on African agricultural development (Heidhues and Obare, 2011). On the other hand, the 1990s marked the end of a millennium, and that impelled public and private institutions to prepare for the next

millennium on the basis of hope; a narrative that is closely associated to agricultural biotechnology. This is the background for the African Union-sponsored New Partnership for African Development (NEPAD) (2001), which calls for “institutional support in the form of research [centers] and institutes ... [to] boost the production of marketable surpluses.” The focus on institutions as part of a strategy to increase agricultural productivity is worth stressing (Puplampu, 2006). However, the interest in institutions should be tied to capacity or sustainability (Eicher, 1989; World Bank, 1989).

The AU, beyond NEPAD (2001), launched the Comprehensive Africa Agriculture Development Programme (CAADP), initiated a Biosafety Project, and enacted the 2003 African Model Law on Safety in Biotechnology (Zerbe, 2007). The plans were followed by the Africa Science and Technology Consolidated Plan of Action and the Freedom to Innovate policy documents (Juma and Serageldin, 2007; NEPAD, 2006). The latter document, for example, stressed the need to anchor biotechnology and its governance structure to the aims and aspirations of the society and explore new forms of knowledge, calling on research establishments to conform with global advances in science and technology. The African Union designated the Forum for Agricultural Research in Africa (FARA) as a key part of promoting agricultural biotechnology (Steffens, 2007; FARA, 2006).

Another essential institutional aspect of agricultural biotechnology in Africa is the capacity of the various national agricultural research systems (NARS) (Beintema and Stads, 2011; Alene and Coulibaly, 2009; Liebenberg and Kirsten, 2006; Elliot and Perrault, 2006; Puplampu, 2004b). Four main features of the

NARS in Africa can be briefly identified. The first is their institutional set-up. They are made up of institutions and personnel from several areas of agricultural interest and expertise – policy units in agriculture, higher education, specifically researchers from universities, professionals in science and technology policy to environment and women's issues. Most of these institutions are in the public domain and depend on the state for their funding requirements (Cohen, 2005; Cohen and Pinstrip-Andersen, 2002). The level of public funding of national agricultural research in Africa, with the exception of South Africa, has lagged behind that of other developing societies (Alston and Pardey, 2006:18). As the FAO (2004b) correctly notes, public agricultural research institutions have been under severe financial constraints in recent years, partly in light of the changing role of the state in an era of globalization. However, other developing countries, for example, China, India, Taiwan and Korea continue to invest heavily in agricultural research (Ochem, 2006; FAO, 2004b). Theoretically, the changing role of the state opens the door for private sector participation in agricultural research. Yet, except in South Africa, the role of the private sector in agricultural research is minimal in many African countries (Liebenberg and Kirsten, 2006).

Agricultural research systems play a major role in defining the role of agro-biotechnology in any society. Consequently, the nature of the research capacity could serve as a useful proxy in classifying African countries with regard to agricultural biotechnology. Beintema and Stads (2011:11-12) used the level of funding and staff to categorize public agricultural research in Africa. They identified what they called Africa's “Big Eight” countries as Ethiopia, Ghana, Nigeria, Kenya, Sudan, South Africa, Tanzania, and

Uganda. One significance aspect of the “Big Eight” is their regional locations. For example, Ghana and Nigeria, both on the west coast, could serve as centers for regional growth. South Africa, however, is alone in the southern part of the continent.

A second feature of the national agricultural research systems in Africa is their orientation. There is an excessive focus on technical issues and export crops, relative to social issues, or crops for domestic consumption. This orientation has its origins in the history of agricultural research in the Third World (Deo and Swanson, 1991; George, 1986). The focus on technical research is particularly troubling since the success of any agricultural research system calls for close collaboration between technical and social aspects of research (Biggs and Farrington, 1991). A third feature is the human capital of the NARS in Africa. Two major factors are worth mentioning – a quantitative assessment of the areas of specialization and number of qualified staff as well as a qualitative analysis of the physical infrastructure and working conditions, which in turn, are reflections of the state of higher and science education in Africa (Beintema and Stads, 2011; Urama et al., 2010). Many African countries were able to improve the human capital base in the immediate post-colonial period, but only to lose them to the diaspora with the economic crisis that engulfed African countries since the 1980s, due to, among other problems, shortfalls in funding to the research institutions (Tettey, 2006; Tettey and Puplampu, 2005; Puplampu and Tettey, 2000).

Finally, NARS in Africa are over dependent on external multilateral agencies and institutions. As indicated earlier, the World Bank (1989)

initiated agricultural biotechnology in Africa. Several agencies of the United Nations introduced policy documents on the potential of the technology for agricultural development in general and African agriculture in particular (UNEP, 2006; FAO, 2004b; UNDP, 2001; GEF, 2000). The UNEP-GEF project on biosafety has been the most instrumental global initiative to establish a national framework for biosafety in African countries (UNEP, 2006; GEF, 2000). The UNEP-GEF effort, consistent with the Cartagena Protocol, placed specific requirements on countries. One major requirement, in line with Article 23 of the Protocol, was to organize and involve public participation in the deliberations towards a biosafety policy (Jaffe, 2005:307). According to UNEP-GEF (2006b:11) twenty-seven African countries, have completed their National Biosafety Framework (NBF), four countries (Cameroon, Kenya, Namibia and Uganda) have implemented their NBF (see also African Union, 2006). Several African countries are either at the advanced stage of a draft or working on one (Moola and Munnik, 2007).

Beyond the UNEP-GEF program, other external institutions are also involved in establishing the biosafety policy framework in Africa. The notable ones are the World Bank, Britain's Department of Finance and International Development (DFID) and the United States Agency for International Development (USAID). USAID, for instance, through the Initiative to End Hunger in Africa established the Program for Biosafety Systems (PBS) under the auspices of the International Food Policy Research Institute (IFPRI) and coordinated workshops in several African countries including Ghana, Nigeria, Malawi, Mali, Nigeria, Kenya and Uganda (IFPRI, 2006b; Alhassan, 2006). The World Bank was the major

actor in the West African Economic and Monetary Union-sponsored project (on behalf of Benin, Burkina Faso, Mali, Senegal and Togo), as part of the West Africa Regional Biosafety Project (World Bank, 2006b).

Several African countries are involved in different aspects of biotechnology research, mainly production of quality controlled bio-fertilizers, cloning of *in vitro* plants (mainly export crops) and bio-prospecting of new nitrogen fixing species of bacteria (Thomson et al., 2010; Ayele, 2008; Brink, Woodward and DaSilva, 1998). The Kenya Agricultural Research Institute (KARI), through its collaboration with Monsanto, the agro-biotech giant, worked on transforming the sweet-potato to produce resistance to the feathery mottle virus as well as improvements to banana production (using tissue cultured pathogen-free banana planting materials) (Omiti, Chacha and Andama, 2002; Hassanali, 2000). The project also benefited from the assistance of the International Service for the Acquisition of Agri-biotech Applications (ISAAA) as well as funding from the Canadian International Development Research Centre. In Burkina Faso, Ghana, Guinea, Mali, and Nigeria, the introduction of high-yield, drought resistant and early ripening varieties of maize led to impressive gains in production (DaSilva, 2001; Twumasi-Afryie et al, 1999).

Juma (2011:35) posits that tissue culture “has not only helped produce new rice varieties in Africa but has also helped East Africa produce pest- and disease-free bananas at a high rate.” The development saw Kenya's banana production for example, more than doubling “from 400,000 to over one million tons in 2004, with average yields increasing from 10 tons per hectare to 30-50 tons.”

DaSilva (2002) cites the cooperation between the International Potato Centre in Peru and the Uganda National Agricultural Research Organization that led to the introduction and growth of disease-free potato crops in Uganda. Komen, Mignouna and Weber (2000) also examined the extent of biotechnology investment in Kenya, Uganda, Malawi, South Africa, Zimbabwe, Ghana and Nigeria with respect to banana, plantain, cassava, cowpea, maize, sorghum and yams. Pineapple producers in Ghana are using tissue culture to produce crops that will satisfy the quality standards of the export market, and researchers there are also examining how to develop a variety of cocoa that will be resistant to the swollen shoot virus through mutagenesis using gamma irradiation (Essegbey and Puplampu, 2007). In Egypt, researchers have used plant tissue to produce maize and tomato resistant to stemborers and Gemini viruses respectively (Komen et al., 2000; Moawad and Madkour, 2000). Uganda has embarked upon field trials of GM bananas, cassava and cotton (Wamboga-Mugirya, 2010). In terms of actors, the agricultural biotechnology landscape in Africa is occupied by state and non-state institutions. All the illustrations above involve state institutions in the NARS. It is the state institutions that provide the initial entry point for non-state institutions, whether they are multinational corporations whose activities are geared towards profit or non-profit institutions involved in policy advocacy (Cohen, 2005; FAO, 2004b).

Notwithstanding the examples above, there are only three noteworthy African countries involved in the cultivation of agricultural biotechnology crops. The three countries are

South Africa (maize, soybean and cotton), Burkina Faso (cotton) and Egypt (maize) (James, 2010). South Africa, for example, is the only African country among the leading developing countries (China, India, Brazil and Argentina) involved in the cultivation of biotech crops, while Burkina Faso had the second largest proportional increase (126%) in biotech hectareage in the world (James, 2010:6; Juma, 2011). The next two sections examine the time lag in enacting biotechnology policy in Africa and the extent to which farmers engage with the technology.

5.2.3 Agricultural biotechnology policy in Africa – where are we?

The state continues to be the main agent for agricultural biotechnology in Africa. Thus, contrary to globalization, the state plays an influential role in society (Castells, 1997:243). In addressing agricultural biotechnology in Africa, some facts have to be stressed. First, even though Kenya, for example, as part of the UNEP-GEF (2006b) project, completed its National Biosafety Framework (NBF) in 1999, the final Biosafety Bill was signed in February 2009, ten years after the completion of the framework (African Centre for Biosafety, 2009). According to UNEP (2006:13), the four countries that implemented their NBF were able to do so because they were part of “the Pilot Biosafety Enabling Activity project funded by GEF and implemented by UNEP”. This implies that African countries are dependent on external agencies to establish their NBF. While that in itself is significant, it underscores the real possibility of a lack of policy ownership, since it is likely that once the funds for a specific project run out, the survival of the project is also doubtful.

Under the auspices of the UNEP-GEF, a key aspect of initiating a biosafety policy is to establish a National Biosafety Committee (NBC). The NBCs are made up of units and representatives from various sector ministries and agencies; entities that might not necessarily share the same ideas for creating a sound policy on biotechnology or biosafety. The National Agricultural Research System (NARS), like the National Biosafety Committee (NBC), is made up of several sector ministries and units within these ministries. Most of these institutions have different mandates, and are accountable to different sector ministries. For example, universities in the NARS will be under the ministry of education, while agricultural colleges and institutes are accountable to the ministry of agriculture. In such an institutional framework, the nature and commitment to the overriding goal of the NARS cannot be easily accomplished. The issue of the commitment of related officials in sector ministries, coordination and underfunding are prominent features of the NARS in Africa (Beintema and Stads, 2011; Essegbey, 2008). In effect, one factor in the long search for biosafety policy in Africa is the institutional framework for agricultural research (Puplampu, 2010:194)

The problems of commitment exist even when there is a single national agricultural research agency, as in Niger, Togo and Eritrea, or an umbrella organization as in Ghana and South Africa (Beintema and Stads, 2011:2). In Ghana, where the Council for Scientific and Industrial Research (CSIR) (itself made of different research institutions) is in charge of the entire NARS, a “turf” mentality as well as institutional squabbling, personality conflicts is prevalent (Puplampu and Essegbey, 2004). Nigeria created

the Agricultural Research Council of Nigeria (ARC/N), ostensibly to enhance coordination and linkages across research agencies, better relate to researchers and their clients, and deepen synergies in institutional mandates (Flaherty et al., 2010). The move towards a better handling of coordination in Nigeria is a direct result of the desire to establish a new framework for agricultural policy and research in that country, and to offset years of neglect and under-investment in the 1990s. The institutional capacity of both the NBC and the NARS, how each perceives itself and relates to the other, underpin the delay in crafting biosafety policy in Africa.

The commitment and coordination problems are further worsened by the funding regime. The historical dominant presence of the state in NARS was noted earlier. Notwithstanding the restructuring of the state machinery in the 1980s, “the government sector still dominates agricultural research in the region, but its relative share has declined over time. In 1991, government agencies employed 82 percent of full-time equivalent public R&D staff in SSA [Sub-Saharan Africa] on average, but this share had fallen to 73 percent in 2008” (Beintema and Stads, 2011:2). While there are, of course, variations across Africa, there have been some increases in agricultural research funding. In Ghana, the increases were entirely due to increased salary expenditure at CSIR, rather than expanded research activities or greater investment in equipment or infrastructure, while the expenditure increases in Nigeria and Sudan were to compensate for years of underfunding (Beintema and Stads, 2011:11-12). Meanwhile, countries like Brazil, India and China consistently invest in public agricultural research and development institutions compared to Africa as

a whole (Beintema and Stads, 2011:9). Hence, it is not the case that the state, even in an era of globalization cannot fund agricultural policy and institutions. Rather, the African state lacks the political will to fund agricultural policy and institutions (Makinde, 2009).

One enduring feature of state funding of agricultural policy and institutions in Africa is unpredictability. While politicians tout the role of agriculture in the national development effort, promises to release funds are not matched with actual delivery. In Ghana, calls from Parliamentarians to the Ministry of Finance to release funds to augment the national biosafety effort made no difference (Ghana Web, 2005; Alhassan, 2001). In cases where the funds are released, the timing does not make it possible to properly plan and utilize the funds. The lack of political commitment to guide the national development effort is a major impediment to agricultural policy and research planning in Africa. These are clear indicators of an absence of good governance and accountability in state-society relations. In other words, African governments are yet to realize the importance of funding agricultural institutions with the personnel required for the institutions to effectively discharge their duties. The funding question is a fundamental one of how to engender national development in a context of scarce resources and competing needs. No country, either in the global north or south, has an infinite supply of resources. The question then is “how to organize and prioritize scarce resources for optimum outcomes” (Puplampu, 2010:195). Essgebeby (2008) is therefore correct, in an analysis of biotechnology policy issues in Nigeria, Kenya, Namibia, Rwanda, Ghana and South Africa, in arguing that the extent to which African countries can utilize biotechnology and create

the required policy framework will depend on the orientation and priorities of national development planning (Essegbey and Puplampu, 2007). A key aspect of this orientation is the awareness or realization that agricultural biotechnology is expensive, but if properly funded will provide valuable benefits in the long term (FAO, 2004b).

The 1980s and 1990s, characterized by calls for a minimal state, assumed the emergence of considerable private sector participation which would take over the role of the public sector in agricultural biotechnology policy and institutions. However, there is a lag in private sector involvement in agricultural biotechnology policy and institutional development, due to the nature of the market for agricultural research (Puplampu and Tettey, 2000). In general, agricultural policy planning and research in particular are expensive. Private sector involvement in agricultural research and the consequent desire to shape the policy environment for agricultural biotechnology “would be predicated on a perceived profitability, and not necessarily because there is a social good to be derived from it” (Puplampu, 2004:112). Some recent initiatives in Senegal and Côte d'Ivoire suggest a trend that might bode well in the future (Beintema and Stads, 2011:19-20). Large private companies in these countries funded research activities, and the process could well have implications for the nature of the policy process and institutional capacity building in agricultural development. Lately, some African countries (Kenya – coffee and tea; Malawi – tea and tobacco; Zambia – cotton) have instituted commodity levies, which primarily tied to research relating to those commodities, could also have long term consequences for the policy process (Beintema and Stads, 2011:20). Several

conditions are required for any meaningful private sector participation in the policy, institutional and private framework and the broader goal of public support and assistance in accepting agricultural innovations. Specifically, there is the need for a policy environment that strongly protects intellectual property rights, facilitates importing and testing of new technologies, and a tax regime that favors the exemptions and rights of venture capitalists (Alston, Pardey and Piggott, 2006). Since many of the private institutions are likely to be transnational in nature, it is essential that whatever policy environment the political authorities put in place should also pay attention to the interests of local, even if nascent, private agricultural institutions.

Given the never-ending mantra from African leaders that they lack the resources for development, it comes as no surprise that there is a heavy dependence on external sources of funding for policy development, implementation and monitoring. As stated in the previous section, several donors were involved in biotechnology policy development in Africa and used their involvement to influence agricultural biotechnology policies in the region. If institutional capability with respect to biotechnology policy is contingent on the state and the private sector, or commodities for funding which might be unstable or erratic, the funding regime from bilateral and multilateral donors and institutions also has its shortcomings. Donors, like private sector organizations, are selective in terms of their assistance programs. The US Government-sponsored Program for Biosafety Systems and the World Bank West African Regional Biosafety Project are notable examples. According to ETC (2006), the two projects were part of a broader US strategy

to introduce GMOs into the developing world: the timing of the projects and the specific focus on cotton aligned with an agenda to push *Bacillus thuringiensis* (Bt) cotton in West Africa make governments and farmers receptive to the world-wide league of GM producers.

The argument of the ETC (2006) was made at the height of the row between cotton producers in the four African cotton countries (Benin, Burkina Faso, Chad and Mali) and Brazil over US domestic cotton subsidies, which were inconsistent with WTO provisions on agriculture (Jobodwana, 2011; Kaminski, 2011; Kaminski, Headey and Bernard, 2011; Tschirley, 2010; Moseley and Gray, 2008). The projects, from ETC's (2006) perspective, were hegemonic in form and intention. Burkina Faso was at the centre of the West African Regional Biosafety project, because through a Ministerial Directive, the country became the only country in West Africa conducting field trials on Bt cotton (Alhassan, 2006). In the long-run, however, the country was negatively affected by the volatilities in world cotton prices, mainly because of cotton subsidies in the United States and synthetic fibers in Europe (World Bank, 2009b).

Donor funding, mostly from the public sector, is generally tied to a specific project and is short-term; hence it raises the possibility of a discontinuity when the funding period expires, and questions about the long-term commitment required for policy and institutional effectiveness. Furthermore, the nature of the funding regime, whether or not it involves any partnership with the private sector, and the ability of the recipient country to negotiate better terms with the duration of the project, affect donor assistance. Most African countries embarked upon drafting their National Biosafety

Framework because of the availability of external funding from the UNEP-GEF (Gupta and Falkner, 2006). The various national biosafety committees eventually exhausted their funding and were unable to promulgate the policy. The essential point is that “creating a framework is quite different from having capable research institutions” (Puplampu, 2010:195) that will implement the framework. In the midst of bureaucratic and institutional political wrangling, and an erratic and unreliable funding regime from national, international and multilateral development agencies and institutions, many African countries have not been able to enact an effective biotechnology policy and institutions. Consequently, the engagement, outcomes and potential of agricultural biotechnology to transform African agriculture remain just that – a potential. Any discussion of the role and place of farmers has been missing in the debate on agricultural biotechnology in particular and African agriculture in general.

5.2.4 Farmers and agricultural biotechnology utilization: challenges and opportunities

One useful way to address the role of farmers in agricultural policy making in general, and biotechnology research and utilization in particular, is to revisit the nature and organization of the NARS. Historically, the colonial ministries of agriculture were not only understaffed, but also focused on export agricultural crops and technical aspects of agricultural production. The external and technical focus of agricultural institutions and policy were expressed in the agricultural research system. The continuities in colonial and postcolonial practices account for the

contemporary marginal location of farmers in agricultural policy and institutions, including the NARS. To be sure, contemporary African agricultural policy and research institutions have been making an effort to better engage farmers, even though the preference continues to be mostly large-scale farmers in export crop production.

Two noteworthy cases of the interaction between African farmers and agricultural biotechnology will form the basis of the analysis in this section: Bt cotton farmers in the Makhathini Flats of KwaZulu Natal in South Africa, and in Burkina Faso, as well as the New Rice for Africa (NERICA) and rice production in several African countries (Diagne et al., 2011; Dalohoun, Hall and Mele, 2009; Diagne, 2006; Gouse, 2009; Gouse et al., 2005; Thirtle et al., 2003). It must be noted that even though Burkina Faso is not one of the “Big Eight” African countries driving agricultural research, the country's policies, as discussed shortly, account for the origins of the production of agricultural biotechnology cotton. Generally, the variations of biotechnology in agriculture reflect differences in countries relative to biotechnology policy and institutions. Specifically, the two cases illustrate the role and place of farmers in the national agricultural institution and policy making process, the relationship between farmers and the NARS (institutions and research policy), the role of both state and non-state actors, the type of crop and its value to national and international agricultural markets and the type of farmers involved in the production process.

The point of departure of the story of Bt cotton farmers in South Africa and Burkina Faso is the institution and policy on agricultural biotechnology of the respective governments. South Africa,

being the first African country to establish a policy framework, also approved commercial release of GM seeds. In the case of Burkina Faso, a Ministerial Directive authorized the field trials of Bt cotton. It was the presence of an institutional and policy framework that accounted for Monsanto's role in the Bt cotton debate in both countries. Monsanto played a major role in sponsoring South African cotton producers to bring their accounts to a global audience (Munro, 2008; Freidberg and Horowitz, 2004). Through this sponsorship, the farmers presented a compelling narrative on infusing agricultural biotechnology into their farming activities (Glover, 2010). The experiences of the two countries underscore the need for and importance of an appropriate institutional framework in addition to other relevant conditions.

Another important variable is the market for cotton. In South Africa where “most cotton ... is imported, the producer price is closely tied to the international price (because if the local price went up, local purchasers would simply import more of their cotton needs). And the international price, of course, is shaped significantly by subsidies in the global north” (Munro, 2008:264). In effect, the increases in cotton production in South Africa, due to the technological improvements did not translate into increases in income for the small-scale farmers. The argument put forward by Gouse et al. (2005) is that the case of Bt cotton in KwaZulu Natal was a technological triumph, but an institutional failure. It was an institutional failure because the farmers, among other problems, did not have access to credit. Indeed, institutional credit is one of several factors that African governments have to address if farmers are

expected to adopt agricultural biotechnology and benefit from it. Burkina Faso cotton farmers were faced with the reverse of the South African situation, since they have to export their cotton directly into international markets, and were also confronted with the situation of price instabilities and uncertainties. The utility of harnessing biotechnology to produce what farmers are likely to eat should be an integral part of the policy framework. The argument underscores the fact that farmers are not likely to adopt agricultural biotechnology for non-food crops, because if the new crop fails either to produce or capture the market, they will have no source of food or income to buy the food items they need but did not produce. This theoretical argument is supported by an analysis of the New Rice for Africa (NERICA) project.

The Africa Rice Centre (AfricaRice), formerly the West Africa Rice Development Association (WARDA), is one of the agricultural research centers under the umbrella of the Consultative Group on International Agricultural Research (CGIAR). Rice, of course, is a staple food in many African societies, and while domestic production has been rising, there continues to be a shortfall that is filled by imports. In 2009, rice imports cost Africa almost US\$4 billion, a huge figure that could have been invested in domestic production (Seck et al., 2010). Development of the NERICA varieties began in 1991 and the initial difficulties were addressed by 1994 “through perseverance and the use of biotechnology tools such as anther culture and embryo rescue techniques” (Diagne et al., 2011:255). The success of the NERICA project and its implications for food security has been widely acknowledged (Anderson and Jackson, 2005). For example, the Centre and its director (Monty

Jones) won the Consultative Group on International Agricultural Research's (CGIAR) King Baudouin Award and the World Food Prize in 2000 and 2004 respectively.

The essential feature of the NERICA project critical to the current inquiry is the role of the participatory varietal selection (PVS) methodology in the subsequent adoption of the NERICA varieties across Africa, from Burkina Faso and Gambia to Uganda and beyond (Diagne et al., 2011:260). PVS provides an opportunity for farmers to choose from available crop varieties, and the development and dissemination of crop varieties takes account of site-specificity in terms of agronomic and selection variables (Diagne et al., 2011:255). The methodological orientation of the NERICA made a major difference in the widespread utilization of NERICA. This is because, like other African agricultural development programs, it had external donors. These donors included the International Rice Research Institute, research institutes and development agencies in Japan and the United States. The success of the methodological focus of putting farmers first, while not a new orientation, has to be acknowledged and celebrated (Chambers, 1987). The extent to which farmers, specifically small-scale farmers, as end-users of policy and research, participate in agricultural policy and research is essential to outcomes.

The Achilles heel in agricultural biotechnology utilization in Africa is the nature of participation by farmers in agricultural policy making and research (see Box 5.1 on Côte d'Ivoire). Participation is premised on groups taking part in decisions that affect them (Brett, 2003). The motivation behind participation is to engender a sense of ownership and the subsequent

acceptance of a specific policy. Implicit in participation is also a sense of fairness, especially when previous or existing procedures fail to consider the needs of specific and relevant social groups, hence participation could be demanded by law (Innes and Booher, 2004). The importance of participation influenced the framing of Article 23 of the Cartagena Protocol on Biosafety, which calls for consultation among the various stakeholders, public awareness and participation in ongoing discussions on biotechnology. The problem, however, has been the role of farmers in such public consultations, given their

historical neglect in agricultural policy processes and their equally marginal place in technically focused agricultural research systems. The NERICA case shows that when farmers are properly involved in agricultural research, there are positive outcomes. There is no evidence to suggest that farmers will not adopt agricultural biotechnology to improve upon their production practices. However, as the most vulnerable in African agricultural systems, farmers are rational actors who will be concerned about their food security needs when they adopt agricultural biotechnology to produce crops which are

BOX 5.1

Agricultural biotechnology utilization and institutional constraints: the case of Ivorian rice sector

Today, approximately 20% of imports to West Africa consist of food supplies, particularly rice. Côte d'Ivoire imports 753,711 tons of rice per year at a cost of more than 150 million US\$ to achieve food security and meet rice consumption needs (FAOSTAT, 2005). On average Côte d'Ivoire imports more than 50% of its rice consumption needs.

Increased productivity in the rice sector will require that farmers move from the traditional mode of agricultural production to one based on science and technology. There is ample evidence that use of improved seed has been responsible for an important share of world-wide agricultural productivity growth (Tomich et al., 1995; Hopper, 1993). The contrast between the role played by the improved crop varieties in other regions of the world and the very limited use of these innovations in sub-Saharan Africa has motivated numerous studies on issues relating to the adoption of improved technologies. However, in such studies, too much emphasis is placed on individual attributes implying a “person blame” rather than “system blame” situation. This approach seemed to suggest that the entire responsibility for agricultural modernization ultimately rests with the individual.

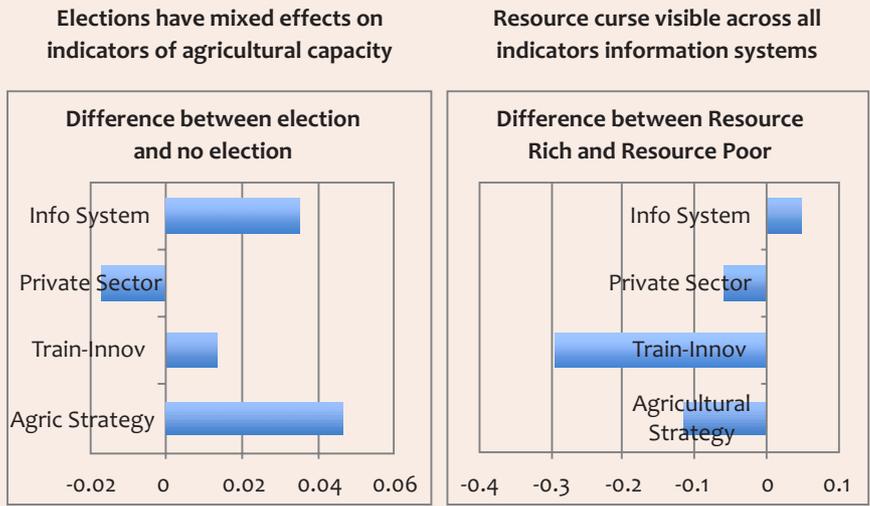
An empirical analysis of findings from surveys conducted in west Côte d'Ivoire in 2008 demonstrates that not only farm and farmers' characteristics but also institutional factors, significantly influence the adoption and intensive use of improved rice varieties (Béké, 2011). Indeed, constraints to the adoption of improved technologies involve undeniably critical factors such as the lack of credit and the deficiency of transportation infrastructures. Smallholders generally are dispersed over wide areas, and infrastructure connecting farms with markets often is poor. In such environment, costs that arise in producing and marketing agricultural products limit modern technologies profitability. Additionally, subsistence agricultural producers in Côte d'Ivoire face significant liquidity constraints that limit effective demand for improved technologies. The overall conclusion deduced from this analysis is that credit constraints and transport costs in accessing agricultural markets have significant negative effects on the adoption of improved rice varieties. Farmers are able to adopt intensively improved agricultural technologies if policies improve their access to credit and reduce transport costs in accessing agricultural markets.

Source: Tomich and al., 1995; Hopper, 1993; Béké, 2011

Farmers' associations are not homogenous entities. They represent different crops (traditional historical export crops and non-traditional exotic crops), and locations (rural or urban). In several national biosafety committees, the farmers represented were those involved in the export of the new non-traditional crops as was the case in Ghana (Puplampu, 2011b:200-201). Finally, the underlying assumptions of participation in the Protocol were problematic (Jaffe, 2005; Jansen and Roquas, 2005). Each country was expected to conceptualize participation in a manner consistent with existing political and socio-

cultural nuances. However, the assumption that each country will have the structure to solicit genuine participation and democratic interaction and outcomes is equally naïve (Rayner, 2003). As the ACI survey data shows, agricultural capacity is more impacted by country characteristics than by democracy, except in the role of the private sector and information systems (Figure 5.2). Better information systems in the whole agricultural value chain can reverse the resource curse. A private sector stronger than the state can sway elections provided there are enabling factors such as technology and infrastructure.

FIGURE 5.2
Relations between agricultural capacity and democracy.



Source: ACI database 2012

5.3 Infrastructure bottlenecks and enablers

An enabling infrastructure environment is central to agricultural development (Gajigo and Lukoma, 2011; Juma, 2011; ITU, 2010; Meinzen-Dick et al., 2010). Infrastructure refers to a range of services drawn from both the public and private sectors – and includes “facilities, structures, associated equipment, services, and institutional arrangement that facilitate the flow of agricultural goods, services, and ideas” (Juma, 2011:84). Examples of infrastructure are: water supply, sanitation, transportation, electricity, telecommunications, irrigation dams and banks. Agricultural infrastructure, thus, encompasses all of the basic services, facilities, equipment, and institutions needed for the economic growth and efficient functioning of the food and broader agricultural markets. Infrastructure serves as the basis upon which technical knowledge can be applied in sustainable development (Juma, 2011:84).

A key objective of this section is to highlight the role of an enabling infrastructure environment in accelerating agricultural development. Indeed, as Juma (2011:84) argues, “Africa's [current] poor infrastructure represents a unique opportunity to adopt new approaches in the design and implementation of infrastructure facilities.” Ndulu et al. (2005:103-104) similarly posit that during “the four decades since 1960, African countries... achieved significantly lower capital accumulation than other developing regions. ... African countries have also largely under-invested in infrastructure against the wisdom that countries which typically manage to invest more, do so particularly in infrastructure sectors.”

Agricultural infrastructure plays an important role especially in the African context where a large percentage of the society depends on this sector for subsistence. The agricultural sector itself also plays a dominant role in alleviating poverty and the overall growth of the agricultural sector and its components such as growth of agricultural employment, income, and output depend largely on the level of investment made in infrastructure. An enabling infrastructure environment reduces costs and enlarges markets for farmers (Ndulu et al., 2005:109). That said, investing in agriculture-related infrastructure requires, amongst others, a research and cooperative extension system that will enhance production, marketing, food safety, nutrition, natural resource conservation, and all other functions of different agencies concerned in the sector.

Some of the reasons for investing in an enabling agricultural infrastructure are:

(a) Infrastructure increases agricultural production and productivity – Gajigo and Lukoma (2011) argue that the infrastructure in the agricultural sector enhances the 'comparative advantages' of that region in which the infrastructural investment is made. As they put it: “[A] major determinant of agricultural productivity growth is infrastructure. In addition to other factors such as human capital, credit markets, extension services, and technology research, the presence of reliable infrastructure increases both output per capita and output per unit of land. It is therefore a key contributor to productivity, mainly by reducing transaction costs in inputs and outputs markets, as well

as better integrating within sub-regions” (2011:1-2). An earlier empirical study by Binswanger et al. (1993) demonstrated that increased marketing infrastructure that includes components such as road facilities enhanced the total agricultural output with the elasticity of 0.20. Juma (2011:85) similarly notes how infrastructure fosters agricultural trade and “helps integrate economies into [global] markets... [And] further represents untapped potential for the creation of productive employment.” Fan and Zhang (2008), in a study on Uganda, also noted the invaluable contribution of infrastructure-led projects to rural development.

(b) Infrastructure reduces cost of production - development of agricultural infrastructure in

a particular region not only enhances agricultural production and productivity but leads to reduction in the marginal cost of production (Gajigo and Lukoma, 2011; Juma, 2011). Ahmed and Hussain (1990) demonstrated that fertilizer use in the agricultural sector increases with the improvement in the quality of roads. It could be argued that the transaction cost – that generally falls outside the cost of input prices – can be one of the major components of the total cost of production in the agricultural sector and that infrastructure plays a dominant role in reducing the transaction cost. Gajigo and Lukoma (2011) argue that cost of infrastructure as reflected in spatial price dispersion can be substantial (Table

TABLE 5.1
Cost of infrastructure as reflected in spatial commodity price dispersion in some African countries

Country	Commodity	Price dispersion * (January to June 2011)
Kenya	Rice	32%
	Maize	39%
Tanzania	Rice	25%
	Maize	37%
Uganda	Rice	14%
	Maize	30%

Source: Regional Agricultural Trade Information Network (2011). *The ratio of monthly price differences in major cities in a country to the monthly average price level of commodity.

Transportation costs incurred by the farmers in a particular region, both for transporting inputs to the field from the place of purchase and transporting the output to the market

place for final sale, can be substantial in the absence of proper transportation facilities. Once the transportation infrastructure has been introduced, the transaction cost may be

considerably reduced, which has a bearing on the total marginal cost of production (Gajigo and Lukoma, 2011; Juma, 2011). This will either result in benefiting the farmers by way of increased 'producer surplus' or it would result in diversion of the additional cost saved towards other productive activities by the farmers that would enhance the overall output and income of the region. As Juma (2011:87) argues, "Transportation is a key link for food security and agribusiness-based economic growth. Roads [are] the most obvious and critical element [although] modern seaports, airports and rail networks are also [critical], particularly for export-led agricultural innovation such as cut flowers or green beans in Kenya" (see also Essegbey and Puplampu (2007) on pineapple exporters in Ghana).

(c) Infrastructure enhances value addition – agricultural infrastructure arguably enhances the level of 'value added' in a region or sector. Increased levels of agricultural infrastructure in a particular region would lead to investment in allied sectors which can produce high value added products through linkage loops. The increased level of capital formation due to the availability of agricultural infrastructure leads to 'derived demand' for investment in the industries that produce value added commodities. For example, increased banking or agricultural training facilities may attract a new kind of investment in areas such as food processing, etc. This would increase the regional as well as sectoral income and employment that will have its multiplier effect.

(d) Infrastructure and the social benefits – the provision of an initial level of agricultural infrastructure, or enhancement of the existing one, may lead to different kinds of cropping patterns that generate some indirect positive benefits or positive externalities/spill-overs. For example, introduction of a new technology such as sprinkler irrigation in a region may reduce the exploitation of groundwater in that region and this would make groundwater available for farmers downstream several miles away.

This would probably save the marginal cost of digging boreholes, preventing failure of wells, etc. that would save considerable cost to the farmers downstream. Also, introduction of a new technology may lead to cropping pattern change that would entail moving from crops that cause soil erosion, to crops that may prevent soil erosion. The secondary effects of soil erosion such as loss of fertility of the top soil, sedimentation of irrigation tanks, eutrophication of lakes, etc. are considerably reduced and this results in a reduction in the social costs or an increase in the social benefits. The Altoona Irrigation Project in Mali is a case in point. Initiated in 2007, the project when completed "will introduce innovative agricultural, land tenure, credit and water management practices, as well as policy and organizational reforms aimed at realizing the office du Niger's potential to serve as an engine of rural growth for Mali. [The] project seeks to develop 16,000 hectares of newly irrigated lands in the Alatoona production zone of the Office du Niger, representing almost 20% increase of "drought-proof" cropland" (Juma, 2011:91-92).

(e) Infrastructure enhances economies of scale – some types of infrastructure may result in increased economies of scale that would increase the agricultural income. The economies of scale are realized when the cost of production of a particular firm declines due to external advantages. Provision of one particular infrastructure for a specific objective may result in satisfying multiple objectives, thereby increasing the economies of scale the production activities. For example, rural electrification designed to provide electricity for the agricultural sector, or a rural road network, may attract small-scale industrial units that also consume electricity, as well as roads, in the production process. The small-scale units in this case need not have additional expenditures on the infrastructure required for consumption of electricity (such as electricity posts, etc.) or roads since that kind of facility is readily available for immediate consumption. This adds to cost saving, and increases the private benefits.

(f) Infrastructure and accelerator effects – it can be argued that a particular type of agricultural infrastructure in one region will have its multiplier as well as accelerated effects in other areas, especially in urban centers. For example, additional areas of land can be brought under cultivation because of construction of an irrigation dam in a particular region. This would lead to increased consumption of fertilizer which would either warrant expansion of the reserved capacity in the fertilizer industry or would require investment in the new fertilizer units in urban areas. This multiplier effect in turn would lead to an increase the investment in the 'producer goods' – such as

machines required for the fertilizer units – putting an accelerator effect into operation. In this way, infrastructure in one area may have cascading effects in other areas, resulting in increased real output and employment.

(g) Infrastructure enhances welfare of producers and consumers – certain types of agricultural infrastructure lead to improvements in both producer and consumer surplus. For example, increased availability of banking operations in rural areas, increased availability of transportation facilities and so on, prevent the 'middle-men' and the money lenders from appropriating substantial amounts of producer and consumer surpluses. The welfare of the producers and the consumers improves due to the fact that increased infrastructural facility brings producers and consumers to a single place, where the producer can get a higher price for his/her products, and consumers can pay a lower price for the same product.

The development of infrastructure such as roads and regulated markets increases the efficiency of both marketing and production since they reduce transaction costs and ensure competitive pricing (Gajigo and Lukoma, 2011; Juma, 2011; Minten, 1999). Minten (1999) documented the relationship between access to infrastructure, output markets and rural agricultural prices using community surveys in Madagascar. The study concludes that the hard infrastructure is an important determinant of the price level, but adding the soft infrastructure on top of it would be more beneficial in terms of reducing the price variability and the resulting food security in the rural areas.

(h) Infrastructure reduces price oscillation – another form of loss of producer and consumer surpluses is the oscillation in the price of the agricultural commodities. When there is a supply shortage and the demand for the commodity is constant, the producer/seller will charge a price equivalent to the 'quasi-rent' thereby extorting a considerable amount of consumer surplus. When there is an excess supply of the same commodity, the market becomes a buyer's market and the price paid by the consumers would be sub-optimal. The price oscillation in this case is attributed mainly to the information asymmetry existing in the market and once adequate amount of investment is made in the communication infrastructure, then this information gap would be removed and prices stabilized.

Gajigo and Lukoma (2011) argue that three main types of agricultural infrastructure are crucial in Africa: transportation, irrigation equipment and post-harvest storage technology. Transportation is critical to enhance connectivity, irrigation facilities relieve the farmer from the constraints of rain-fed agriculture and post-harvest storage facilities ensure that farmers do not suffer losses due to inadequate storage capabilities. As they put it: “countries face huge post-harvest losses: for perishable agro-commodities such as fruits and vegetables, the losses average 35-50 percent of total attainable production, while for grains the losses varies between 15 and 25 percent. Food availability decreases just a few months after harvest because sellers find it difficult to store perishable commodities” (2011: 5; see also Juma, 2011). As Juma puts it, investing in infrastructure “is a critical aspect of stimulating innovation in agriculture. It is also one of the

areas that can, [and should] benefit from regional coordination.” However, in order to attain this, Africa's Regional Economic Communities (RECs) need to engage each other to harness and maximize existing capacities particularly in critical sectors such as “transportation, energy, water, telecommunications [and post-harvest storage technologies]...” (Juma, 2011:112-113).

5.4 Financing agriculture in a changing landscape

The commitment of African governments to agricultural financing does not match the contribution of agriculture to the economy, with its critical importance in poverty reduction and food security. Over the years, government interventions through a multiplicity of credit institutions have not resulted in any significant improvement in financial intermediation. The liberalization of the economy since the introduction of the SAPs in the 1980s has tended to exacerbate the financial problems of the agricultural sector. Government funds available for lending have dwindled considerably. The cost of borrowing has escalated substantially and the financial outlay for agricultural enterprises has multiplied several-fold irrespective of the scale of the operation, due to the ravages of inflation. Consequently, only a limited number of entrepreneurs are in a position to meet their financial requirements. At the same time, international development assistance to agriculture has been declining – and arguably more so with the current financial crisis.

There are many documented reasons to explain the decline in agricultural assistance to Africa. These include new donor priorities that have emerged in recent times that address issues of

social protection, health and HIV/AIDS, development policy lending, anti-corruption and public administration amongst others. Large scale agriculture projects have fallen out of favor. New style agriculture projects have emerged that require less investment. These typically deal with community-driven development (CDD) irrigation systems, micro credit, research, resource rehabilitation and land management. Agriculture seemingly has not been prioritized in many Africa countries. This, combined with the twin issues of expanding urban poverty and the quality and high cost issues of agricultural projects, has exacerbated the decline in funding. The situation is exacerbated by market failures in the financial sector, which persistently place farmers at a disadvantaged position in securing access to financing that is required for operating profitable agricultural enterprises.

The difficulty African agricultural financing is facing is not unconnected with the liberalization of the economies, including the financial sectors of many countries. Lending to agriculture, for example, has been de-controlled. Interest rates are currently determined on the basis of market fundamentals, with commercial banks setting their lending rates based on central bank rates, the risk levels, costs of doing business, profit mark-ups and other considerations. The result is very high lending interest rates for the private sector in general and agriculture in particular. Rates sometimes reach double digits and are very unattractive to agricultural sector investors. This development has accounted for the low rate of participation of commercial banks in agricultural financing in recent times. Moreover, monetary policies in many African countries provide a risk-free haven for commercial banks to invest. The open market operations of the

central banks, which involve the mopping up of excess liquidity through the issuance of government securities, in an attempt to control inflation, have indirectly affected the flow of investment funds to the agricultural sector. More often than not, the biggest buyers of such securities are commercial banks. In such cases, what should have been loaned out to the private sector by banks is instead invested in risk-free government securities. This leads to the crowding out of bank lending to the private sector, making it even more difficult for highly risky sectors like agriculture.

The foregoing raises the question as to why it has been difficult to design innovative approaches for the provision of adequate finance for agricultural development in Africa. Besides, what is the nature of financing of agriculture in Africa and the implications for food security? What factors militate against sustainable investment and financing of agriculture? Has there been satisfactory progress in government expenditure allocation to agriculture? What are the paradigmatic shifts required for effective financing and transformation of the agricultural sector to improve food security in Africa? What are the prospects for public-private partnerships (PPP) in funding the agricultural sector? What other funding innovations could be devised and what are the capacity building implications for the agricultural sector?

5.5 Needs and mechanisms for agricultural finance in Africa

In spite of recent advances in technology, the financial sector has not been able to provide the required services for the transformation of the agricultural sector. Each of the sub-sectors of

agriculture – crop, livestock, fisheries and forestry – is in dire need of financial services. The services required vary by type and location of enterprise as well as scale of operation. In general the need for finance will be in the form of accumulation of funds (savings), working and investment capital, money transfer and risk mitigation (insurance). According to MFW4A (2011), secure savings deposit facilities are needed to meet contingency expenditure and to smooth cash flows. Farmers may wish to accumulate funds for significant productive investments, both seasonal (e.g. fertilizer, improved seeds, labor, stock) and medium term (e.g. machinery, motive power). Security of savings deposits is also fundamental to building an effective bridge between the mass of small farmers and the financial sector. Furthermore, savings deposits can assume the important function of serving as collateral support to borrowing. Although efforts are being made by both donors and governments to increase agricultural investment in Africa, the sector remains grossly undercapitalized. Farmers and other stakeholders in the value chain need credit in order to address the issue of poor capitalization, low level of use of modern inputs and low productivity.

The range of loans for which an effective demand exists includes short-term (seasonal) loans of periods less than one year, medium term loans for periods of up to five years and long-term loans of between six and ten years. Short-term loans are designed to meet important financing needs in the agricultural production cycle including the provision of advances for crop and livestock intakes, production requirements, production credit and other related services that include the handling, manufacturing, packing, processing, storage,

transport and marketing of agricultural products. Medium and long-term loans are granted for the support of investment in processing and farm machinery, in water supply and irrigation equipment, in livestock structures and fencing, in fish farming (ponds and cages) and in farm forestry development. Long-term loans may be in the form of establishment loans to farmers for perennial crops. These loans are typically used for establishing sugar cane plantations, citrus and deciduous fruit orchards, timber plantations and vineyards for table and wine grapes. They can be designed specifically for acquiring farming equipment, implements, farming vehicles, livestock, improvement of structures and irrigation systems.

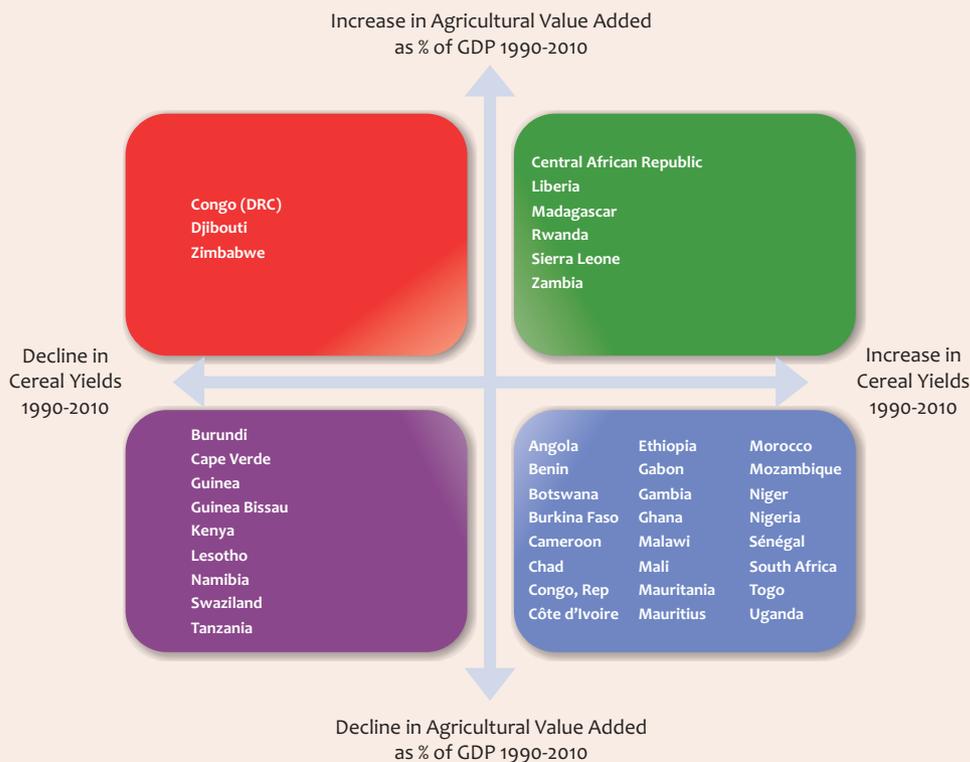
Agricultural financing should also provide opportunities for money transfer within an economy or internationally, whether for production activities or international trade. Such transfer is particularly important given the fact that agricultural activities are time-bound and delays may have adverse consequences on farm operations. Money transfer is very crucial in meeting the financial needs of investors in rural areas, which constitute the domain where farming is carried out. Many partners with whom the rural dwellers have to transact business live in urban areas. Transactions can go on at reduced cost and in a timely fashion if there are opportunities for money transfer. The advent of cell-phone banking (also known as mobile money) has transformed the money transfer landscape across Africa, lowering the cost of making such transfers and increasing greatly the convenience of doing so. The financial system and the telecommunication sector should have sufficient confidence and trust building mechanisms so that the masses of the rural producers and other business enterprises can

benefit from such services.

Furthermore, since agriculture involves a very high level of risk mitigation measures are needed in order to further encourage investment, both on-farm and further down agricultural value chains. Traditional techniques for managing risk; for example, inter-cropping species with different moisture requirements, staggering of planting (even in rain-fed agriculture), inter-seasonal on-farm food storage and maintenance of a contingency savings fund, are all important traditional techniques. The need to use financial mechanisms for risk management is clear, in view of the rising levels of investment and involvement of the financial sector. The insurance market is still not properly developed across the continent. However, there are a few countries (e.g. South Africa and Nigeria) where

insurance against losses in agriculture – crops and livestock – has been formalized and operational over a long period of time. According to MFW4A (2011), there are also a number of other countries where weather index insurance is being pioneered (e.g. Malawi and Kenya). Availability of agricultural insurance services will help farmers cope with the risky nature of agricultural enterprises. It gives the poor a sense of security that allows them to dare to pursue profit-oriented activities and hence to borrow, since the income shock when insurance claims are settled will be minimized. A strategy of linking insurance with credit provision will ensure that lenders have better loan recovery performance, and this guarantees the viability of the credit institution. Figure 5.3 shows variation in value-chain as share of GDP against cereal yields for the period 1990-2010 for a number of

FIGURE 5.3
Variation in value-chain as share of GDP against cereal yields selected African countries (1990-2010)



Source: Agricultural value added as a share of GDP and cereal yields per hectare from World Bank Data Finder. All other data from ACI database 2012.

Due to a number of factors including a high incidence of poverty, low savings and harsh economic conditions, it has been difficult for farmers to rely on equity capital to meet their needs as specified above. They have therefore continued to seek debt capital from various sources including informal and formal sources. The following describes the various mechanisms through which they have access to credit and other financial services.

5.5.1 *Mechanisms for agricultural finance*

The formal approach to agricultural financing in Africa has largely been supply-led and efforts seem to have been concentrated on the use of credit for the promotion of output expansion. The producers operate small-scale enterprises that rely on the rural informal sector for financial support. Where state-owned institutions are set up to supply credit, the smallholders are usually rationed out of the market through cumbersome lending procedures and high transaction costs. Thus in examining the state of agricultural financing in Africa in this section attention will be focused on both the formal and informal finance.

- **Informal Finance:** By definition, informal finance operates outside the purview of the legal, fiscal, regulatory and prudential framework of the monetary and financial authorities. In many developing countries, a large number of rural dwellers rely on the informal sector for their financial services on account of its relatively low information and transaction costs, ease of access to low-income groups, timeliness of operation, simplicity and flexibility in financial procedures. Indeed, informal finance is much more extensive and diverse than formal finance and accounts for most of the financial

services, other than term finance, provided to the rural sector. Across much of Africa countries, formal rural credit accounts for less than 10% of total credit disbursed (Popiel, 1994).

Studies on informal finance in Africa have demonstrated that both in the urban and rural areas, the informal sector has been a veritable source of credit for production and consumption purposes (Olomola, 2000; Aredo, 1993; Hyuha et al. 1993; Seibel, 1986; Tapsoba, 1981). It is evident from the studies that the continued relevance of the sector depends on simplicity of lending procedures, the speed of operation, and liberal loan conditions including the waiver of collateral requirement. Nonetheless, there are some inherent drawbacks in economies of scope and scale, maturity transformation, spatial transfer of savings, predominance of cash transactions and shallowness of intermediation.

- **Budgetary Finance:** Although agricultural spending in Africa has been rising, it has generally performed below expectation as an effective instrument for sustained growth and food security. Public expenditure on agriculture, which was virtually stagnant over the 1980s and 1990s, more than doubled between 2000 and 2005 to nearly US\$9 billion (World Bank, 2007b). Over the same period, the share of agricultural expenditure in agricultural GDP rose from less than 4% in 2000 to more than 6 percent in 2005. There are large variations across countries in Africa, nevertheless. Ghana, Kenya, Malawi, Morocco, Togo, and Zambia, for example, experienced negative growth rates of agricultural spending between 1980 and

2005. On the other hand, Burkina Faso, Ethiopia, Nigeria, and Tunisia saw high growth rates of over 8 percent in the same period, having accelerated largely after 2000 (World Bank, 2007b).

5.6 Progress towards 10% budgetary allocation to agriculture in Africa

There are significant variations in the extent to which African countries have complied with the 2003 Maputo Declaration (NEPAD, 2009). For example, the 2007 AU/NEPAD survey showed that 50% of African countries devoted less than 5% of their national expenditure on agricultural development (NEPAD, 2009:1). However, the same study also noted that 28% of the countries (Benin, Chad, Mauritania, Nigeria, Sao Tome and Principe, Sudan, Swaziland, Uganda and Zambia) were on track to meet the target, while the number of countries spending more than 10% actually increased from 11% to 22% in 2003 and 2006 respectively (NEPAD, 2009:2). Countries in the latter group include Comoros, Ethiopia, Madagascar, Malawi, Mali, Niger and Zimbabwe. Other studies on budgetary allocations to agriculture in Africa continue to show variations (Fan, Omilola and Lambert, 2009). These variations, some of which are instances of significant policy success, also demonstrate differences in the extent to which CAADP can bring about the required policy and institutional changes for African agriculture (NEPAD, 2010; Omilola et al., 2010).

As of 2009, only eight countries—Burkina Faso, Ethiopia, Mali, Malawi, Ghana, Niger, Senegal and Zimbabwe—had reached or surpassed the 10 percent stipulated in the Maputo Declaration. Sixteen other countries (Benin, Chad,

Madagascar, Mauritania, Mozambique, Namibia, Nigeria, Sudan, Swaziland, Tanzania, The Gambia, Togo, Tunisia, Uganda, Zambia and Zimbabwe) reached expenditure shares between 5 and 10 percent while 14 countries (Botswana, Burundi, Cameroon, Central African Republic, Congo Democratic Republic, Cote d'Ivoire, Egypt, Gabon, Guinea Bissau, Kenya, Lesotho, Mauritius, Morocco and Rwanda) devoted less than 5 percent of their total budgets to the sector (Fan et al., 2009). The inability of the African continent to substantially raise the level of their agricultural investments may have serious implications for poverty reduction and food security. Recent estimates by IFPRI indicate that in order to achieve MDG1, the continent will need to boost agricultural spending by \$13.6 billion 2007 dollars annually from 2008 to 2015, with a cumulative total of \$95.7 billion. This suggests that the continent will need to increase its agricultural spending by at least 20 percent per year (Fan et al., 2009).

5.7 Credit Flow from Commercial Banks

Agricultural financing by commercial banks in Africa is grossly limited. The banks regard agriculture as a high risk sector and continue to clamor for special incentives which will make lending to the sector more attractive. Many countries have designed various incentives to encourage commercial bank lending to agriculture. These include insurance policies as well as fiscal and monetary policy measures backed up in some countries with appropriate legislation. For example in the UEMOA countries, there is the law on “Groupement d'intérêt économique” which is a piece of legislation that confers legal status on even small groups bound

by common economic interest. In some cases, reminded of their responsibility to society, banks have been persuaded to set aside funds (e.g. 10% of profits before taxation), to finance small-scale enterprises (FAO, 2004c). In Nigeria, the government established the agricultural credit guarantee scheme (ACGS) in order to induce commercial banks to increase their lending to agriculture. It has been possible to leverage substantial commercial bank financing to Nigerian agriculture over the years through the instrumentality of the ACGS (see Box 5.2). Nevertheless, the participation of commercial banks has been limited. Commercial banks established in Nigeria within the last ten years are far more reluctant to lend to agriculture than the older banks. Although the use of loan guarantee has a fairly long history in some parts of Africa its adoption has not been widespread. Recently AGRA has introduced the use of loan guarantees in some parts of Africa and this has started to show successes in leveraging commercial banks to lend to agriculture, especially in East Africa. With the use of \$16 million in loan guarantees for commercial banks, AGRA has been able to leverage \$170 million in market-based and affordable loans for smallholder farmers and agricultural value chains that support them in Tanzania, Uganda, Kenya, Mozambique and Ghana (Adesina, 2009).

To increase the flow of credit from commercial banks in Africa especially for the benefit of smallholders, both the farmers and the bankers need substantial skill upgrading to fully understand the business orientation of agriculture in all its ramifications. The farmers are grossly financially illiterate while the staff of commercial banks lack the requisite expertise in agricultural financing and agribusiness

management. Whereas many public and private agencies are ready to provide training for the farmers (and they in turn are ready to learn all the time), the banks are in a world of their own – pursuing corporate customers in ostensibly risk-free zones and ignoring the fact that agricultural financing can provide good business given the right orientation, innovation and management strategies. Over the years, the banking system has failed to design appropriate products to serve agriculture, to address the perceived risk in the sector and to exploit the monumental resources in the sector to their own advantage, especially in terms of improved profitability, enhanced capital base, portfolio diversification and viability. In Nigeria for instance, the agricultural market has not unleashed any hardship on the banking sector compared to the aftermath of the collapse of the capital market in that country in 2009. The banks prefer margin loans for operators in the capital market, while discriminating against agriculture. Some of them were destabilized, distressed, and collapsed completely due to exposure to risk in the capital market, as well as associated management inadequacies. The capital market crisis in Nigeria over the past three years has demonstrated clearly that bank lending risk is not limited to agriculture, and no bank has suffered erosion of its capital base due to agricultural lending that can be compared in any way to the heavy financial losses and loss of customers' confidence arising from exposure to risks in other sectors of the economy. Arguably therefore, it is an error of judgement on the part of any bank in Africa that ignores the financing of agriculture – a sector which provides employment for about 70% of the population and accounts for a third of GDP.

BOX 5.2***Nigeria's Agricultural Credit Guarantee Scheme: A Boost to Commercial Lending***

In Nigeria, Act 20 of 1977 established the Agricultural Credit Guarantee Scheme Fund (ACGSF) which started operation in 1978. The principal objective of the scheme was to facilitate the provision of credit to farmers by providing guarantees to participating commercial banks for loans granted to farmers in accordance with the scheme enabling act. The setting up of the ACGSF was predicated on the unwillingness of commercial banks to give loans to smallholder farmers for reasons of high default rate on loan repayment and therefore high risk of repayment. This was compounded by lack of collateral for banks to fall back on in case of default and the high cost of administering low unit value loans to farmers who remained widely scattered. The ACGSF had an initial authorized capital of ₦100.00 million. This was reviewed upward to ₦1.00 billion in 1999 and then ₦3.00 billion in 2000. This fund was meant to provide cover to commercial banks to the tune of 75% of any net default, which might arise from loans given to farmers. The financial risk of default in loan repayment was to be borne by the ACGSF. The scheme required commercial banks to give 10% of their profit before tax to farmers as loans. Any defaulting banks were to be penalized by the Central Bank of Nigeria (CBN). In addition, commercial banks were required to have a certain percentage of their branches in rural areas where farmers can gain easy access. By 2004, out of 25 universal banks in Nigeria, 11 were participating in the Fund. In addition, five out of the 669 eligible community banks, now micro credit finance houses, have joined the scheme.

As at 2009, the CBN guaranteed a total of 53,639 loans valued at ₦8.35 billion thereby bringing the cumulative loans from the inception of the scheme in 1978 to 647,351 valued at ₦34.41 billion. The scheme has made modest contribution to food security in the country since the loans were devoted to the cultivation of vital food commodities including comprising crops, livestock and fisheries. A sub-sectoral analysis of the loans guaranteed shows that food crops got the highest volume of 44,672 loans valued ₦5.52 billion followed by livestock with 3,789 loans valued ₦1.73 billion and fisheries with 9,612 loans valued ₦1.51 billion. Cash crops had 16,693 loans valued ₦0.82 billion, while mixed farming and others had 95 and 539 loans valued ₦0.01 billion and ₦0.09 billion respectively.

Source: Olomola, 2011

The establishment of agricultural development banks (AgDBs) is another common approach to agricultural financing in many African countries. Except in the case of Banque Nationale Agricole in Tunisia, Farmers' Commercial Bank in Sudan, Banque Nationale de Développement Agricole in Mali, Agricultural Bank in Zimbabwe and a few others, financial services provided by banks across Africa generally tend to be limited to the provision of credit. As shown in Table 5.2, AgDBs have been in existence for a long time, and are largely owned by the government. They were funded by resources from the government and donors who also provided technical assistance (Giehler, 1999). Their performance and impact

were not monitored over a long period of time. When donors finally did evaluate their support to AgDBs, many cut down or even stopped their assistance. In recent years, there has been a tendency to ignore AgDBs in programmes of rural and microfinance systems development. According to Seibel et al. (2005), AgDBs are weak or distressed in the majority of African countries. They fail to mobilize savings and domestic capital market resources. Repayment rates are low and transaction costs high. Moreover, there has been a lack of supervision by regulatory agencies and donors. As a result, many AgDBs are unsustainable, and their outreach and growth is restricted.

TABLE 5.2
The Spread of Agricultural Banks in Africa

Region	Name of Bank	Year Established	Type	Government Ownership
NORTH AFRICA	Banque de l'Agriculture et du Développement Rural Algeria	1982	DB	100
	Banque Nationale Agricole Tunisie	1959	CB	65
	Agricultural Bank of Libya	1957	DB	100
	Principal Bank for Development and Agricultural Credit, Egypt	1931	DB	100
	Caisse Nationale de Crédit Agricole (CNCA), Morocco	1961	DB	100
EAST AFRICA	Agricultural Finance Corporation Kenya, AFC	1963	DB	100
	Centenary Rural Development Bank Ltd (CERUDEB), Uganda	1983	DB	100
	Development Bank of Ethiopia, DBE	1970	DB	100
	Farmer's Commercial Bank, Sudan, FCB	1998	CB	0
	Agricultural Bank of Sudan, ABS	1957	DB	100
WEST AFRICA	Agricultural Development Bank Ghana	1965	DB	100
	Banque Agricole et Commerciale du Burkina, Burkina Faso	1980	DB	80
	Nigerian Agricultural and Co-operative Bank Ltd Nigeria, NACB	1973	DB	100
	Banque Nationale de Développement Agricole Mali, BNDA	1981	CB	0
	Caisse Nationale de Crédit Agricole du Sénégal, CNCA	1984	DB	100
SOUTHERN AFRICA	Agribank of Namibia	1991	DB	100
	Land Bank South Africa	1912	DB	100
	Agricultural Bank of Zimbabwe	1999	CB	100

Source: FAO AgriBank-Stat, <http://www.fao.org/ag/ags/agsm/banks/index.htm>

Note: DB = Development Bank, CB = Commercial Bank

In most cases, these banks' contribution to poverty reduction has been minimal. Many are technically bankrupt and a number of them have actually been closed. Nonetheless, some of them have undergone considerable reform and they continue to be major providers of rural and microfinance services in most countries through their branch network.

For instance, in Nigeria, the Bank of Agriculture (BOA) is the nation's main agricultural and rural development finance institution. As a development finance institution, it is govern-

ment owned (CBN 40% and Federal Ministry of Finance 60%), and supervised by the Federal Ministry of Agriculture. The Bank was incorporated as Nigerian Agricultural Bank (NAB) in 1973, and in 1978 was renamed Nigerian Agricultural and Cooperative Bank (NACB). Subsequently in 2000, it was merged with the People's Bank of Nigeria (PBN) and took over the risk assets of Family Economic Advancement Programme (FEAP) to become Nigerian Agricultural Cooperative and Rural Development Bank Limited. In November 2010 the bank was

renamed the Bank of Agriculture Limited (BOA). The existence of this bank has not led to any significant improvement in the delivery of agricultural finance services over the years. Agriculture is the largest employer of labor (60%) and also the largest contributor to the national GDP in Nigeria (42%). However, agricultural credit as a percentage of banks' total credit in Nigeria was 1.4% in 2008 and has averaged 2.4% between 2008 and 2010.

If AgDBs are to contribute meaningfully to agricultural financing, they have to be licensed to operate as commercial agricultural banks and not as parastatals of the ministries of agriculture as is currently the case in some countries. Moreover, they need to be depoliticized, restructured and recapitalized. Part of the restructuring will involve the creation of savings functions and inclusion of other financial services in their operations. For instance, since its establishment, the agricultural bank in Nigeria focused only on credit disbursement without any provision for savings and other financial services for its clients. It has also relied largely on the government as the source of its loanable funds. Apart from their commercial orientation, AgDBs should also diversify their clients so that they can provide services for various actors along the agricultural commodity value chain. In terms of the financial service delivery, they have to move in the direction of the Agricultural Bank of Zimbabwe Limited, which provides commercial, retail, corporate, and international banking services in Zimbabwe. The agricultural bank in Zimbabwe offers agricultural loans, treasury, bridge finance provision, advisory, savings and current accounts, overdrafts, letters of credit, order financing/invoice discounting, bank guarantee, investment, certificates of deposit,

foreign currency dealing, offshore financing, and mail transfer services. This holistic approach to financial service delivery is required for the transformation of agriculture in Africa.

5.8 International alliance for financing African agriculture and food security

Many African countries have also relied on financial support from international financial institutions to address the inadequacies of their financial systems in financing agriculture and food security. Indeed, the focus of the African Union, NEPAD and G20 on food security and the unmanageable global food price crisis have tended to move agricultural finance on top of the African and international development agenda. Agricultural production needs to increase by 70% by 2050 to feed the world, while climate change and urbanization will heavily reduce the area of cultivable land. One key to this problem lies in increased output and productivity of African agriculture. Arguably, facilitating access to finance to fund the growth of African agriculture is one of the greatest challenges for stakeholders with an interest in both financial and agricultural sector development in the continent. It is therefore, not surprising that African governments, G20 members, private institutions and development partners are teaming up to enhance finance for food and agricultural development. Recently there are two major parties driving the alliance: namely – the G20 Sub-group on Agricultural Finance and the Africa-wide Task Force on Agricultural Finance, initiated by the partnership for 'Making Finance Work for Africa' (MFW4A).

The Partnership for MFW4A, African

governments, private institutions and development partners have gathered to form a comprehensive, Africa-wide Task Force on Agricultural Finance. The Task Force is closely linked to the African Union Commission and NEPAD Planning and Coordinating Agency (NPCA), as drivers of the CAADP agenda, as well as the AfDB and AFRACA (the African Rural and Agricultural Credit Association). Development and private partners such as the World Bank, AFD, UNCDF, FAO, IFAD, USAID, German Development Cooperation, FinMark Trust, AGRA and Stanbic Bank are supporting the Task Force. The targeted results are clear guidelines on policies and practices geared to supporting substantial increases in investment in African agricultural sectors. The agreed guidelines are to be synthesized in one major African Agricultural Finance Policy paper. It is expected that the guidelines will jointly be incorporated by the AUC and NPCA as part of the CAADP investment plans to be used by the G20 and taken up by African governments and development partners in the continent.

5.8.1 Global partnership for agriculture and food security (GPAFS)

The Global Partnership for Agriculture and Food Security (GPAFS) is another funding mechanism, albeit focused on providing a response to the high food prices, as well as more broadly toward food security and agriculture. GPAFS is a multilateral financing mechanism, which allows for the immediate targeting and delivery of additional funding to public and private entities to support national and regional strategic plans for agriculture and food security in poor countries. African leaders have reacted positively to the GPAFS initiative suggesting that CAADP plays a crucial role in view of the need to

sustain long-term food security in Africa (Mkandawire, 2009). In this connection, emphasis is to be placed on key areas such as improved volume and quality of investment in agriculture, knowledge and information support and business partnerships with emphasis on private sector financing.

5.8.2 Support from international finance institutions

The aforementioned notwithstanding, the World Bank is still the biggest source of funding for African agriculture. World Bank's African agricultural funding fell as low as US\$ 200 million in 2001 but rose to US\$ 685 million later in 2006/07. IFAD's funding of African agriculture has also increased at a steady pace from US\$ 150 million in 2002/03 to US\$ 234 million in 2006/07.

5.9 Agricultural finance constraints in Africa

Although sustainable access to financial services—that is savings, credit, payments, and insurance—contributes to economic growth and poverty reduction, such access is highly restricted in many African countries. Access to financial services is lowest in Africa. Less than one percent of commercial lending goes to agriculture (Varangis, 2010). Less than 1% of farmers in Zambia, and less than two percent of the rural population in Nigeria, have access to credit from formal financial institutions.

Financial constraints are more pervasive in agriculture and related activities than in many other sectors, reflecting both the nature of agricultural activity and the average size of firms. Financial contracts in rural areas involve higher

transaction costs and risks than those in urban settings because of the greater spatial dispersion of production, lower population densities, the generally lower quality of infrastructure, and the seasonality and often high covariance of rural production activities. Thus, banks and other traditional for-profit financial intermediaries tend to limit their activities to urban areas and to more densely populated, more affluent, more commercial areas of the rural economy. For effective delivery of financial services in the agricultural sector there is need to understand the constraints faced by lenders and borrowers and those imposed by the forces of nature and the market as well as governance of the financial transactions. Several constraints derive from policy failures, while others are sector-specific risks, administrative constraints and operational bottlenecks.

(a) Policy failures and institutional weaknesses – the agricultural sector has been poorly served by the financial system partly on account of the unfavorable policy environment. Many countries lack an enabling environment for efficient operation of the financial system. The economies are characterized by weak regulatory regimes,

poor physical and financial infrastructure, and policies that repress financial market development. It is expensive to provide financial services in rural areas, which are typically less dense in economic activity, have poorer infrastructure, and are more subject to risks from weather and agricultural price changes than in urban areas. Furthermore, financial institutions often have a weak institutional capacity for providing financial services in rural areas. Besides, operators within the financial sector often display limited understanding of the agriculture sector, and this greatly enhances their perception of the risks involved in financing the sector.

(b) Supply and demand-side constraints and market failures – supply and demand-side constraints refer to obstacles faced by lenders and borrowers in the financial system. A clear distinction between these sets of constraints is important in the sense that it can facilitate the design of remedial measures including identification of capacity building needs. The various obstacles are presented in Table 5.3. Clearly, intervention strategies aimed at enhancing the performance of agricultural finance are not

TABLE 5.3
Obstacles Faced by Borrowers and Lenders

Obstacles Faced By Borrowers	Lenders Obstacles
<ul style="list-style-type: none"> • They lack personal capital. Most first-generation farmers, particularly beginning farmers, have little or no personal equity and very limited cash flow. • They are unable to convey farm production knowledge or management experience. • Their personal credit histories are poor or insufficient to secure loans. • They lack business plans and the ability to project realistic cash flow. • Weak farmers organisations and other chain actors • Poor farmer access to markets 	<ul style="list-style-type: none"> • Decline in numbers of financial institutions providing agricultural loans. • Decreases in lender staffing levels; • Fewer staff with agriculture expertise even in rural areas • Lenders' unwillingness to venture outside their specialty areas.

Source: Olomola, 2011

(c) **Stringent terms and conditions of financial products** – the credit market in agriculture is encumbered by operational and administrative inadequacies and exploitative tendencies of financial institutions. These include, (i) stringent loan terms and conditions set by financial institutions, (ii) negative attitude of financial institutions, (iii) high interest rates, (iv) inadequate capacity to offer services, (v) inappropriate financial products and services. Other constraints of a general nature include poor agricultural statistics and information systems and an underdeveloped property rights regime. For instance, farmers cannot use land as collateral for loans.

An evidence of market failure in the financial sector has been that private banks have failed to provide appropriate credit and financial services to small family farms and rural areas. The agricultural credit market is beset by several imperfections including market segmentation, covariate risk, scarcity of collateral, information imperfections and mass illiteracy of clients. The widespread information asymmetry often leads to problems of adverse selection and moral hazard, which underpin the reluctance of commercial banks to lend to small-scale farmers (Olomola, 1996, 1999). Adverse selection arises when the lenders do not

know the particular characteristics of borrowers, especially in terms of uncertainties about a borrower's preferences for undertaking risky projects. In the case of moral hazard, the main problem is that borrowers' actions are not discernible by lenders. This heightens the risk of default in the sense that individual borrowers may be lax in efforts to make the project successful or they may change the type of project that they undertake.

(d) **Agricultural sector-specific risks** – the sector-specific risks can be discussed under seven categories namely, (a) Production and yield risks, (b) market and price risks, (c) financial risk, (d) legal and environmental risks and (e) risk of loan collateral limitations, (f) human resource risk and (g) risk of policy instability. Details of the various manifestations of these risks are presented in Table 5.4. These forms of risks are not peculiar to Africa with the exception of policy risk. They are characteristic of agriculture in many parts of the developed and developing countries. In the USA, the risks are also endemic but they are being vigorously addressed in various ways. Some of the strategies adopted are also presented in Table 5.4. Again, the exception here is policy risk which is a major problem in the African context. Many of the mitigation strategies are generic and can be adapted to address relevant

TABLE 5.4
Agricultural Risks and Mitigation Strategies

S/N	AGRICULTURAL RISK	RISK-MITIGATION STRATEGY USED BY SMALLER FARMERS
1	<p>Production</p> <ul style="list-style-type: none"> • Weather, including drought, freezes, excessive rainfall at harvest • Pests, including insect and disease damage 	<p>Enterprise and crop diversification</p> <ul style="list-style-type: none"> • Technology to protect crops (season extension) • On-farm production of as many inputs as possible— e.g., fertilizer, hay • Knowledge of other production in area or cooperation with other farmers • Production of what grows well— skills and soils • Access to variety of seeds, locally adapted varieties
2	<p>Marketing</p> <ul style="list-style-type: none"> • Price risk due to increases in supply, or changed demand • Loss of market access due to the relocation or closing of a processing plant • Loss of marketing power due to small size of farm sellers relative to buyers, etc • Lack of market information. 	<ul style="list-style-type: none"> • Market plans • Informal cooperatives/relationships • Up-front contracts • Internet savvy • Multiple markets • Mix of wholesale and retail markets • Online wholesale lists with support for aggregation and distribution • Demand forecasting • Testing markets before making huge investment • Customers as personal references or brokers • Knowledge sharing with other farmers and through farm organizations
3	<p>Financial</p> <ul style="list-style-type: none"> • Production risks and price risks from above • Inflation, especially cost increases on key inputs • Changes in interest and exchange rates 	<ul style="list-style-type: none"> • Family expenses control • concessional loans, grants, Individual Development Accounts (IDAs), micro-financing • Use of sustainability practices as a way to cut costs • Off-farm income • Leased or creative farm tenure deals to reduce expenses • Bootstrapping farm growth for few years/investment of sweat equity • Focus on the money makers and those that support them • Tax filing and schedules that are appropriate • Boundaries between family and farm expenses • Debt reduction in good years to increase solvency • Debt pre -payment or establishment of capital reserve fund to enable a move into new arena • Improved understanding of the difficulties of undercapitalization
4	<p>Legal/Environmental</p> <ul style="list-style-type: none"> • Tort liability — being subject to a civil suit — is of special concern to direct marketers • Legal risk also relates to environmental liability and business structure 	<ul style="list-style-type: none"> • Use of sustainable practices to limit environmental risks • Knowledge of regulatory approval bodies and processes • Knowledge of food safety regulations • Knowledge of labor rules and regulations, i.e., housing and wages
5	<p>Human Resource</p> <p>The three D's: divorce, death, or disability of an</p>	<ul style="list-style-type: none"> • Investment time in training labor • Use of family labor • Acquisition of business and financial management training
6	<p>Risk of Poor Collateral</p> <p>Lack of land title, low land value and rudimentary farm assets</p>	<ul style="list-style-type: none"> • Virile agricultural insurance policy • Land reform
7	<p>Policy Risks</p> <p>Policy somersault, inconsistency and discontinuity</p>	<ul style="list-style-type: none"> • Improved political commitment • Enhanced social and political capital • Strong legislation • Adherence to rule of law

Source: Adapted from Cocciarelli et al., (2010)

5.10 Towards a paradigm shift in African agricultural finance

A major transformation is a shift of emphasis from concentrating finance on upstream agriculture to massive investment in the downstream sector, in partnership with private agribusiness firms to promote pro-poor growth and enhance food security. Financial innovation has been stymied for a long time due to the focus of financial institutions mainly on funding agricultural output expansion. The approach has failed to generate meaningful value added and the necessary financial capacity on the part of producers. The situation is worse for small-scale producers, whose access to market and alternative employment opportunities is highly restricted.

Another key transformation of the agricultural sector will be brought about by shifting emphasis to financing of agricultural commodity value chains. Such a shift will address the erroneous belief that the problem of finance is limited to the production stage. To generate high value-added products, employment and wealth in the agribusiness sector, finance is required for the transformation of products from primary to secondary and even tertiary forms. This is the way value-chain financing can support agro-industrialization. Sometimes production is adversely affected if there is a problem with marketing. Market expansion and agro-

processing can be supported by appropriate financial products, such as warehouse receipt financing and other innovative credit mechanisms. Contract farming schemes in which formal and informal linkages are being forged in the agribusiness sectors in some countries, including Nigeria, have clearly demonstrated the need for financial support by the banking system to agribusiness firms and through them to the small-scale farmers. This has stimulated actions within the country to develop the value chains of commodities such as rice, cotton, tobacco, ginger and soya bean (Olomola, 2010). Even for export commodities, there is a need for financing to promote growth and compete effectively in the international market. The formal financial system will therefore, have an increasing role to play in attracting investors at different stages in the value chain and to ensure that commodity-dependent African countries transform from being exporters of primary products to exporters of high value-added commodities.

5.10.1 Characteristics of agricultural commodity value chains

The development of the value chains requires adequate financing of major activities from the production stage to the end users. The key stages in the chain and the specific types of activities that need to be financed are presented in Table 5.5.

TABLE 5.5
Agricultural Commodity Value Chain Characteristics

S/N	Value Chain Level	Types of Activities
1	Farming	<ul style="list-style-type: none"> ▪ Land Preparation, Planting, Spraying, Fertilizer application, Harvesting
2	Post-Harvest	<ul style="list-style-type: none"> ▪ Sorting/cleaning, Grading, Inspection, Packing
3	Transport to Market	<ul style="list-style-type: none"> ▪ Movement of goods in domestic market ▪ Shipping of goods across borders(involving clearance, customs, inspections) ▪ Storing
4	Distribution	<ul style="list-style-type: none"> ▪ Contractual arrangements ▪ Logistic coordination
5	Retail	<ul style="list-style-type: none"> ▪ Specifications – Quality, Traceability ▪ Delivery ▪ Product Development
6	Consumers	<ul style="list-style-type: none"> ▪ End product Buyers ▪ Urban vs. rural buyers

Source: Olomola, 2011

5.10.2 Shift from traditional lending to value chain finance

The emphasis on value chain financing implies that lending has to be done differently.. It is important to stress that the shift has to be backed up by an appropriate framework for capacity building. In this regard, the differences between the traditional lending conditions and approaches and the value chain finance are shown clearly in Table 5.6. For Africa, a major

difference will be the emphasis on small-scale producers. Whereas the conventional lending system discriminates against small producers who are responsible for food security on the continent, value chain finance recognizes the potential of this category of farmers, and the economic transformation that can be achieved through their exposure to the necessary financial resources for operating their farms as business concerns.

TABLE 5.6
Value Chain Finance versus Traditional Lending

AREA	TRADITIONAL LENDING	VALUE CHAIN FINANCE
Lending	Asset based	Cash flow based Contracts
Credit Risk	Traditional assessment: needs sufficient client information	Improved systems for risk assessment/automation/parametric information through existing relations in supply chain
Risk Mitigation	Careful client selection Insurance/hedging	Loan portfolio diversification Risk sharing/first loss Insurance/hedging
Client Type	Larger commercial farmers	Smaller commercial farmers Organizations/associations of small farmers
Capacity Building	Clients are knowledgeable	Need financial education and awareness raising to become better clients for FIs

Source: Olomola, 2011

5.10.3 Financial products for value chain actors

In addition to the types of activities to be supported, financial institutions must keep abreast of the recent developments in packaging suitable financial products for various categories of producers – small, medium and large – and for different actors along the value chain. Agricultural finance should cover the whole value chain. Although the loan terms will vary, risk for financial institutions will generally decrease as the value chain moves forward. The types of financial products that will be required for various levels of the value chain are

presented in Table 5.7. Whereas short-term credit/working capital will be required for input procurement, cash flow management and income smoothing term credit will be required at any level for fixed asset or land acquisition, leasing and inventory build-up. It will also be necessary for financial institutions to provide deposit and transfer services for cash flow management, risk mitigation, investment and asset building. Non-bank financial institutions such as insurance companies will also have to play critical role in designing appropriate insurance products to address risks arising from the forces of nature (health, life, weather).

TABLE 5.7
Types of Financial Products Required By Agricultural Value Chain Actors

S/N	Value Chain Actors	Types of Financial Products Required
1	Inputs suppliers and producers	Premises financing, stocking and restocking financial products, appropriate saving schemes, assets financing, insurance for stocks and technical training and entrepreneurship skills
2	Transporters	Money to purchases trucks, and maintenance. They also need services on insurance and guidance on importation of inputs
3	Traders	Operating capital, assets financing (equipment and trucks) and invoice discounting;
4	Consumers	Money to purchase goods, effective distributions and consumers protection

Source: Olomola (2011)

In the light of the foregoing, stakeholders in the agricultural finance market should realize the opportunities and possibilities that exist in Africa to transform agriculture through the instrumentality of value chain financing. The approach can enhance farmers' access to credit directly and indirectly. The development of agricultural commodity value chains through increased private-sector financing will reduce agricultural wastage in general and post-harvest losses in particular and thus improve the profitability of

farming. With increased earnings, farmers' access to equity capital for production purposes will rise. Increased financing of downstream activities that is possible with value chain financing will likely lead to an expansion in the output market and increase farmers' access and participation. This will in turn increase the commercial orientation of farming and may lead to an improvement in the way lenders perceive the risk associated with agricultural production.

Besides, farmers may benefit directly in terms of increased access to finance from actors in the value chain. For instance, an agribusiness firm involved in producing value-added products with financial assistance from the banking sector can on its own establish a contractual relationship with farmers and provide them with finance for farm operations. This is another important mechanism for eliciting private sector response to the financial problems facing small-scale farmers in Africa (Olomola, 2010).

5.11 Reform of state-owned agricultural finance institutions

As mentioned earlier, the establishment of agricultural banks has been a major instrument of agricultural development in Africa over the years. The performance of many of such banks has, however, been far from satisfactory. Where such banks still exist, they have to be restructured, depoliticized and recapitalized. Several institutions have been established to perform agricultural development functions which will therefore, make it imperative for the agricultural banks to focus strictly on financing in a manner that will meet the requirements of the expected transformation in the sector. Such banks have to shift their focus from traditional lenders and loss makers that rely on government funds, to value chain finance institutions with commercial orientation and efficient providers of financial services. Their activities can therefore, not be limited to lending alone. There must be provision for providing savings and transfer services for cash flow management, risk mitigation and enhanced investment in the agricultural sector. The envisaged reform is to have a regulatory and legislative component that will ensure that such banks function as banks and

not as parastatals of ministries of agriculture. Ultimately, there will be need to diversify the source of funds of such institutions. With adequate financial orientation it should be possible for them to develop to a stage where they will perform so well as to qualify for listing on the stock exchange and derive funding from the general public and interested organizations.

5.12 Innovations for effective agricultural financing in Africa

After the review and analysis of the various constraints, financing modalities and paradigm shifts, this section focuses on the following eight innovative approaches for mobilizing and delivering funds for agricultural development and food security in Africa.

(a) Promote Investments in Rural Finance

Infrastructure – technology and innovation in rural finance has helped access to finance become a reality for the rural poor across the world. Innovations can be organizational, and have proven to dramatically reduce costs and improve outreach elsewhere in Africa (e.g. Ghana). Investing in apex organization for financial cooperatives and/or the newly formed Microfinance Banks (MFBs) in Nigeria, therefore, is based on established good practice and can be scaled up in areas where the conditions permit.

(b) Promote Savings Groups

– another approach is to actively promote savings groups, with emphasis on the quality of group formation. This will more accurately target the rural poor who cannot afford efficient market rates. Savings will reduce the vulnerability of this target population and provide small amounts

of own capital for rotating savings schemes found in many parts of Africa. Savings groups can eventually be linked into formal financial systems.

(c) Formal-Informal Credit Linkage Program – a typical example of this form of linkage is the provision of financial services through self-help groups (SHGs) and financial cooperatives. This approach has been used successfully in India, less so in Africa, to finance agriculture among smallholders. For instance in several Indian states, a separate movement has emerged, based on village-level women's self-help groups and their federations at the village, mandal (or block are sub-districts but can also refer to division,

and comprise several villages or village clusters), and district levels. These estimated 2.2 million groups collect funds from their members and either deposit them in rural banks or lend them to members. After demonstrating their capacity to collect on loans over a six-month time period, rural banks will typically leverage a group's savings by a factor of four, providing additional capital that is mostly used for agricultural purposes. It is often easier for self-help groups to obtain loans than it is for larger farmers, many of them poor customers for rural banks. With the self-help groups responsible for all screening, processing, and collection activities, the transaction costs for loans are greatly reduced (Box 5.3).

BOX 5.3

Access for the Rural Vulnerable Poor: The case of SHGs in India

Over the past 15 years, the average annual growth of Self-Help Groups (SHGs) in India has topped 80%. One of the most important initiatives guiding this development is the SHG Banking Linkage Program, launched in 1992 by the government-owned National Bank for Agriculture and Rural Development (NABARD). Working with 620,109 SHGs in 2006, it integrated more than nine million households into the financial sector.

Indian SHG's have between 15-20 members and are autonomous groups that collect savings and then deliver loans to members. Emphasis is on voluntary and high quality group formation. SHGs are usually formed with the assistance of a promoting institution (governmental or non-governmental), most SHGs are federated to help with financial monitoring and accessing finance from external sources. Most Indian SHG's reach the very poor, a population that is both landless and illiterate. A CGAP study of 150 of the more successful SHGs in India finds that the majority of members live in very remote areas (far from paved roads and other infrastructure). Initial loan sizes are very small (US\$ 2.50 – 45.00), and livelihood support services (health care, literacy training, mid-day meal, skills training) are often offered in tandem by the promoting institution. Members join to get loans and access these other services.

Other lessons from the Indian success story for Nigeria include: Member participation and group solidarity is critical to a SHG's sustainability, as are good organizational support and social mobilization techniques on behalf of the promoting institution. Groups formed to respond to immediate incentives (like accessing government gas connections) tend to disband once the member's short-term goal is achieved.

Sources: CGAP (2007), Fouillet (2007)

Financial cooperatives and their networks are re-emerging as promising institutions in rural finance in many countries, combining the advantages of proximity with modern management tools. Locally based, their transaction costs are typically lower than those of other financial institutions. But because they are members of a larger network, they can offer the variety and volume of financial services that rural customers require, and they can pool risks as well as costs. In Burkina Faso, the Réseau des Caisses Populaires du Burkina (RCPB), the largest network of financial cooperatives, is establishing rural service points and very small village-based credit unions, managed and supervised by financial cooperatives in larger villages. RCPB was created in 1972 in the region of Bougouriba. It has benefited from a long-term relationship with La Compagnie Internationale de Développement Rural Canada (CIDR), which became Développement International Desjardins (DID). Over the past 30 years, RCPB has become the largest credit and savings cooperative network in Burkina Faso. As of 2009, RCPB operated in 43 out of 45 provinces, offering credit and savings products to a variety of clients, including farmers, entrepreneurs, artisans, and salaried employees. RCPB comprises 103 savings and credit coops, 31 point of sales, 4 regional unions, 5 technical offices and a federation. Each savings and credit cooperative is owned by its members.

(d) Expanding the reach of rural finance – information technologies offer a broad array of new ways to extend financial services to rural areas, for value chains and for

agriculture more broadly. The use of mobile phones for banking is being pioneered by Wizzit in South Africa and by Globe Telecom and Smart in the Philippines. The phones can be used to pay for purchases in stores and to transfer funds, significantly reducing transaction costs. With legal frameworks in place, m-banking could be one of the major breakthroughs in extending outreach to poor customers. Branchless banking – using post offices, stores, gas stations, and input providers – is another successful approach to reaching rural customers at low cost. Brazil, India, Kenya, the Philippines, and South Africa demonstrate its financial viability, although there are issues in regulating such endeavors.

Rural leasing is another financing option for rural entrepreneurs, in agriculture and in the rural nonfarm economy. Here again, examples of commercial providers in Mexico, Pakistan, and Uganda show that leasing can finance the acquisition of productive assets. Now running profitably, these commercial providers all benefited from access to government and donor funds to jump-start their operations, demonstrating the potential benefits of public-private partnerships.

(e) Financing through Interlinked Agent – yet another way to increase agricultural access to capital is financial intermediation through linked agents in value chains (input suppliers or output processors). Those agents are often more able to cost-effectively monitor on-farm behavior (eliminating information asymmetries), thus reducing monitoring costs and enabling financial institutions to

accept non-standard forms of wealth as collateral, such as standing crops or, for warehouse receipt financing, harvested crops.

Further work is needed to determine whether these (often spatially monopolistic) practices offer finance at competitive rates and whether transaction costs continue to negatively affect smallholders. As mentioned, some microfinance institutions (MFIs) and cooperatives have themselves begun to adopt this form of secured lending. But their success has in many instances been undermined by inadequate legal frameworks, which often prevent the collateralization of less conventional assets such as an input supplier's contract for a standing crop. Further undercutting collateralized lending are legal systems that fail to provide clear rules for priority claims on assets and prompt redress in the event of default. Without collateral, high risks cannot always be compensated by higher interest rate premiums, so many smallholders are simply cut off from the credit market.

(f) Adapting microfinance to reach smallholders

– the inadequacies of rural financial markets reflect real risks and real transaction costs that cannot easily be resolved through legislation. Innovations are required to permit more flexible forms of lending, while guaranteeing that borrowers repay loans. One approach to resolve these problems flows from the pioneering efforts of the Grameen Bank. Microfinance institutions (MFIs) extend the selection of available contracts with new arrangements that substitute for collateral. They often have

guidelines to favor groups – particularly women – excluded from borrowing through other channels. Many MFIs lend to local groups whose members select one another and share the liability for repaying loans, so local social capital substitutes for wealth as collateral. MFIs often target rural areas, where social capital is stronger (Olomola, 2000).

To meet the underserved agricultural market, MFIs have begun to innovate in other parts of the developing world such as in Guatemala and Malawi, where individual loans have been offered to agricultural producers specializing in short-cycle tomatoes and other vegetable crops. The value chain approach has been adapted to financing inputs and outputs, using standing crops as collateral. Moreover, Caja los Andes in Bolivia began to accept non-standard collateral assets and lend to farmers well diversified across a range of agricultural and non-agricultural activities. In 2006 it became a bank, Banco Los Andes Procredit, and agricultural loans now constitute 10% of its portfolio.

In short, while microfinance lending in agriculture is still small, there are hopeful signs that innovation will permit the microfinance movement to partially fill the agricultural void, at least for producers with small enterprises engaged in high-value activities, particularly animal husbandry and horticulture. There is a strong case for public policy support to search for, and pilot test, technological and institutional innovations that reduce the costs and risks of doing business. Many of the newly developed

innovations may have the character of a public good, because innovations by one lender may be quickly adopted by another. This justifies public support for promising start-ups to enable them to become financially viable within predetermined time periods.

(g) Promote Private Sector Participation Through Contract Farming – contract farming is a partnership arrangement between the private sector and small-scale farmers which should be encouraged in view of its commercial orientation and employment potential, especially in ensuring longer-term contractual production relationships. Contract farming is becoming increasingly recognized as an important approach for the modernization of peasant farming. It guarantees linkages between smallholders and large-scale producers and facilitates access to modern inputs and production credit. Many agricultural products such as banana, rubber, cotton and sugar have been produced and marketed through contracting small-scale producers in African countries. For instance, in many COMESA countries, private companies have been promoting the growing and marketing of cotton, tobacco, coffee, tea, sugar, and high value

horticultural crops through provision to smallholder farmers of extension, credit and even markets for their crops. Kenya and Zimbabwe supply off-season specialty vegetables; South Africa is a major exporter of off-season fruit to European markets. In particular, contract farming is becoming increasingly important in the Zimbabwean horticulture export trade in which smallholders produce for larger commercial farms engaged in packing. About 3,000 smallholders are growing for export on a contract basis (IFAD, 2001). Indeed, Kenya and Zimbabwe have demonstrated that smallholder sourcing can meet the quality requirements of supermarkets in Europe. Usually, the exporter takes responsibility for organizing growers, arranging finance, providing technical support and ensuring traceability.

(h) Term Finance (e.g. Leasing in Madagascar) – as indicated earlier, term finance will be required at various levels of the value chain. Leasing can be an appropriate instrument in designing appropriate financial products for value chain financing. The Madagascar experience, presented in Box 5.4, indicates the coverage of assets which can be involved especially in addressing the problem of risk of

BOX 5.4

Success Stories in Term Finance: The case of leasing in Madagascar

The Caisse d'Épargne et de Crédit Agricole Mutuel (CECAM) is an agricultural finance cooperative in Madagascar. CECAM introduced leasing in 1993 for a range of assets including farm implements, draft animals, dairy cows, irrigation equipment, bicycles and sewing machines. Flexible payment schedules are adapted to the crop cycle and the leased asset is the main security and source of payment. Given the lack of collateral of many rural households, this was an ideal option for CECAM. Factors critical to CECAM's success include the selection of clients with good experience and skills in handling the asset. So, for example, CECAM's clients will tend to already have some equipment or animals and the lease represents an upgrade. CECAM also requires down payments, and involves farmers groups in the assessment of the lease application and prospective lessee. CECAM originally made the group jointly liable for the lease, but this requirement faded away with experience and a reduction in the perception of risk. Other factors contributing to CECAM's success include strong monitoring and supervision using community groups. Default is immediately dealt with, maintaining the credibility and profitability of the intervention.

Source: Hollinger (2004)

5.13 AfDB recent initiatives for agricultural value chain financing

For the period 2011-2014, the AfDB is sharpening its focus in agricultural financing to cover agribusiness and agro-industrial development with a three-fold objective of increasing agricultural productivity, enhancing food security and conserving natural resources.

In financing the private sector AfDB plans to adopt two approaches: (i) General Financial intermediaries: Lines of credit, partial credit guarantee schemes and generalist private equity funds which represent around US\$50 million to indirect finance of agriculture in the last 3 years, and (ii) Agriculture and Agribusiness focused projects and funds such as trade finance, debt finance, private equity funds, which represent a total of US\$ 160 million in its active portfolio for the same period. Other initiatives of the AfDB in investing capital in agriculture include the following:

(a) African Agriculture Fund – this is an Equity Fund focused on agriculture and agribusiness which provides equity across the full agricultural value chain. The size at first closing was/ US\$150 million in investments, with projected return at 12%, and US\$14 million in Technical Assistance to guarantee high development impact. In the past year, despite sector specific challenges, but encouraged by effective reforms, there was an increased number of requests for financing from Agriculture and Agribusiness focused equity and guarantee funds that are

professionally managed, aim at investing in the whole value chain and attract institutional investors with acceptable although lower projected returns but sizeable social returns.

(b) Equity and Guarantee Fund of Funds – this is a Fund of Funds which aims at providing equity and debt financing to investment funds focused on Agriculture and Agribusiness. The target size is between US\$750 million to US\$1 billion aiming to provide financing or guarantee scheme to 10-15 sub-funds. The geographical area comprises the five African sub regions

(c) Equity and Guarantee Fund for Agriculture and Agribusiness in Africa (EGFAA) – the EGFAA is a US\$1.2 billion financial package set up in 2010 for use in funding the African Agribusiness and Agro-industries Development Initiative which was established in March 2010. One of the key objectives of the facility is to encourage the involvement of finance and expertise across African nations in order to support private sector investments in agribusiness and agro-industry. Preference is given to Funds investing in agricultural infrastructure or with a pipeline that covers the whole food value chain. The Fund of Funds is to be managed by professional fund managers who will be selected based on their investment skills and their proven track record in managing Technical Assistance program and other initiatives. The Bank is to provide 25% of the target commitments of the Fund of Funds.

5.14 Commercial agricultural credit scheme in Nigeria

As part of its developmental role, and in line with advances taking place on the African continent, the Central Bank of Nigeria (CBN) in collaboration with the Federal Ministry of Agriculture and Water Resources recently established the Commercial Agriculture Credit Scheme (CACs) for promoting commercial agricultural enterprises in Nigeria. The objectives of the scheme are: (i) to fast track development of the agricultural sector of the Nigerian economy by providing credit facilities to commercial agricultural enterprises at a single digit interest rate; (ii) to enhance national food security by increasing food supply and effecting lower agricultural produce and product prices, thereby promoting low food inflation; (iii) to reduce the cost of credit in agricultural production to enable farmers to exploit the potentials of the sector; and, (iv) to increase output, generate employment, diversify the revenue base, increase foreign exchange earnings and provide input for the industrial sector on a sustainable basis.

The scheme is financed from the proceeds of the ₦200 billion bond raised by the Debt Management Office (DMO) and made available to the participating bank(s) to finance commercial agricultural enterprises. In addition, State Governments and the Federal Capital Territory Administration (FCTA) could also

borrow up to 20% of the bond proceeds for on-lending to farmers. Key Agricultural commodities covered under the scheme are; (i) Cultivation of target crops (rice, cassava, cotton, oil palm, wheat, rubber, sugar cane, *Jatropha carcus*, fruits and vegetable); (ii) Livestock (dairy, poultry, piggery), (iii) Fisheries. Credit support to the target commodities is administered along the entire value chain of production, storage, processing, market and enterprise development

In July 2011, Nigeria further initiated an agricultural finance framework known as the Nigerian Incentive-based Risk Sharing System for Agricultural Lending (NIRSAL) to address the problem of low level of agricultural financing in the country. It is focused at the pilot stage, on the development of value chains in respect of 6 commodities namely; tomato, cotton, maize, soya bean, rice and cassava. Details of the value chain activities to be financed, the expected benefits and the governance structure are provided in Box 5.5. NIRSAL, unlike previous schemes, which encouraged banks to lend without clear strategy to the entire spectrum of the agricultural value chain, emphasizes lending to the value chain and to all sizes of producers. Success of this initiative will depend on the effectiveness of the governance structure, commitment of the stakeholders to discharge their financial responsibilities under the initiative and political will to undertake the required sector-specific and fiscal policy reforms for the effective performance of the agricultural sector

BOX 5.5**The NIRSAL Initiative in Nigeria****What is NIRSAL?**

NIRSAL is a dynamic, holistic approach that tackles both the agricultural value chain and the agricultural financing value chain. NIRSAL does two things at once; **fixes the agricultural value chain**, so that banks can lend with confidence to the sector and, **encourages banks to lend to the agricultural value chain** by offering them strong incentives and technical assistance.

What are the value chain activities to be financed?

There are five pillars to be addressed by an estimated USD 500 million of CBN money that will be invested as follows:

1. **Risk-sharing Facility (USD 300 million)**. This component would address banks' perception of high-risks in the sector by sharing losses on agricultural loans.
2. **Insurance Facility (USD 30 million)**. The facility's primary goal is to expand insurance products for agricultural lending from the current coverage to new products, such as weather index insurance, new variants of pest and disease insurance etc.
3. **Technical Assistance Facility (USD 60 million)**. This would equip banks to lend sustainably to agriculture, producers to borrow and use loans more effectively and increase output of better quality agricultural products.
4. **Holistic Bank Rating Mechanism (USD 10 million)**. This mechanism rates banks on the basis of two factors, the effectiveness of their agricultural lending and the social impact and makes them available for the public.
5. **Bank Incentives Mechanism (USD 100 million)**. This mechanism offers winning banks in Pillar four, additional incentives to build their long-term capabilities to lend to agriculture. It will be in terms of cash awards.

What are the expected benefits?

- Generate an additional USD 3 billion of bank lending within 10 years to increase agricultural lending from the current 1.4 to 7% of total bank lending.
- Increase lending to the “pooled” small farmer segment to 50 percent of the total (typically, banks do not reach these producers individually but through “pools”, i.e., aggregating mediators, such as MFIs and cooperatives).
- Reach 3.8 million agricultural producers by 2020 through pooling mechanisms such as value chains, MFIs, and cooperatives.
- Reduce banks' break-even interest rate to borrowers from 14 to 7.5-10.5%.

What is the governance structure?

NIRSAL and its five pillars will be administered by a Non-Banking Financial Institution (NBFI.) At the national level, the NBFI will administer the five NIRSAL pillars. It will report to a Board of Directors chaired by the CBN and memberships from AGRA, the Ministries of Agriculture, Finance, and Commerce and Industry. The Board will have ultimate decision-making and strategy-setting responsibility for the Fund. The CEO of the NBFI will be responsible for NIRSAL's overall implementation and for maintaining relationships with key stakeholders. At the regional levels, Regional Transformation Engines will administer NIRSAL, through Portfolio Investment Managers and Technical Assistance Representatives.

Source; Olomola, 2011

5.15 Implications for capacity development

The innovative approaches enunciated in this chapter have implications for capacity development at three levels viz.: policy reform and formulation, business enterprises and financial institutions.

- (a) Policy and Regulatory Reforms** – securing access to finance is a means of ensuring food security. African governments have to be sensitized and convinced of the need to provide an enabling environment for finance to flourish. The justification for reforms (both macroeconomic and sector-specific) has to be clearly articulated and the benefits substantiated to guarantee the commitment of policy makers to effect the required changes and to continue to strengthen the policy environment. Both the executive and legislative arms of government will need technical support in this regard.
- (b) Enterprise Level** – All the actors in the agricultural value chain (farmers, input dealers, assemblers, processors, wholesalers, exporters, importers) need to know how to secure access to finance to operate and develop their businesses. With regard to farm enterprises (crop and livestock related) there is need for training in farm accounting and business management among other areas.
- (c) Banking and Other Financial Institutions** – financial institutions often seek to contain their risks and costs in financing agriculture. They need to have competence in developing commercially attractive financial services that meet the needs of the various actors in the value chain and how a value chain focus can result in market growth and reduced credit risk. Details of the capacity building requirements for commercial banks and microfinance institutions are presented in Table 5.8.

TABLE 5.8**Capacity Building Needs in Agricultural Finance Delivery System**

S/N	CLIENTS	CAPACITY BUILDING NEEDS
1	Commercial Banks	<ul style="list-style-type: none"> • Understand value chain concepts and competitiveness • Risk assessment and identification of strategic opportunities to strengthen value chains • How cohesive value chains can be used to reduce risks and facilitate access to finance • How to apply value chain financial products to meet the needs of various actors in the value chain • Designing appropriate financial products • Develop better understanding of specific supply chains and their economics--identify key agribusinesses and their clients/suppliers and mapping opportunities for lending • Understanding, quantifying and managing risks around specific commodities and supply chains • Separating systemic (e.g. weather, yield, price) from idiosyncratic risks (e.g. client performance) • Use of technologies to reach new clients and reduce the cost of serving them (e.g. mobile banking, mobile phones, etc.) • Development of loan products to better meet client needs and the particularities of commodities and supply chains • Designing Risk Sharing Facilities (Reduce credit risk on the specific agriculture loan portfolio, Increase capacity to originate new loans Improve key balance sheet ratios, risk management and operational efficiency and Potentially increase riskadjusted return on capital) • ICT infrastructure banking services to difficulto-reach communities
2	Microfinance institutions	<ul style="list-style-type: none"> • Designing and lending products for agriculture and value chain financing • Ways to vet new clients for credit approval • Understanding financial risks • Identifying opportunities and managing risks
3	Farmers, suppliers, processors, buyers and others	<ul style="list-style-type: none"> • farm accounting and business management • Understanding financial risks • Identifying opportunities and managing risks • Understanding market needs • Training in loan application writing for bankable agricultural projects with emphasis on cash flows and project costs • Methods in mitigating and adapting to climate change
4	Intervention agencies National and International NGOs Development partners	<ul style="list-style-type: none"> • Building cohesive value chains • Internal and external approaches to value chain finance • Promotion, awareness raising, and training of potential clients: SME agribusinesses and farmers • R and D and use to improve agricultural productivity • Mind-set change from negative public perception against agriculture especially by the youths • Land titling and collateralization– ways of turning farm plots into collaterals which commercial banks often demand

Source: Adapted from Olomola, 2011

5.16 Markets and agriculture transformation

As previously discussed in Chapter 4, the performance of agricultural markets is crucial for enabling farmers and agribusiness to exploit the expanding opportunities that are arising from the ongoing changes in domestic and global markets, particularly the rapidly increasing demand for high-value primary and processed agricultural products that come with the rising incomes in emerging markets. Agricultural markets are also important for food staples - they remain a mainstay of smallholder producers, not least because food staples are especially important for food security, as the majority of smallholder households are net food buyers even in favored areas. Markets unify actors across different spatial and temporal scales (Barrett and Mutambatsere, 2005).

Well-functioning (integrated) agricultural markets can therefore increase incomes to farmers, reduce the cost of food, mitigate the uncertainty of supply, as well as improve food security particularly for the poor (World Bank, 2007a; Barret and Mutambatsere, 2005). They ensure that macro and sectoral policies influence/change the incentives and constraints faced by micro-level decision makers (Barrett and Mutambatsere, 2005). Efficient agricultural markets link farmers, traders and other market intermediaries more closely to consumers, and smallholder farmers to domestic and international agricultural value chains for high-value produce. The timely transmission of price signals to farmers so they can adjust their production to meet projected market supply changes and changing consumer preferences is a

hallmark of efficient markets. Public policies and institutions are important for the development of agricultural markets in order to reduce transactions costs, manage risks, resolve information asymmetries, and enforce contracts. However, smallholders may need to professionalize their bargaining power through farmer organizations to ensure equitable market outcomes, with the assistance of public policy. Zoellick (2011) proposes a number of institutional, analytical and financial innovations as well as international collective action in order to enhance the facility of unfettered markets for helping feed the world against the headwinds of resurgent food prices across the developing world, arguing that “the answer to food price volatility is not to prosecute or block markets, but to use them better.” In essence, well-functioning markets provide opportunities at the micro-level for welfare improvements snowballing into sustained macro-level growth and development.

Innovation is crucial in developing well-functioning agricultural markets (Juma, 2011; Zoellick, 2011). Bonnen (1998) argues forcefully that institutional innovation was the key driver of agricultural productivity growth in the United States. A clear and sustained national policy with clear goals guided the development of the necessary public and private institutions, which both preceded and interacted with human capital in a dynamic fashion to create new technologies. These institutions were critical to ensuring the creation and development of knowledge all the way to its use in some coordinated, interlinked and systematic manner. Furthermore, institutions are matters of human contrivance, which can neither be achieved

serendipitously nor left solely to market forces. Markets are also crucial for managing risks associated with supply and demand shocks by smoothening out stock flows across space and time, thus reducing price variability. Markets thus perform multiple functions: distribution, transformation of unprocessed commodities into value-added products, and transmission of information and risks (Barrett and Mutambatsere, 2005).

As articulated in Chapter 4, a better understanding of the dynamics in African agriculture can be situated in the political economy context. In that sense, the history of agricultural markets in these countries reflects the evolution of thinking on the role for government in creating institutions, physical infrastructure and enhancing competition. The emphasis in the 1960s and 1970s on government interventions to allegedly resolve market failures saw the creation of marketing boards, payment of subsidies and significant pressures on the fiscus. The 1980s saw emphasis on market liberalization to 'get prices right', and more recently, focus on 'getting institutions right.'

5.17 Conclusion

There have been considerable efforts toward creating the conditions for growth in Africa. A lot of emphasis is on the influence of government policy and behavior and how that in turn impacts risk, and barriers to competition across the sectors including agriculture. Capacity for agricultural transformation requires a holistic understanding by all stakeholders. Notwithstanding, governments have an important role in providing public goods, supporting the provision of infrastructure, and

addressing market failures through the creation of the right policy and institutional environment. Under-provision of these 'public goods' can significantly increase costs to firms and farmers making potential opportunities unprofitable. The three fundamental constraints to Africa's future prosperity: capacities, market integration, and institutions remain binding on the agricultural sector. In this chapter, it has been argued that geographical disadvantages due to weak infrastructure and market integration are not a predicament for agricultural transformation and food insecurity, as their effects can be offset or ameliorated by capacities. There is need for innovations in technology and financing for agricultural transformation. These efforts should be developed strategically to deal with emerging issues such as climate change and the need for climate adaptation.

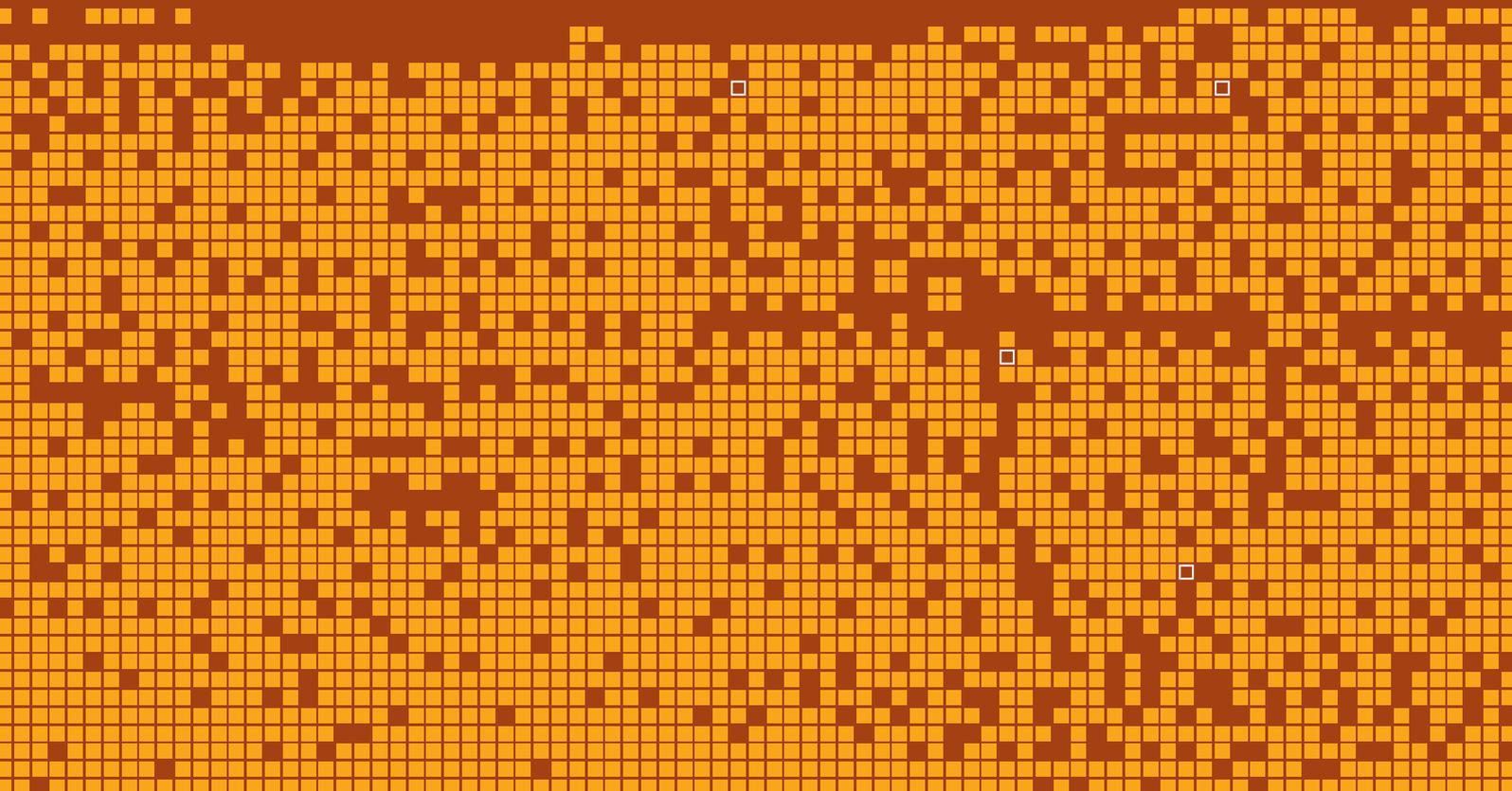
The agricultural transformation agenda should therefore embrace the development of commodity value chains in the crops, livestock, fisheries and forestry sectors with a view to transforming the sector from a farming system, labor-trapping occupational sector into a commercial, competitive agribusiness sector capable of catalyzing the industrial revolution in Africa. Africa's financial systems, as well as developments in technology and infrastructure, need to purge themselves of the age-long discrimination against agriculture. Agriculture cannot operate as a business without appropriate financing and other supportive mechanisms to enhance productivity, value addition and competitiveness in the various commodity value chains. The foregoing has implications for capacity building. For example, the strength, depth and sustainability of the financial system will depend on the impact it is making on the

development of the real sector in general and the agricultural sector in particular. The financial sector should therefore be strengthened through appropriate training in agricultural risk assessment and value chain financing in line with the various strategies being adopted in the continent to modernize and transform the agricultural sector to enhance growth and poverty reduction. The financial system must accommodate all sizes of producers – small, medium and large-scale. The negative perception of smallholders as incapable of managing a profitable enterprise and unworthy of access to formal credit has to change. Moreover, government must provide the enabling environment to enable sustainable

development of the value chains. Banks need incentives and technical assistance to lend to agricultural commodity value chains. Finally, with the growing awareness of the importance of value chain financing, attraction of private sector investment and by committing resources for the required capacity building for meaningful participation by stakeholders, it is possible for agricultural financing in Africa to lead to increased growth, agro-industrial development and sustained food security. This creative way of thinking could be applied to infrastructure financing where public-private partnerships would be explored. More resources may need to be put aside to deal with the dangers to agriculture posed by changing climatic

6

New Threats – Debating Climate Change and Adaptation





6

New Threats – Debating Climate Change and Adaptation

6.0 Introduction

The experience of the past two decades has increased the understanding of African leaders regarding the impact and magnitude of climate change on agriculture. Fischer et al. (2011) maintain that climate change poses a serious threat to food production in Africa, an aspect that brings an additional risk of tipping the continent into severe poverty. African farmers are involved in complex food production systems that range from tef in Ethiopia to yam in Nigeria; from irrigated rice in Mali to commercial farms in South Africa; and from maize and bean smallholdings in Kenya to dairy farms in Zimbabwe (Toulmin, 2009). Chemnitz and Hoeffler (2011) see climate change as a major threat to the development of rural Africa. Although contributing less than 3% of total global greenhouse gas (GHG) emissions, Africa is the worst affected in terms of the negative impacts from climate change (IPCC, 2007c). African governments must confront what Chemnitz and Hoeffler (2011) term a three-fold challenge: produce more food for the growing population, adapt better to climate change, and by so doing, minimize GHG emissions that cause global warming which leads to climate change. Adaptation and technological needs for Africa are estimated in the range of 5-10% of gross domestic product (GDP) for coastal countries alone with global warming predicted to cost Africa between \$50-100 billion by 2020 (FAO, 2009c).

As already noted, the agricultural sector plays a central role in Africa's development, contributing between 35-40% of GDP and even half of total export earnings (Fisher et al., 2011). Climate change and environmental degradation will result in, among other negative impacts: less land under cultivation, water, crop variety and livestock. This will threaten food security and lead to a decline in income and ultimately malnutrition. Hence, African agriculture is at crossroads when we consider the challenges of climate change and environmental degradation. Overall, African governments need to adapt to the negative impacts associated with climate change and environmental degradation.

6.1 Climate change and agriculture

According to the Intergovernmental Panel on Climate Change (IPCC), climate change refers to “any change in climate over time, whether due to natural variability or as a result of human activity” (IPCC, 2007c). Ngaira (2007), maintains that there is strong evidence that increases in green houses gases (GHGs) have led to global

warming, sea level rise and space-time changes in climatic zones around the globe, including Africa. Snow cover on Mount Kilimanjaro and Mount Kenya has decreased by about 50% since 1960 in response to land surface temperature increases (Ngaira, 2007).

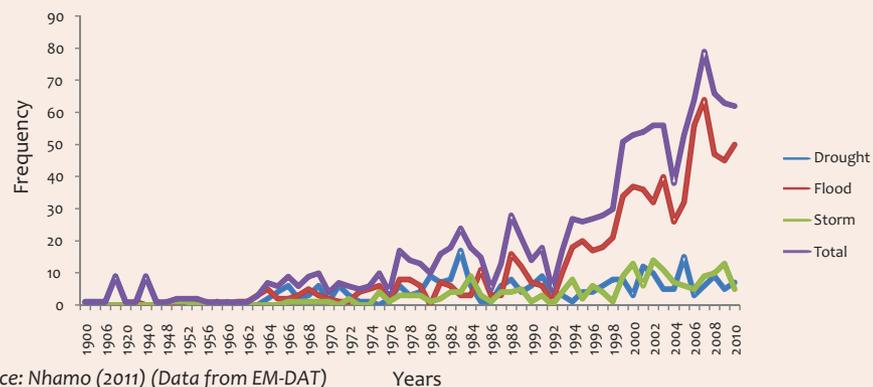
The IPCC (2007c) predicts the following trends in weather and climate events, much of which bear

negatively on Africa: by 2020, between 75 and 250 million people will be affected by water shortages; by 2020, in some countries, yields from rain-fed agriculture will be reduced by up to 50%; towards the end of the 21st century, projected sea level rise could affect low-lying coastal areas with large populations and the cost of adaptation could amount to at least 5-10% of GDP; and by 2080, an increase of 5-8% of arid and semi-arid land in Africa is projected under a range of climate scenarios. Temperatures are expected to rise by between 1.5-4°C in the 21st century. The IPCC further predicts prolonged droughts and floods with agricultural losses of between 2-7% of GDP by 2100 in some parts of Africa. Western Africa is projected to experience agricultural losses of 2-4% of GDP whilst the rest of Africa will experience agricultural losses of between 0.4-

1.3% of GDP. It is also predicted that fisheries will be negatively impacted, with an estimated decrease in productivity due to sea temperature rise reaching between 50-60% by 2100 (Ibid). Natural disaster data from EM-DAT show an upward natural disaster trend for Africa since the 1900s (Figure 6.1). The same trend was observed for global data. A total of 276 droughts, 765 floods and 201 storms were reported over the period 1900-2010 in Africa. Other major disasters included ten events of extreme heat, five insect infestations and twenty-six wildfires. There have been a number of extreme weather events related to climate change in Africa. Among them are the 1986-87 and 1991-2 droughts in southern Africa; the drought of 2010-11 in the horn of Africa; and Cyclone Eline that hit southern Africa in 2000.

FIGURE 6.1

Trends in selected African natural disasters (1900-2010)



Source: Nhamo (2011) (Data from EM-DAT)

Drawing from indicators (e.g. climate-related hazard exposure, population density; household and community resilience, governance and violence), White (2011) computed Africa's vulnerability to climate change. The eight countries most vulnerable were identified as Angola, Burkina Faso, Gambia, Mozambique, Nigeria, Somalia, Sierra Leone and Swaziland. Wheeler (2010) performed comprehensive accounting of climate change vulnerability for African countries and developed risk indicators

for three critical problems: increasing weather-related disasters, sea-level rise, and loss of agricultural productivity. Nhamo (2011) forecasted (median) agricultural productivity loss from 2008-2050. The findings show that Central Africa will be the worst affected with 19.8% loss, Southern Africa (18.95%), North Africa (18%), Sahelian Africa (17.05%), Coastal West Africa (16.35%) and East Africa (10.25%). An overview of climate change impacts on agriculture across Africa is shown in Table (6.1)

TABLE 6.1
Overview of climate change impacts on African agriculture

Sub-continent	Climate change impacts
East Africa	<ul style="list-style-type: none"> • Changes in the storage of the East African Great Lakes and reservoirs due to changes in rainfall, which could adversely impact agricultural production • Ecosystem impacts, including impacts on mountain biodiversity • Declines in fisheries in some of the major East African lakes could occur due to increases in temperature coupled with overfishing • Extreme droughts
North Africa	<ul style="list-style-type: none"> • Climate change could negatively impact mixed rainfed and semi-arid agricultural systems, particularly the length of the growing season, for example on the margins of the Sahel • Possible decreases in runoff in parts of North Africa by 2050 • The Nile river is sensitive to rises in sealevel, as salination could occur
Southern Africa	<ul style="list-style-type: none"> • Heightened water stress • Climate changes may in certain areas favor horticulture over plantation forestry • Coastal marine fisheries are likely to be negatively affected by changes in the Benguela current
West Africa	<ul style="list-style-type: none"> • Negative impact on crop production and possible agricultural GDP • Changes in the coastal environment, such as the removal of mangroves and coastal degradation, could have negative impacts on fisheries and tourism as well as on the resilience of settlements to heavy storms • Changes in ecosystem ranges and species locations as well as possible increased risk of species extinction.

Source: Based on IPCC (2007c) and Davis (2011: 5)

The extant literature is replete with new and contested terminologies, such as environmental refugees, ecological refugees, environmental migrants, environmentally impelled migrants, environmentally displaced persons and climate change migrants (Algan and Kuncek, 1998; Dow et al., 2005; Geisler and Sousa, 2000; Reuveny, 2007). The UN Human Development Report introduced the notion of human security in 1994 (Geisler and Sousa, 2000: 1). Human security is a function of “safety from chronic threats of hunger, disease, and repression on the one hand and protection from sudden and hurtful disruptions in daily life on the other” (UNDP, 1994:22-23). In this context, environmental

insecurity is part of human insecurity induced by natural disasters and mismanaged environmental endowment. From this, the term “environmental refugee” emerged. Over the past two decades, the term “environmental refugees” has increasingly been invoked to describe growing waves of people displaced by environmental problems. Approximately 150 million people will be environmental refugees by 2050, largely due to the negative impacts associated with climate change (IPCC, 2007c). Reuveny (2007), draws on the broader extant literature, to map out the nature of climate change induced movements in selected African countries (Table 6.2).

TABLE 6.2
Climate change-induced migration in selected African countries

Origin/period	Destination	Environmental push	Numbers
Mauritania, 1980s-1990s	Senegal, Senegal River Valley	Drought, soil erosion, desertification, deforestation, water scarcity	69,000
Somalia, late 1970s	Somalia, Ethiopia border region, Ogaden	Arable/grazing land degradation, water scarcity	400,000
Sahel rural areas, late 1960s-1980s	Sahel urban regions, Neighboring coastal states	Droughts, famines, land scarcity	10 million
Sudan, north, south, west, 1970s-1980s	Sudan, Khartoum, Kordofan East	Droughts, famine, desertification, deforestation, erosion	3.5-4 Million by early 1990
Nigeria, Jos Plateau, 1970s-1990s	Urban areas, intraregional	Soil/water/air pollution, silted rivers, land scarcity or degradation	-
Somalia, late 1980s-mid 1990s	Somalia-Ogaden, Kenya, Ethiopia, Djibouti	Drought, erosion, deforestation	2.8 million
Kenya, Western, Northern, 1960s-1990s	Kenya, Rift Valley, urban centres	Drought, land degradation, land scarcity, famine	150,000-200,000

Source: Adapted from Reuveny (2007: 663-665)

Climate change is closely linked to environmental degradation with extreme weather events like droughts and floods leading to desertification and erosion. In addition, reduced river flow lead to siltation and polluted water. These and other aspects of environmental degradation, and how they are linked to agriculture, are discussed in the next section.

6.2 Environmental degradation and agriculture

SEEN (n.d.: 1) defines environmental degradation as “a situation in which a part of the natural environment is damaged.” This can be damage to land, water, atmosphere as well as loss of biodiversity. Environmental degradation negatively impacts on land availability. Gullies, sand dunes, degraded grazing land, sheet erosion and declining soil fertility show the extent of environmental degradation in Africa (Nhamo and Inyang, 2011). According to UNEP

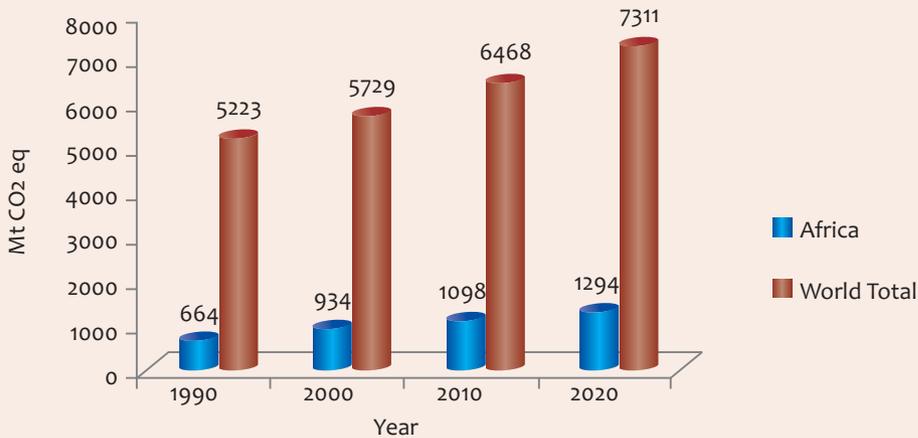
(2008), a number of African countries are faced with challenges of environmental degradation: Algeria, Benin, Botswana, Djibouti, Libya, Mauritania, Morocco, Niger, Somalia and Tunisia.

What is clearly understood is the fact that climate change aggravates circumstances leading to environmental degradation. The shortage of water, for example, leads to river courses losing their velocity, and silting. Siltation in turn leads to shortages in irrigation water. In areas where boreholes are used for irrigation and watering livestock the impacts are similar as aquifer recharge is reduced leading to drying up of boreholes and wells. Similarly, excessive wildfires destroy habitats and biodiversity leading to barren land, soil erosion and siltation. Lesotho, for example, faces serious soil erosion and gully formation challenges. Unlike droughts, the environmental damage from floods is immediate, localized and can be irreversible.

Floods can tear away top soil from poorly managed subsistence farming communities. Flood damaged lands also take longer to regenerate life if artificial assistance is not provided immediately. While the impact of environmental degradation on agriculture is clear, agriculture contributes to the degradation of the atmosphere through GHG emissions from

residue burning, forest clearing, manure management, fertilizer applications and livestock production. The level of GHG emissions for African agriculture compared to global emissions in the same sector is shown in Figure 6.2. While Africa's emissions are relatively low compared to the global total, emissions have risen significantly over the years.

FIGURE 6.2
Agricultural emissions 1990-2020 (Mt CO₂ equivalence)



Source: Based on GTZ (2008: 6)

Another challenge associated with climate change is increasing aridity. This is the situation faced around the Moshi region in Tanzania. The rapid disappearance of ice caps on mountains in equatorial East Africa (Kilimanjaro, Kenya and Elgon) has been partly attributed to land use changes particularly deforestation. Land use changes including deforestation, overgrazing and burning of vegetation not only add to the carbon load but also cause changes in energy and moisture fluxes, with noticeable consequences on weather and climate patterns at local and regional levels (Ngaira, 2007). An estimated 11% of the land in Africa is at risk of being lost for crop

agriculture due to climate change induced environmental degradation (Fisher et al., 2011). It is estimated that there will be an increase in areas with severe dry conditions in Africa by about 5–8%, or 60–90 million hectares by 2080 (Ibid).

6.3 Impact, adaptation and mitigation in key sectors

The impacts of climate change as well as relevant adaptation and mitigation measures in the water, crop, livestock, fisheries and horticulture sectors are key to agricultural transformation

and food security in Africa. Adaptation in agriculture refers to measures put in place to allow farmers to live with the changing climate. Hisali et al. (in press), view adaptation strategies as responses to actual or expected climatic stimuli (and their effects) which are intended to moderate harm or exploit associated beneficial opportunities. The adjustments can be broadly categorized either as responses to current occurrences (climate variability) or planned adaptation to long term changes. Mitigation is “any anthropogenic intervention that either reduces sources of GHG emissions (abatement) or enhances their carbon sinks (sequestration)” (GTZ, 2008: 8). Carbon sequestration in soils, and on-farm emission reduction and the

displacement of fossil fuels through cleaner-burning bioenergy like ethanol, biogas and methane, are key mitigation measures in agriculture. A holistic view to address climate change in agriculture is advocated for (Figure 6.3). A number of additional pointers can be drawn from Figure 6.3. For example, African farmers and governments might not be able to adapt if there is no funding or if governance of funds is not instituted properly. The shortage of skills in the fields of adaptation and mitigation is still high on the continent. On the other hand, appropriate mitigation measures can result in less GHG emissions, an aspect that will result in less extreme weather events and other negative impacts associated with climate change.

FIGURE 6.3
Holistic view on climate change adaptation and agriculture



Source: Nhamo (2011)

In line with the central role played by adaptation in agriculture as shown in the holistic approach discussed above, Easterling (2011), develops an adaptation toolkit. This toolkit puts adaptation tools under four groups namely: natural resources and inputs, technological innovation, human ingenuity as well as information and knowledge (see Table 6.3).

TABLE: 6.3
Socio-agroecological systems (SAS) adaptation toolkit

Category	Adaptation Elements/Actions
Natural resources and inputs	<ul style="list-style-type: none"> • Water, energy, labor, land, fertilizer, pesticides
Technological innovation	<ul style="list-style-type: none"> • Breeding and genetic modification • Energy, water and soil conservation • Pest management • Specialized equipment • Information technology
Human ingenuity	<ul style="list-style-type: none"> • Crop and animal translocation • Improved agronomic practices, including diversification, energy efficiency • Strategic marketing • Harvest and storage efficiency
Information and knowledge	<ul style="list-style-type: none"> • Environmental monitoring systems • Outreach and information dissemination • Risk management • Research and development (R&D)

Source: Easterling (2011: 277) cited in Nhamo, 2011

Across Africa, a number of sectors (water, crop, livestock, fisheries and horticulture) are vital to grasping the nexus between climate change and agriculture. The following sections will examine these sectors in detail.

(a) Water sector – Water plays a central and uncontested role in Africa's development (Africa Partnership Forum, 2008). The sector is the most vulnerable in terms of climate variability and change. Water is a key driver, which impacts on food production and supply (Hanjra and Qureshi, 2010). Major impacts are on quality and quantity. If not handled well, the impacts of climate change will aggravate water related disputes across the continent. Already, there is a standing conflict in the Nile River Basin (Davis, 2011). Many

African countries are on the verge of exhausting their available water resources. By 2025, 25 countries are expected to have water scarcity or water stress (Africa Partnership Forum, 2008). Specific countries identified as having problems related to water pollution, access, scarcity and stress are: Algeria, Angola, Burkina Faso, Chad, Djibouti, Eritrea, Ethiopia, Kenya, Liberia, Libya, Mali, Mozambique, Somalia, South Africa, Tanzania, Uganda, Western Sahara and Zimbabwe (UNEP, 2008).

Most African countries fall within the tropical zone that is marked by seasonal shifts of the tropical rainfall systems (Toulmin, 2009). The Inter-tropical Convergence Zone (ITCZ) is one such dominant rainfall system associated with

countries stretching from Swaziland to Liberia. The ITCZ often follows an almost predictable seasonal pattern of change in surface temperature to bring reliable rainfall to the continent. The only exception is when the system is disturbed by the El Niño/La Niña-Southern Oscillation (ENSO) phenomenon that leads to unusually warm sea surface temperatures in the tropical Pacific leading to either extreme droughts or wet conditions. Indeed, the 1991/92 drought in southern Africa is believed to have been caused by ENSO.

FAO (2007) estimates the utilization of Africa's freshwater resources at 5.5% compared to 20.4% in Asia. A 2005 FAO survey indicated that there are about 1,300 large and medium-size dams across Africa, with 517 (40%) of these located in South Africa. Many of the dams were built to fulfill the demands of growing populations and irrigation agriculture. In terms of percentage share, an estimated 52% of the dams serve the purposes of irrigation, 20% are for municipalities and 20% for multiple purposes that include power generation (Ibid). As of December 2010, South Africa was using up to 98% of her surface water yield, with 41% of the annual usable potential of groundwater having been allocated (Davis, 2011). Apart from agriculture, water is also used up in industry, power generation, and for domestic purposes (DST, 2010). All these uses for water will compete more in the future given the dwindling supplies as a result of climate change. The potential for inter-basin water transfers has not been fully utilized on the continent, (FAO, 2007). Plans for inter-basin transfers out of the Congo and Niger systems into the Sahelian and southern Africa basins are still at pre-feasibility stages. The plans include proposals for a transfer from the Oubangi sub-

basin of the Congo into the Chari-Logone sub-basin of Lake Chad (Ibid).

It is predicted that an 8% reduction in rainfall may lead to a corresponding 31% reduction in groundwater recharge and a 30% reduction in surface runoff (Wakhungu, 2010). With rapid climate change, the major risks to water resources include: decreased availability of water due to increased temperatures that result in excessive evaporation (shifts in the timing and amounts of rainfall will also have similar effects); as well as increased risk of water pollution and decreased water quality resulting from erosion and high rainfall events that increase the presence of sediments, nutrients, dissolved organic carbon, pathogens and pesticides, and increased water temperature, which promote algal blooms (Davis, 2011).

One key adaptation strategy in the water sector is the revision of national regulatory measures on water rights. To this end, governments and key stakeholders must embark on mainstreaming climate change into national water laws and regional water protocols. Southern Africa and other African sub-continental zones have been working on cross-border river basin water transfer schemes. The bottom line, however, is that if climate change continues unabated, there might be less water to transfer from the basins.

The Africa Partnership Forum (2008) suggests adaptation measures in the water sector at three spatial levels namely: SSA, North Africa and Africa in general. For SSA, there is need to develop water storage infrastructure (see also Juma, 2011). The average storage capacity in sub-Saharan Africa in 2007 was estimated at 200m³/person/year, a figure noticeably low by international standards. Integrated river basin

management that combines water storage infrastructure with hydroelectric power development and water for irrigation are encouraged. The African Partnership Forum also recommends for SSA the need to strengthen water policies and water resource management including making the private sector more active. With regard to North Africa, there is need to realign water demand with available supply through comprehensive institutional and policy reform as well as strengthen water scarcity management strategies. Water-saving technologies and demand-management measures are deemed necessary interventions. For Africa as a whole, disaster risk management needs to be improved, especially with regard to floods since for every US\$1 spent preparing for disasters, US\$7 is saved in the cost of post-disaster recovery and reconstruction (Africa Partnership Forum, 2008).

Many natural lakes also exist in Africa including lakes Chad, Victoria and Malawi. The Great Lakes region is a contested area, as there are conflicting positions regarding how best to manage this shared resource. Programs aimed at controlling deforestation, desertification and silt control should be put in place. Also knowledge-sharing amongst the different national institutions responsible for managing this precious resource, is required.

(b) Crop sector – The crop sector [cash or food] is the largest in the agricultural industry in Africa. Using the International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT), Ringler et al. (2011) considered three possible climate change impacts on crop production to 2050 in Africa. The identified possible climate change impacts were: the direct effects on rain-fed yields through changes in

temperature and precipitation; indirect effects on irrigated yields from changes in temperature and available irrigation water (including precipitation); and autonomous adjustments to area and yield due to price effects and changes in trade flows.

The IFPRI IMPACT applied by Ringler et al. (2011), showed reduced crop yields in Africa by 2050 as a result of climate change. The results show very low increases in sugarcane production (0.21%), millet (0.5%) and sorghum (1.02%). These are crops that can thrive in much drier climatic conditions. Overall the picture depicted is one of a net negative impact yields with wheat production projected to reduce by as much as -21.64%, sweet potatoes and yams (-13.67%), cassava (-8.67%), maize (-4.73%) and rice (-1.11%). The IPCC (2007c), similarly projects that without appropriate adaptation Africa could witness up to 40% decline in cereal production by 2050.

In a study applying a meta-database of future crop yields from 16 recent studies in West Africa, Roudier et al. (2011), established that there was a large dispersion of yield changes ranging from -50% to +90%. However, the median was a crop yield loss of about -11%. The predicted impacts were greater in northern West Africa (Sudano-Saharan countries) at -18%, followed by southern West Africa (Guinean countries) at -13%. Lobell et al. (2011) similarly studied nonlinear heat effects on African maize as evidenced by historical yield trials. Drawing from a wealth of historical crop-trial data that exists in the African tropics and previously not utilized for climate research, the authors used a data set of more than 20,000 historical maize trials. This was coupled with daily weather data to show a nonlinear relationship between warming and maize yields. Weather stations with daily data for the study

period stretching from 1999–2007 were used. The major findings were that each day spent with temperatures above 30°C reduced maize yield by 1% under optimal rain-fed conditions and by 1.7% under drought conditions (see also Auffhammer, 2011).

In a related study in Malawi by Pauw et al. (2010) based on both historical production and climate patterns, it was revealed that maize production loss during climate events of different return periods (RPs) vary. The study separated maize on the basis of cultivars namely: local breed, composite and hybrid. Local varieties are usually the worst hit by droughts. Production could fall by at least 27% during an RP10 drought, whereas hybrid maize production falls by 10% (Pauw et al, 2010). Composites were found to be most drought-resistant in the country. With regard to floods, the study found that there was loss for all maize varieties since physiological differences between maize types were irrelevant during floods.

Since crop farming in Africa is mainly rain fed, the first port of call for adaptation should be in improving weather forecasts and early warning systems. Fisher et al. (2011) advise that African governments should mobilize resources to provide climate information and forecasting as well as strengthen research and development. Reliable early warning systems mean that governments must invest in infrastructure and human resources. Very few African countries have the technological know-how to predict weather accurately, due to limited investment in this area. For accurate national and Africa-wide weather and climate forecasts and simulations, the continent must be networked through well-equipped weather stations. South Africa's climate change experts involved in grooming

African adaptive capacity is a welcome development. At the national level, South Africa has developed a useful Risk and Vulnerability Atlas (DST, 2010). The Atlas has gained recognition as a valid portal of data and information at the national, provincial, municipal and business sector levels.

Nhemachena and Hassan (2011) have established that 67% of farmers across Southern Africa were adapting to climate change. Among the common adaptation measures were: crop diversification, planting different varieties, replacing farm activities with nonfarm activities, changing planting and harvesting dates, increasing the use of irrigation, and increasing the use of water and soil conservation techniques. A related study of 9,000 farms to determine if integrated farms are more resilient to climate change in Burkina Faso, Egypt, Cameroon, Ethiopia, Ghana, Niger, Senegal, South Africa and Zambia revealed that this was likely to be so (Seo, 2010). In fact, the results indicate that the productivity of integrated and resilient farms increases while that of specialized ones decreases. The projections were for various climate predictions to 2060. The study concluded that integrated farms become relatively profitable over specialized ones, with the impacts of climate change on integrated farms ranging from 9% loss to 27% gain depending on climate scenarios.

In an effort to communicate with rural farmers, FAO piloted the use of tools such as farmer field schools and multimedia materials through rural radios and extension agencies to generate climate change knowledge (FAO, 2009c). Similar research was carried out in West Africa (Tall, 2010) from the 2008 Red Cross early warning work. Tall (2010) and Ogallo (2010) both note that language, lack of trust between extension

work and communities, and low local capacity to act on forecasts are challenges. To address these, Tall (2010) suggests the need to: initiate forums that bring together national-level forecasters and local-level stakeholders; simplify the content of forecast bulletins; and develop trust between farmers and providers of climate information.

The role of local and indigenous knowledge systems should find its rightful place in the climate change adaptation discourse. Deliberate national policies integrating various kinds of knowledge systems, especially local and indigenous, as well as scientific knowledge systems should be put in place. Linked to knowledge systems is the emerging discipline of knowledge management. African countries need to better document, store and retrieve knowledge for long term usage.

Another solution presented is to dam more water bodies for irrigation (FAO, 2008), especially given the geographic spread of large dams across the continent. That said, one key challenge pertains to maintaining the dams to avoid siltation. Coupled with this is the uneven distribution of suitable dam sites in certain countries like South Africa and Zimbabwe. The total area under irrigation in Africa is estimated at 13.4 million ha in 2005 (Ibid). In terms of irrigated land, about 70% are located in five countries: Egypt, Madagascar, Morocco, South Africa and Sudan.

According to Petherick (2011) most studies on climate change and the crop sector tend to ignore indirect impacts such as changes in levels of pests and diseases. This kind of information is now necessary for policymakers seeking

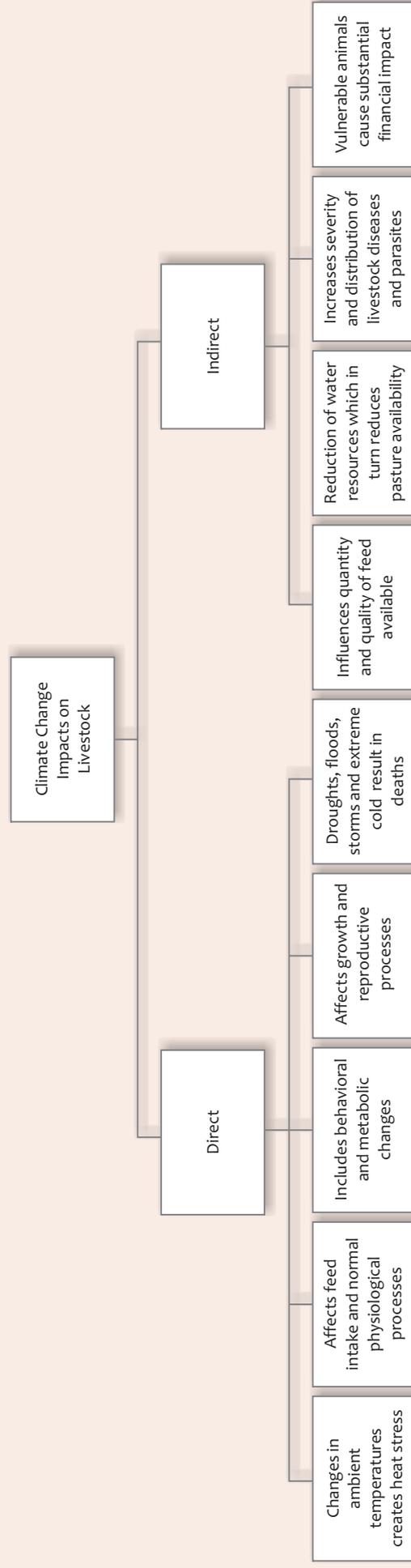
research that helps them plan accordingly. As for other mitigation measures, Fisher et al. (2011) suggest that African governments should reduce their GHG emissions through precision agriculture that will ensure efficient use of fertilizers and the rehabilitation of degraded crops. This requires that financing is secured from both national and international sources.

Weather Index Insurance (WII) is another initiative gaining acceptance as a valuable climate change adaptation strategy (Dilley, 2007). The drought insurance in Ethiopia presents one of the classic cases in WII (Dilley, 2007). A similar initiative was also piloted in Malawi (Meze-Hausken et al., 2009). The 2006 Ethiopian initiative was aimed at insuring the vulnerable population at risk from droughts. An index was constructed based on the dominant case of emergencies, i.e., rainfall required to protect the livelihoods of the 'at risk' population, estimated at 16.2 million people. The index was based on the insurance contract, and variations in the index trigger timely payouts used to finance the World Food Program (WFP) and government contingency plans. The payment was to be triggered when data gathered over a period from March to October 2006 indicated that rainfall is significantly below historic averages, pointing to the likelihood of widespread crop failure. The contingency funding was secured through the AXA Re contract and a maximum of \$7.1 million paid out for a \$930,000 premium. The model was designed on the basis of the potential losses that 17 million poor Ethiopian farmers risk should an extreme drought arise (Pantuliano and Wekesa, 2008). African governments might wish to continue rolling out the Ethiopian WII prototype as is or with amendments.

(c) Livestock (including game farming) sector – Although historical changes in demand for livestock products have been largely driven by human population growth, income and urbanization; in the future, livestock production will increasingly be affected by competition for natural resources (particularly land and water), and by the need to operate in a green economy (UNEP, 2010a). According to Notenbaert et al. (2010), pastoral systems are facing demographic, economic, socio-political and climatic pressures that are driving many pastoralists into non-livestock based livelihood strategies. The poultry sub-sector is also very sensitive to extreme heat and cold with either extremes leading to deaths.

Fischer et al. (2011) predict that approximately 33% of African countries are at risk of significant decreases in pasture production as a result of climate change. Animal husbandry accounts for about 18% of total GHG emissions in Africa (Naqvi and Sejian, 2011). Methane is one of the chief GHGs that ruminants such as cattle, buffalo, sheep and goats generate. In addition, extensive deforestation has been taking place in some parts of the tropical rainforest in Africa to create livestock grazing. A summary of climate change impacts on livestock is shown in Figure 6.4.

FIGURE 6.4
Climate change impacts on livestock production



Source: Modified after Naqvi and Sejian (2011: 21)

In countries like Botswana, the livestock sector is one of the major consumers of water, much of which originate from aquifers (Masike and Urich, 2009). These underground water reserves are accessed through borehole drilling that can stretch to more than a hundred meters. Climate variability and change, particularly temperature and rainfall influence per capita daily water demand and livestock drinking behavior at the boreholes. Through such linkages, climate change is expected to affect the cost of water supply for the livestock sector in Botswana. Drawing from a systems approach, to assess the impacts of climate change to 2050, the results indicate that climate change will lead to an increase in the cost of water supply by 23% (Ibid).

De Leeuw et al. (2011), in a study following Kenya's devastating 2008–2009 drought, suggested that climate change be mainstreamed into Kenyan drought management policies. The role of research and development as an adaptation measure in the livestock sector cannot be overemphasized. Wakhungu (2010: 2) concludes that there is the need to improve education and capacity to analyze climate change model data in order to inform policy. Livestock selection, changes in grazing patterns and water allocation are some of the measures that will mitigate against droughts (Ringler, 2011). As Sissoko et al. (2011) also point out, in the West African Sahel, farmers have adapted to climate change through selling livestock and engaging in on-farm diversification or specialization.

Pastoralists consider mobility and access to natural resources as the most important adaptation mechanisms to drought. However,

mobility is particularly restricted in areas of conflict and access to land and water may be problematic. Governments should therefore organize and monitor migratory movements, allowing access to unused grazing areas (De Leeuw et al., 2011). Input from local communities on how to mitigate droughts should be sought by those in positions of political authority. To Tarawali et al. (2011), it is imperative to encourage mixed farming of crop and livestock as a viable strategy to stock feed supply, especially when it is difficult to purchase in times of droughts, floods and other economic shocks.

Pastoral communities in East Africa have a long history of utilizing indigenous forecasting methods to predict seasonal climate events (Luseno et al, 2003). However, many traditional forecasting methods are perceived as becoming less reliable with increasing climate variability. Among common indigenous forecasting observations are: clouds; wind; lightning; behaviour of livestock, wildlife or local flora; movement of intestines of slaughtered animals; watching stars or the moon; and interpretation of dreams.

Notenbaert et al. (2010) approve of risk management (including the traditional early warning systems) and climate-robust development as promising approaches to adaptation measures in the livestock sector. Index based livestock insurance similar to that applied in the crop sector also offers innovative opportunities for protecting farmers. In addition to the measures proposed, diversification in the arid- and semi-arid regions might turn into economically viable livelihood strategies for

those in the livestock sector. To the list could be added carbon off-setting and manure management (GTZ, 2008).

Methane reduction strategies mainly come in the form of management and nutritional initiatives (Naqvi and Sejian, 2011). African governments could reduce GHG emissions in the livestock sector through 'precision' agriculture that would ensure the rehabilitation of degraded pasture land (Fisher et al., 2011; Naqvi and Sejian, 2011) provide ways in which methane can be mitigated in the livestock and game farming sector including: improved genetic selection to produce low methane producing animals; reducing livestock population; improving nutrition and grassland management; diet modification through ammonia and molasses feeding to reduce methane; and employing advance technology like immunization and recombinant technology for reducing methane production.

(d) Fisheries, aquaculture and entomology – Fisheries play a critical role in food security and African diet. In West Africa, fish constitutes up to 30% of average daily animal protein (Minard, 2006). Benin, Mali, Mauritania, Senegal, Gambia, Sierra Leone and Ghana are countries most dependent on fish in West Africa whilst in southern Africa, Malawi and Zambia stand out above the rest. Of the 520 million people worldwide who depended on fisheries and aquaculture for their living in 2006, between 30-45 million were based in Africa with 27.8% of total agricultural exports in West Africa realized from this sector. Women dominate the processing, retailing and local trade as well as the artisan fisheries. Some of the key river basins producing fish include the Senegal-Gambia, Volta, Chad, Congo, Nile, Zambezi and Limpopo. However, there is pressure on African fisheries from industries from Europe and South-East Asia that

have bought fishing rights from African governments seeking foreign currency (Toulmin, 2009).

In an era of globalization and a changing climate landscape, some African countries are threatened with overfishing: Angola, Burundi, Senegal, Sierra Leone, Sudan and Western Sahara (UNEP, 2008).

NEPAD, with the objective of developing the fish and aquaculture sector in Africa, in September 2005, organized the first Fish for All African Summit in Abuja, Nigeria to galvanize regional and international investment (Minard, 2006). A US\$30 million NEPAD-WorldFish Program for Sustainable African Aquaculture was announced during the 2005 Abuja Summit. The NEPAD-WorldFish Program aims to realize an annual increase in fish production of 10% that will create employment for about five million people by 2020 and provide food security for many (Badjeck et al., 2009). As of 2008, the African Development Bank had an ongoing fisheries and aquaculture portfolio comprised of 21 projects and programs that were benefiting 23 countries (AfDB, 2008).

Scholars such as Toulmin (2009) submit that a 2°C rise in temperature is likely to have a major impact on African fisheries with Mauritania and Angola being the worst hit. However, a negative impact on fisheries in one country might witness a positive impact in another in coastal areas as fish species are highly migratory. Among the impacts resulting from climate change are: changes in freshwater flows into lagoons and large lakes, intrusion of salt water into lagoons, rising sea levels and changing ocean currents could impact coral reef development (ibid). Allison et al. (2007) present evidence of negative impact of climate variability and climate change

on the African lakes of Tanganyika and Chilwa. Climate variability and change can be realized on a series of pathways or effects (Badjeck et al., 2009). The effects include production ecology, fishing and aquaculture operations, communities' livelihoods as well as wider society and economy effects. Climate change has both a negative and positive impact on ocean currents, ENSO, sea level rise, rainfall, river flows, lake flows, lake levels, storm severity and frequency and acidification (WorldFish Centre, 2007). Extreme weather events will affect fishing infrastructure and systems, as the number of fishing days could be reduced; nets traps and long-lines damaged; loss of lives to fishermen; damage to boats and shore facilities (Allison et al., cited in Toulmin, 2009).

In light of the above, one suggested key adaptation strategy for fisheries and aquaculture is to integrate with other farming systems so as to assist farmers in coping with drought conditions (WorldFish Centre, 2007). WorldFish has established partnerships with the African Union and NEPAD in a bid to bridge the knowledge and technical gaps in the fisheries and aquaculture sector. Other initiatives like the FishBase provide a global most comprehensive and authentic database. In addition, ReefBase documents 10,000 reefs in 40 countries whilst the BayFish model provides a set of decision making support tools that assist in the management of river basins. In dealing with adaptation in the fisheries and aquaculture sector, stakeholders should be aware of other drivers outside climate change that include socio-economic, credits, population growth, regionalization, research and development, technology and general management (WorldFish Centre, 2010).

To build more resilient fishery systems in Africa, Toulmin (2009) further suggests a number of strategies. These include: reducing fish harvest to ensure sustainable consumption; strengthening management rights over fish stocks and water; and regeneration of coastal habitats. In addition, rising sea levels could be utilized to increase flood areas where fish can be farmed. Aquaculture is already a growing industry in the DRC, Nigeria, Madagascar, South Africa, Tanzania and Uganda.

Mangrove conservation under Reducing Emissions from Deforestation and forest Degradation plus (REDD+) projects have also been put forth as a viable mitigation measure in fisheries and aquaculture (Badjeck et al., 2009). Through REDD+ projects, GHGs are sequestered.

Entomology is yet another growing agricultural activity in Africa. Bee-keeping, for example, generates income at both commercial and subsistence scales. Given that climate change could affect flowering cycles, one cannot rule out the adverse impact this could bring to the industry.

(e) Horticulture sector – In its 2007 report, the World Bank (2007c: 13) provides a critical overview of the horticulture sector, defining it “as the production and marketing of highly perishable products destined for fresh consumption, with relatively high-value per unit”. From this report, the average annual global production and trade in horticultural goods that include fruits, leguminous vegetables, cut flowers, nuts, and spices grew steadily as world trade increased by 37 percent to an estimated USD 75 billion from 1993-2002. Asia was the leading exporter of fresh fruit and vegetables with a total trade value of

US\$607 million. This was followed by Latin America at US\$408 million whilst SSA came in fifth at US\$89.6 million behind the USA with US\$205 million and the EU with US\$96 million. Horticulture increased in many African countries, with the bulk of produce coming from South Africa and Kenya.

Climate change impacts directly on water availability and temperature, and these influence pest and disease distribution, flowering and fruiting seasons in the horticulture industry (South African Fruit and Wine Initiative, 2010). Rising awareness of climate change amongst consumers in export destinations of horticultural products in Europe and Australia also negatively impact the sector as there is now demand for low-carbon products. The air freight has been debated as an aggravating element that increases the carbon footprints of the horticulture industry in Africa (MacGregor and Groom, 2007). Activities such as land-use change, agrochemical application and fossil fuel use increase GHG emissions (GRET, 2006).

To address the negative impacts associated with climate change in the fruit and wine industry of South Africa, for example initiated the Confronting Climate Change Initiative (CCCI) in 2009. The CCCI aims to highlight and communicate climate change issues, opportunities and threats to the agricultural sector; to create an industry standard for GHG auditing within the fruit and wine sector, and to ensure a standardized measurement, reporting and comparison of individual farm emissions and emission reduction opportunities; to enable informed and authoritative comment, debate and negotiation by stakeholders and policy-makers; and to guide short and long term strategy formulation by decision-makers across the industry (South

African Fruit and Wine Initiative, 2010). However, through conservative energy technologies and sustainable farming practices, GHG emissions could be significantly reduced. Since the CCCI, a carbon calculator for the fruit and wine industry has been developed in order to mitigate GHGs emissions and meet some of the market demands from Europe (Garside et al. 2008). The horticulture industry in Ethiopia has also been following similar footsteps in order to address carbon footprints in the industry (Ethiopian Horticultural Development Agency, 2011). Since the horticulture industry is very sensitive to climatic changes, national, state and/or provincial risk and vulnerability atlases as well as the development of new agro-ecological maps will assist greatly towards adaptation.

6.4 Biofuels, carbon farming and food security

Tirado et al. (2010), identify pathways through which climate change may impact food security. Included in the pathways are increased frequency and intensity of extreme climatic events; reduction in freshwater resources; sea-level rise and flooding of coastal lands that lead to salination and/or contamination of water, agricultural lands; impacts of temperature increase and water scarcity on plant and animal physiology; influence on plant and livestock diseases and pest species and livestock diseases; destruction of livestock, fisheries and aquaculture and impaired sustainability.

In an effort to mitigate against climate change caused by the use of fossil fuels, biofuels production has come in as a good substitute. Millions of hectares of land across the globe and in Africa are being 'grabbed' for biofuels and carbon

farming by commercial entities. Apart from the increasing threat to staple food production, biofuels consume a lot of water. Competing land uses between crop and livestock production links directly to biofuels and carbon farming in Africa. Harvey and Pilgrim (2011: 541) present the concept of “the trilemma challenge.” This is a challenge emerging from increased demand for food and energy that leads to pressure on land conversion, which in turn results in land clearance and climate change that ultimately affect productivity and availability of land.

Nigeria is working with Brazil to produce \$150 million worth of cassava ethanol annually (Pisces, 2009). China has requested two million hectares for jatropha farming in Zambia (Von Braun and Meinzen-Dick, 2009). In their study focusing on land grabs in Africa, Cotula et al. (2009) looked at land deals in

Sudan, Ethiopia, Madagascar, Mozambique and Tanzania. The countries were sampled based on media reports that pointed out significant interests in the countries. The authors reveal that in 2008 GEM Biofuels Plc concluded a deal on exclusive rights for 50 years over 452,500 hectares of land in Southern Madagascar for jatropha. Furthermore, United Kingdom energy company CAMS Group, acquired a lease over 45,000 hectares of land in Tanzania in the same year to produce sweet sorghum for biofuels. Details concerning land grabs in the five countries cited earlier are shown in Figure 6.5. The issue of water, land rights and livelihoods are central in Tanzanian biofuels deals (Centre for Human Rights and Global Justice, 2010). Amigun et al. (2011) realise that the line between energy and agriculture in some African countries is becoming blurred. In Ghana for example, a number of foreign investors including Norwegian, Brazilian, Dutch, Swedish, German and

FIGURE 6.5
Land grabbed by product 2004-2009 (ha)



Source: Adapted from Cotula et al. (2009: 51)

Carbon farming is a new phenomenon that emerged from the Kyoto Protocol. The Kyoto Protocol (UNFCCC, 1997) of the United Nations Framework Convention on Climate Change – UNFCCC (UNFCCC, 2009) requires that 37 industrialized countries reduce their GHG emissions on average by 5.2% based on their 1990 emissions levels. Within the Kyoto Protocol mechanisms is the Clean Development Mechanism (CDM), a mechanism that allows any one of the 37 industrialized countries given GHG emissions reduction quotas to invest in a project that reduces GHG emissions in Africa and account for such through international mechanisms. One such set of mechanisms can be based on carbon farming in Africa through Reducing Emissions from Deforestation and Forest Degradation plus (REDD+) (Nhamo, 2011). While this is a good initiative, unfortunately land is being grabbed for the purposes of REDD+. The Congo Basin is on the limelight in this regard (CBFF, 2008). Through REDD+, the forests conserved serve the purpose to sink carbon to which carbon credits are issued to the investing country for either international trade on the open market or off-setting quotas from the Kyoto Protocol. REDD+ investment in Africa is also consuming land, some of which could be used for food production. However, the magnitude of the land taken away according to Cotula et al. (2009) is not yet clearly known.

6.5 Agricultural trade under climate change

The history of agriculture in global climate negotiations can be traced from the provisions of the UNFCCC of 1992. Article 4(1)(c) calls upon Parties to promote and cooperate in the development of technologies, practices and

processes that control, reduce or prevent GHGs in all relevant sectors, among them agriculture and forestry. Article 4(1)(e) further discusses the need to prepare for adaptation to the impacts of climate change including developing and elaborating appropriate and integrated plans for agriculture. Agriculture is also addressed under Articles 2 and 10 as well as Annex A of the Kyoto Protocol. Article 2(1)(a)(iii) urges Parties to promote sustainable forms of agriculture in order to address climate change. Article 10(b)(i) takes note of the need for Parties to formulate, implement, publish and regularly update national and appropriate regional programs that address climate change mitigation as well as measures that facilitate adequate adaptation within the agricultural and forestry sectors. Annex 'A' presents agriculture as a source of GHG emissions from enteric fermentation processes, manure management, rice cultivation, agricultural soils, prescribed burning of savannas and field burning of agricultural residues.

By 2080 climate change could result in a reduction of Africa's projected agricultural GDP by up to 8% (Fisher et al., 2011). This could also be aggravated by the changing international trade policy on agricultural commodities and carbon footprints (how much carbon can be accounted towards the production of a certain agricultural commodity, especially from Africa).

Apart from the carbon generated from inputs such as fertilizers and the use of electricity, fuels and clearing of forests, airfreight has caused problems as consumers and other 'green' organizations battle to establish the carbon footprint associated with such trade (Nhamo, 2009). This is an additional cost to African farmers who are already faced with low donor

assistance and downward the trend of world market prices. The recent 'Food Miles' argument of the EU presents a serious threat to agricultural commodities trade with that region. A number of organic certifiers in Europe withdrew organic certification to air freighted products like flowers and wines because of their high carbon footprint. Leading airfreight exporting countries including Egypt, Kenya, Morocco, US, Zambia and to a significant extent, South Africa, Cameroon, Gambia and Ghana (ICTSD and IPC, 2010) have had problems linked to the high carbon footprint of produce.

Studies in Malawi indicate that agriculture suffers the greatest trade losses, with declines in GDP ranging from 1.1 to 21.5% during RP5 and RP25 droughts respectively (Pauw et al., 2010). The resultant food shortages also cause local grain prices to rise while grain imports increase. For example, maize imports in Malawi increased by between 6 and 256% during RP5 and RP25 droughts respectively. Local currencies are also affected as the demand for foreign currency for import. A typical case has been the 15.5% devaluation of the Kenya shilling since the start of the drought in the horn of Africa (Bonyo, 2011). Many aid agencies in Kenya were sourcing food for both Kenya and Somalia and this has left the shilling at 93.60 to the US dollar as of 8 August 2011.

At the core of climate change and trade is the emergence of the green global economy. This is an economy that emerged from the desire to address both the global financial crisis of 2008 and the ongoing negative impacts of environmental decay, particularly climate change. According to UNEP (2010) the green economy recognizes a number of key aspects: the value of and need to invest in natural capital;

is central to poverty alleviation; creates jobs and enhances social equity; substitutes renewable energy and low-carbon technologies for fossil fuels; promotes enhanced resource and energy efficiency; delivers more sustainable urban living and low-carbon mobility and grows faster than a brown economy over time, while maintaining and restoring natural capital (Nhamo and Van Zyl, 2011). UNEP (2010) further stipulates enabling conditions for the attainment of a green (African) economy. The enablers include: the establishment of a sound regulatory framework; prioritization of government investment and spending in areas that stimulate the greening of economic sectors; limiting government spending in areas that deplete natural capital; use of taxes and market-based instruments that enhance green investment and innovation; investment in capacity building, training and education; as well as strengthening of international governance framework, among them, the UNFCCC and the Kyoto Protocol that deal directly with climate change.

Over the years, and especially since COP13 in Bali 2007, key themes with a bearing on climate change and agriculture such as mitigation, adaptation, technology, capacity building and awareness as well as financing have emerged as negotiation spaces. In 2010, the Food and Agriculture Organization (FAO) of the United Nations made a submission during COP16 in Mexico entitled "Towards a Work Programme on Agriculture" (FAO, 2010b). The FAO submission made it clear that agriculture was one of the sectors with significant GHG emissions. The FAO indicated that adaptation of the agriculture sector to the changing climate was not an option but an imperative for survival. It also highlighted that developed countries needed to set an

example by setting ambitious levels of reducing their GHG emissions. The FAO submission highlighted that responding to climate change in developing countries should be approached in a manner that would not “jeopardize, or better still enhance, nationally-owned development processes that prioritize food security and poverty reduction, wherein agriculture plays a key role” (FAO, 2010b:1). From the FAO's perspective, agriculture offered options that provided multiple benefits for mitigation, adaptation, development and food security. To this end, incentives, policy approaches and institutional mechanisms including adequate financing, technology and capacity-building support could make agriculture one of the practical solutions to the interdependent challenges of climate change and food security. Overall, the FAO Work Program on Agriculture recommended that mitigation become a key element of the program, including options with adaptation co-benefits. However, the FAO Work Program on Agriculture was not adopted as one of the decisions of COP16 in Cancun, Mexico (FarmingFirst, 2010).

In the lead to COP17 in Durban, South Africa, African voices emerged demanding that climate negotiations take full recognition of the role agriculture plays in sustaining African economies. The Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) called for a climate deal that would promote food security despite the realities of climate change (Rootman, 2011). A 'No agriculture, no deal' call was presented in order to emphasize the importance of agriculture to Africa. The Call by FANRPAN was supported and followed up by another on 3 December 2011 from 16 leading agriculture organizations following the

Agriculture and Rural Development Day (IISD, 2011). The organizations challenged negotiators to include agriculture in the text of the climate agreement from Durban. More than 500 participants to the Agriculture and Rural Development Day addressed priorities for meeting food security challenges while supporting climate change mitigation and adaptation. The participants also noted that the Work Program on Agriculture has stalled in the UNFCCC Ad hoc Working Group on Long Term Cooperative Action (AWG-LCA) negotiating text. A call was also made for collaboration between business, government, research, and development organisations. Among key organizations that endorsed the call and forwarded a letter to the UNFCCC were: FAO, World Food Program (WFP), International Fund for Agricultural Development (IFAD), World Bank, Southern African Confederation of Agricultural Unions (SACAU), International Food Policy Research Institute (IFPRI), Global Forum on Agricultural Research (GFAR), Food, Agriculture and Natural Resource Policy Analysis Network (FANRPAN), World Farmers' Organization (WFO), Farming First and Danish Agriculture and Food Council.

6.6 Conclusion

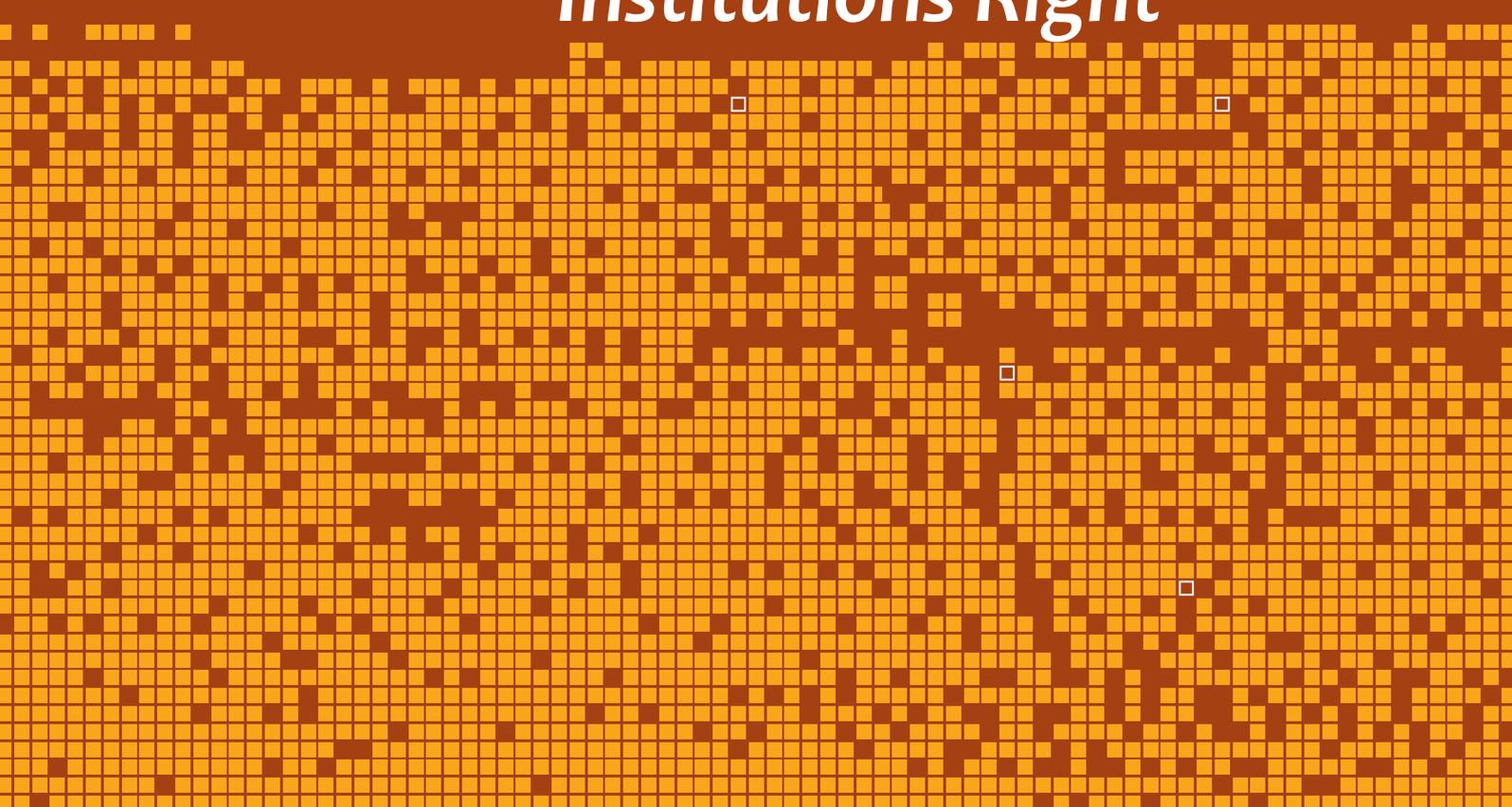
It is important to consider climate change and environmental degradation impacts, as well as adaptation and mitigation phenomena in relation to a number of areas that include water, crop, livestock, horticulture and fisheries sectors. The contemporary discourse on biofuels and carbon farming need to be revisited in the context of Africa with an emphasis on land grabs and switch by subsistence and commercial farmers to these new ventures. Although both

positive and negative impacts of climate change are evident on the continent, the net effect is negative. Climate change was also found to accelerate environmental degradation. Looking into the future, policies have to address concerns from the global, to the continental, national, municipal as well as household and/or farm spatial levels. The household and/or farm spatial scale are critical if Africa is to win the future against climate change and environmental degradation. Agriculture has finally been placed on global climate change negotiations. Hence

the operationalization of mechanisms upon which aspects pertaining to mitigation, especially the measurement, reporting and verification (MRV) of GHG emissions in the sector as well as adaptation financing will become clearer leading to and during the conclusion of COP18 in Qatar. However, Africa needs to continue calling for a deal that realizes the central role played by agriculture in the economy, particularly food security and jobs creation. Capacity needs to be enhanced in the new areas like climate smart agriculture, MRV

7

Agricultural Transformation and Food Security – *Getting Policies and Institutions Right*





7

Agricultural Transformation and Food Security – Getting Policies and Institutions Right

7.0 Introduction

Agriculture has the potential to reduce poverty, enhance development and transform livelihoods. However, a number of important questions need to be considered: Why has agricultural transformation not been consistently realized across Africa? What are the roles of the state, the private sector, and civil society in promoting agriculture and food security? How can agricultural policy making implementation be enhanced and transformed? How can Africa make finance, infrastructure, markets and technology more effective for agricultural transformation? What can good leadership contribute toward agriculture-for-development? And how does capacity development contribute in the process of agricultural transformation and enhancing food security?

Other important questions relate to the variety of outcomes on the contribution of the sector to development results. Agriculture has been used effectively for sustainable development and food security by some countries, yet not so well by others, despite its unique abilities to reduce poverty. Raising productivity to make agriculture better perform as an instrument for development will be difficult, particularly in some of the poorest countries where it is needed most. Unpredictable price spikes undermine the viability of many production and food systems at current levels of productivity. With globalization and continuing strong demographic pressures, enhancing land productivity—and sustainable land management—will become fundamental. Rising energy prices also affect the future of agricultural intensification based on petroleum derivatives such as nitrogen fertilizer.

Another area where questions arise is the delivery of technological innovations. The speed and depth of innovation may be delayed by underinvestment in research and development (R&D) and lack of safeguards to guide the adoption of new techniques. Climate change and growing water scarcity will require more research and innovation on the efficient use of water and resilient farming systems. Climate change will severely impact some of the poorest African countries where water management is least developed and science least funded to generate new adaptive technologies and capacities. Future agricultural growth therefore has to be productive and environmentally friendly, involve smallholders, especially women, and create jobs.

How holistic the sector has been viewed also varies across country contexts. Many countries face challenges in developing specific agricultural products, raising productivity and linking to value chains, particularly supermarkets and high-value export markets. Improved policies, institutions, and

investments in agriculture cannot reduce poverty by themselves. Comprehensive multi-sectoral strategies are required to coordinate the contributions of agriculture with investments in other sectors, raising complex issues of investment prioritization, political tradeoffs in budgetary processes, and holistic coordination of implementation. The political economy of agricultural transformation and food security will continue to be difficult and yet it has to be dealt with through pragmatic capacity development initiatives.

7.1 Taking leadership, politics and policy variations in country contexts seriously

As was argued in Chapters 1 and 4, setting the 'right' policies for agricultural transformation requires some savvy leadership and political guidance – at the core of which will be the need for participation by the local populace in the policy processes. That makes strengthening governance a prerequisite not only for policy making, but also for implementing the agricultural agenda effectively and using public resources efficiently. The leadership must identify combinations of approaches that are both politically feasible and fit country conditions (World Bank, 2007a:251). Equally, supporting leaders is crucial to creating the conditions for effective democracy – characterized by participation, transparency, accountability and social inclusion. As Blair (2010:9) notes, it is not: “a question of doing this instead of strengthening transparency and accountability. The two must go hand in hand, to create a positive cycle where elected leaders are able to deliver for their citizens, in turn nurturing a politics that is about issues and competence not just ethnicity or patronage, and which offers a model to inspire future generations of leaders. But to get there we need a proper understanding of the realities of leadership.”

As submitted in preceding chapters, the decades of the 1980s and 1990s in Africa were characterized by reforms aimed at securing macroeconomic stability. The importance of policy in delivering these noble objectives has been widely acknowledged, but how that policy should be developed is a matter of contention. Chapter 4, for example, contends that one of the main constraints on economic policy for poverty reduction is a mindset that African countries can do very little, or the extreme version, that any proactive state intervention to reduce poverty will worsen the situation. However, given the political will, alternatives can be worked out as evidenced by the development of CAADP, which has mobilized action at the national, sub-regional and regional levels alike. Local agencies should also play a greater role in both agricultural project designs and resource mobilization. There are, of course, other constraints such as weak institutional capacity, unclear mandates of the various agencies and Regional Economic Communities (RECs) that oversee poverty reduction strategies. Additional challenges are the centralization and partisanship of the policy making process. According to Kararach (2011:132), “[W]idening the policy dialogue process to include civil society will go a long way in dealing with the various policy constraints. In any case, policy failures would be accommodated by society if it had shared in the process in the first place.”

Another actor that has not featured prominently in the discourse on agricultural transformation and food security in Africa, is the private sector. Although the discourse on the reforms in the past decades has elevated the role of the market – accordingly, the private sector as the only acceptable development mechanism – this seems to sit in isolation of what other parties can contribute. The debate can be shifted in that the motives of private sector agencies, while profit driven, should be harnessed through proactive civil politics to encapsulate the achievement of socio-economic justice. Civil society can serve as facilitator of public-private partnerships giving value-addition of full social inclusion through greater social investments (Tendler, 1982). In particular, organized farmers and other representative organizations around smallholders can provide effective value in the interface between the state and the private sector.

The lack of transparency and accountability in many African countries has continued to undermine the development of broad policies – including those for agriculture and food security. Many policy decisions continue to be presented technocratically and without consulting the local population – thus limiting the benefits of any efforts at decentralization. This failure is in part a result of the democratic deficit in many Least Developed Countries (LDCs), Africa being no exception. Oligarchies have emerged in many of the so-called reform countries and dominated the socio-economic discourse over the last two decades or so. Many African countries have gone through elections but it is unclear whether or not they have emerged with their democratic credentials, in terms of the efforts to reduce poverty and hunger.

The pressure for a country to undertake reform is, in part, an outcome of both domestic and international socio-economic dynamics. The internal dynamics are the result of both political and apolitical forces. For example, drought has been known to adversely affect African countries, as they depend on rain-fed agriculture. The resultant poor harvest may put pressure on prices and the balance of payments. The point here is that a clearly apolitical factor does have obvious political and policy implications.

Therefore, framing of agricultural policy has to be understood in the wider context of national priority and geopolitics. The tendency in many African countries has been that national priorities are conceived within a relatively narrow framework characterized by nepotism and corruption. The need to broaden the policy agenda reflects the broader forces for democratization and social inclusion. Any changes that challenge the status quo are likely to be met with resistance from those with a stake in it. Institutions that are allegedly free of political control, such as independent central banks, revenue authorities, etc., must realize that the policy recommendations they make will directly influence the socio-political landscape (Kararach, 2011). The case should be made that the development of agricultural policy is not an end in itself, but is a service the state renders to its citizens (Bond, 2004).

This Report contends that how policies work in organizations will depend on a host of factors, from organizational culture to the nature of existing bureaucratic arrangements. Understanding policies and capacity development in context is thus critical as every development

organization is a complex agent, not just an actor whose views and positions can be personified and treated as singular. Indeed, published policies of development agencies may be products of successful discourse coalitions, but may neither represent nor even resonate with the perspectives of those charged with their implementation (Cornwall and Brock, 2005). This is why leadership becomes the crucial driver beyond pronouncements of given policies including those related to agriculture and food security. There is a need to decipher and understand the local context in countries by conducting country capacity needs assessment.

7.2 Globalization, competition and food markets

While the approaches to addressing food insecurity currently in use are laudable, they place emphasis on a global approach to attaining food security and also put large multinational corporations in charge of the food chain. To Schanbacher (2010), the current model for dealing with world hunger and food insecurity advanced by the United Nations, World Bank, International Monetary Fund (IMF), World Trade Organization (WTO) and other international organizations are too dependent and focused on trade, as well as over-reliant on international agribusiness. This approach also generally negatively impacts the right to self-determination and ability of local people to be autonomous in the food chain. Windfuhr and Jonsén (2005: 9) claim that people facing hunger and malnutrition are, to a large extent, smallholders, landless workers, pastoralists or fisher folk, often situated in marginal and vulnerable ecological environments. These

people are often neglected by both national and international policies. Without proper support they cannot compete with increasingly subsidized industrialized agriculture. For many of them, market liberalization has resulted in damaging and often unfair competition with farmers or commercial entities that have 'acquired' comparative advantages through decades of direct and indirect subsidies. According to Windfuhr and Jonsén (2005), the situation often results in smallholders being forced off their land and moving to even more marginal areas or migrating to the shantytowns around cities.

Given that current mainstream answers to the problems causing malnutrition are failing, and adherence to a set of central ideas, based around an ever-greater concentration on trade-based food security is inadequate to tackle the problems, additional analysis and a search for new, innovative solutions are needed (Windfuhr and Jonsén, 2005). However, due to the fact that the role of international trade and international agribusinesses cannot be completely ignored, the search for an alternative gets embodied in the idea of food sovereignty. Also, as a result of concerns with the neo-liberal approach to promoting food security that emphasized market deregulation and the rolling back of the state, food sovereignty is seen as a food enhancing paradigm and an alternative to the neo-liberal model. Food sovereignty principles call for the re-organization of food trade, social peace, as well as the protection of natural resources. It also requires placing priority on food production for domestic and local markets, based on peasant and family farmer diversified and agro-ecological production systems (SWAC, 2006). It further warrants fair prices to farmers.

This means power to protect internal markets from low-priced dumped imports; access to land, water, forests, fishing areas and other productive resources through genuine redistribution. Likewise, it places emphasis on the recognition and promotion of women's role in food production and equitable access and control over productive resources. In addition, food sovereignty entails public investment in support of the productive activities of families and communities that are geared towards empowerment, local control and production of food for the people and local markets (SWAC, 2006).

Another important aspect and principle of food sovereignty centers on the rights to territory for indigenous peoples and their perspective that nature is a living being which is essential to the identity and culture of their communities. Currently, as part of the world trading system, there is the WTO trade-related aspect of intellectual property rights (TRIPs). The TRIPs agreement seeks to ensure that the rules and laws relating to the protection of intellectual property are consistent among WTO member countries, and in the process facilitate trade. It also involves the equal application by all members of minimum standards of protection in relation to all categories of intellectual property. Furthermore, the TRIPs agreement developed minimum standards of protection in the areas of copyright, trademarks, geographical indicators, industrial designs, patents, and undisclosed information (Edelman, 2003:204; Arthur, 2004).

However, there are a number of concerns with the TRIPs that have negative implications for food sovereignty in Africa. First, the agreement allows individuals and multinational corporations (MNCs) to profess exclusive rights over life forms, genes, microorganisms and the micro-

processes by which they perform their functions, as well as ignores the knowledge of indigenous people, and ultimately makes it easier for their knowledge to be appropriated. Biodiversity resources that are indigenous to African communities as well as other parts of the developing world are patented by MNCs as their own discoveries. Since intellectual property protection was frequently non-existent in developing countries, MNCs are going to developing countries and engaging in 'biopiracy' by patenting products, as well as claiming monopoly rights over traditional knowledge and resources, which have been in existence since time immemorial (Arthur, 2004). For example, companies such as W. R. Grace, a US-based agriculture company, that self describes itself as a 'premier specialty chemicals and materials company', acquired US patents for active ingredients in the seeds of the neem tree, which many local communities in both Africa and South Asia had utilized since ancient times as an insecticide, toothpaste substitute, and medicine (Edelman, 2003:204). Thus, the TRIPs agreement does not take into consideration the cultural basis of knowledge, whereby all of society shares research findings (Arthur, 2004).

There is therefore the need to address the issue of the TRIPs agreement, which allows MNCs to patent biological materials and life-forms found in Africa, and which undermine the rights of African farmers over seeds and other forms of indigenous knowledge (Arthur, 2004). As food sovereignty advocates contend, the current situation in the world trading system where intellectual property rights over living resources including seeds, plants and animals is the norm and contributes to de facto biological monopolies and where the seed or breed is rendered

sterile, needs to be reexamined and possibly banned if African countries are to attain food sovereignty. African countries should push the WTO to recognize the fact that they own the rights to their biological resources, knowledge and techniques, so there is no reason why the collective nature of these should be patented (Arthur, 2004). A food sovereignty framework will allow local people to have equitable access to resources and the rights to use them rather than have them patented by MNCs. Models that seek to patent such indigenous knowledge for the benefit of the local people who have tacitly embedded it in their practices should also be explored.

Aside from that, it is unfortunate that in an era where the West and many international institutions such as the IMF, World Bank and WTO all advocate neoliberalism and the Washington-consensus model to socio-economic development, they have not put into practice what they call for, especially as it pertains to the agricultural sector. Indeed, western countries have persistently adopted protectionist policies and also subsidized their agricultural sector, while the WTO has failed to ensure the enforcement of the liberal trade policies and obligations that it has agreed to with member states (Lee and Smith, 2008:259). The WTO has been unable to compel the USA and the EU to stop the subsidization of their domestic industry, which reinforces an unequal playing field between African countries and the West (Lee and Smith, 2008:269). Consequently, despite the pronouncements of Western governments to engage in free trade and reduce agricultural subsidies, this has not been the case. Rather, export subsidy levels have either remained the same, or in certain instances actually increased, and this has certainly affected the economic development efforts of African

countries. Export subsidies by Western governments such as the USA and EU generate food surpluses that benefit big farmers and businesses in their countries but distort the world market and also make farming and agricultural activities in developing countries expensive and uncompetitive. The result is the dumping of subsidized agricultural products from the West on the markets of African countries, invariably contributing to the impoverishment of farmers in Africa (Arthur, 2004). For example, African countries became victims of 'dumping,' when European C-grade beef entered the South African market, thereby undermining Namibian beef exports to South Africa (Cheru, 2002: 27).

It is therefore important that western governments remove provisions of current national policies that subsidize their agricultural sector and which in turn negatively impact food sovereignty in Africa and other parts of the developing world. It is hypocritical for the West to call for free trade, and then provide huge export subsidies to their farmers (Arthur, 2004). Until there is a fair and transparent world trading system and western governments change their current agricultural policy approaches, there is no reason why African countries should not undertake reforms in the agricultural sector that entail a central and dominant role for the state, and contributes to food sovereignty. For example, the comprehensive agricultural input subsidy program introduced by the government of Malawi from 2005/6 to 2008/9 has achieved substantial benefits and successes. Through the provision of vouchers to farmers to receive fertilizers for tobacco and maize production, as well as improved maize seeds, wider economic growth, poverty reduction, higher real wages, and food availability and security were attained (Dorward et al., 2011). Similarly, in Ghana, the

intervention by the government either in or starting in 2001 to raise productivity in the cocoa sector through the adoption of hybrid cocoa varieties, increase in the use of fertilizer, better disease and pest control, as well as favorable price regimes and improvement in marketing, all combined to increase productivity by 30%, reduce poverty, and improve the living conditions of cocoa farmers and the sector as a whole (Kolavalli and Vigneri, 2011). Such policies together with the increase in agriculture extension services to food farmers helped to advance and promote food security and food sovereignty in Ghana, and resulted in the World Food Prize Foundation awarding Ghana's former President J. A. Kufour, together with Luiz da Silva, former president of Brazil, the 2011 World Food Prize.

7.3 Developing coherent frameworks embedded in national policies

From the discussions above, African countries need to domesticate CAADP and embed policies in national contexts and realities. Agricultural transformation and food sovereignty need comprehensive agrarian reforms that uphold individual and community rights of access to, and control over, territories. According to La Via Campesina, one of the principles to achieve food sovereignty is the need for a genuine agrarian reform, which gives landless and farming people – especially women – ownership and control of the land they work and the return of territories to indigenous peoples. Since land belongs to those who work it, the right to land must be free of discrimination on the basis of gender, religion, race, social class or ideology (Windfuhr and

Jonsén, 2005: 17). Equitable access to and control of land, labor and agrarian resources, and state support particularly to small producers, are critical to reversing the social costs of human deprivation arising from food insecurity, and to achieving food sovereignty (Moyo, 2010). It is widely accepted that improved access to land is good for the poor, particularly in terms of food security. This is because not only does income increase with land access, but also it leads to the relaxation of credit constraints, which allows households to undertake profitable investments (Valente, 2009:1541). It further increases wages and the availability of basic food for consumption by the majority of the working people (Moyo, 2010). In the unique case of Southern Africa (Namibia, South Africa, and Zimbabwe) for example, land reforms were adopted with the primary objective of redistributing land from white settlers to black people who were dispossessed of valuable land during the colonial and apartheid period (Malope and Batisani, 2008:383). Thus, the essence of agrarian reforms is to ensure that governments in Africa implement effective public policies that guarantee community (those who derive their livelihood) control over all natural resources. It also contributes to strong accountability mechanisms that help deal with the concerns associated with the violations of these rights.

It is important to note that land and agrarian reforms in many Latin American and African countries, are often disparaged in the Western media as only contributing to political opportunism, cronyism, violence and deadly attacks, and a destruction of food production and socioeconomic activities. Critics of such agrarian reform argue that not only is the so-called modern neoliberal approach essential for food security, but

also large-scale agriculture promotes development and has a positive trickle-down effect on the poor. For example, Valente (2009) concludes from two national surveys in South Africa that on average, land grant recipients in South Africa were more food insecure than comparable non-participants. Similarly, in Botswana, land reform policies are alleged to have harmed many poor households living in communal areas. Also, poor people were excluded from the benefits of land reforms by constraints such as high financial and development costs and the lack of human capital (Malope and Batisani, 2008). It is these challenges, constraints and criticisms that have made land reforms, as part of agrarian reforms, difficult to implement in many African countries. It also helps explain the call by international institutions like the IMF and World Bank for a neoliberal approach to land reform, which takes the form of secure property rights and 'willing-buyer-willing-seller' models of reform.

Despite the criticisms of the state-led agrarian reforms in Africa, under the neoliberal approach of agrarian reforms, many indigenous farmers and peasants are unable to have adequate access to land. Aside from that, the neo-liberal approach leads to commercialization of land, lack of access to land by the poor, increased debt for poor rural farmers, and the concentration of land in the hands of the urban elites, most of who are absentee farmers. It is in this regard that rural actors have mobilized in Southern Africa and Latin America to demand changes in their relationship to property and land (Wolford, 2007:557). Indeed, Scoones (2008) has called into question the myths about land and agrarian reforms in Zimbabwe. The study shows that contrary to western media depictions and stereotypes of abject poverty, land and agrarian

reforms in Zimbabwe were not a total failure and did not overall negatively impact food security. Besides finding that 'ordinary' people were the main beneficiaries of land reforms as opposed to political cronies, many rural farmers also invested heavily on their resettled lands (Winter, 2010). Such findings are similar to ones in the Philippines and other Asian and Latin American countries that showed that agrarian land reforms contribute positively to overall socio-economic development, increase in household incomes, and reduction in poverty. It is in this regard that land reforms as part of food sovereignty should take the form of providing complementary resources such as credit, irrigation, technical assistance and transport, processing and marketing facilities that are required for successful peasant enterprises (Edelman, 2003:207).

7.4 Listening to farmers – participation, governance and social inclusion

Equally, attaining agricultural transformation and food sovereignty will be dependent on the extent to which African countries are willing to meeting their own needs through food self-sufficiency rather than relying on the developed world. This will involve improvements in the local food systems, as well as infrastructure like roads and other transportation systems (Cheru, 2002). Underlying all the various arguments is the fact that food sovereignty can only be attained when there is sustainable economic growth in Africa. This in turn can be realized under circumstances when there is an enabling environment, good governance structure and of course the necessary capacity development initiatives. As Tweeten (1999) asserts, although not essential,

democracy is a positive force for food sovereignty and security to the extent that it creates an orderly succession of leadership useful for business planning. A democratic system can expose corruption and provide checks and balances, as well as provide some empowerment through voting by the poor to receive human resource investments in health, education, and food transfers from governments for broad-based developments. Thus, the promotion of good governance, reforms as well as direct democracy in the agricultural sector will not only help in stemming the tide of food insecurity, but also help create enabling environment for food sovereignty and a dynamic agricultural sector that can contribute to further socioeconomic development. More importantly, a food sovereignty framework that adopts the direct democracy model will help promote the greater involvement and participation of the local population in the formulation and implementation of policies, as well as research agenda for the food and agricultural sector.

Locally generated and holistic approaches to agriculture that concurrently address production, profitability, economic development, natural resource conservation and human well-being are more effective than strategies that address these issues in isolation (IAASTD, 2009a). Local and traditional knowledge related to agriculture exemplifies such an approach – it can encompass production planning, cultivation, harvest practices and post-harvest handling, to storage and food processing methods. Through informal learning and adaptation, small-scale producers in the tropics have developed a wide range of farming practices that are compatible with their ecological niches. The bio-diverse character of many farming practices facilitates

environmental sustainability by provisioning diverse ecological services (Di Falco and Chavas, 2006). These practices have helped to ensure the conservation of the diverse genetic pool of landraces needed for modern plant breeding (Brush, 2000). Nonetheless, professional specialization of marginalized local and traditional knowledge, assumes that farmers are passive actors whose own knowledge needed to be improved or replaced. The role of women farmers in local and traditional knowledge systems has been even less valued. However, as multi-stakeholder approaches to agro-ecosystem management started to become more common during the 1990s and to value chain development since 2000, and as policy-making started to favor evidence-based procedures, place-based user knowledge began to regain value (IAASTD, 2009a).

Increasingly, future breakthroughs in Africa will need to include improved resource management practices, a complex and site-specific undertaking. Given the heterogeneity within African agriculture, and the fact that 90% of sub-Saharan African farmers currently practice diversified agricultural production systems (IAC, 2004), these efforts will require participatory, genuinely collaborative research involving scientists and local farmers and groups in order to identify practices suitable for specific conditions and systems. This puts local people's knowledge, culture and perspectives at the center of research and development efforts. Traditional knowledge can be effective and reliable (Warren et al., 1991; Reij et al., 1996) with respect to: (1) knowledge about the agro-ecosystem and seasonality in which the farmers operate; (2) information about what local people need, want and have capacity for in terms of resources and

access to markets; (3) locally adapted technical knowledge and practices; and (4) a systems view based on having to live by the results. Multi-stakeholder approaches that stimulate sharing knowledge and insights from diverse actors can also be an effective and efficient way to address issues in complex systems (IAASTD, 2009b), thereby overcoming any weaknesses or gaps in local knowledge.

Participatory research provides opportunities for local and traditional knowledge to interact and co-evolve with formal knowledge (Haverkort et al., 2002) so that recommended practices emanating from new research results will fit with small-scale farmers' agro-ecosystems and be adopted and sustained (Neuenschwander, 1993). Indeed, a 'basket' of agricultural technology and management practices can provide farmers with flexibility in choosing among options that best match the site-specific diversity of their fields (soil types, water availability and variability) and socioeconomic circumstances (including access to credit and insurance). These technologies may be adapted from traditional and local practices, or developed through collaborative efforts involving farmers and scientists, that are resilient to the high weather variability, resource availability and market fluctuations. This contrasts with the typical approach in which only a small number of 'preferred' technologies are made available through extension services (IAASTD, 2009a).

Of course, combining various forms of exogenous scientific knowledge with highly diverse forms of local and traditional knowledge does present some challenges. Different actor groups represent different forms of knowledge – local, indigenous or experiential and tacit (farmers, traders, craftsmen, etc.) or external, researched

and scientific (researchers, civil servants, extension workers, service providers, etc.), each with their own pre-existing knowledge system (IAASTD, 2009b). Nonetheless, the paradigm of involving farmers in research is based on strong evidence that enhancing farmers' technical skills and research capabilities and involving them as decision makers in the technology development process results in innovations that are more responsive to their priorities, needs and constraints (Pretty and Hine, 2001).

Some illustrative examples of collaborative R&D are instructive. Local or informal seed systems are increasingly being used to deliver new varieties to farmers (IAASTD, 2009b). Participatory plant breeding (PPB) and farmer participatory research processes decentralized control over the research agenda, all permit a broader set of stakeholders to become involved in research, thereby also addressing the different needs of men and women for technical innovation (IAASTD, 2009a). Improved local and traditional knowledge is essential for management of diseases and pests, which affect crops and livestock (IAASTD, 2009a). The development and adoption of a varied range of technologies for water harvesting and conservation in East Africa has been attributed in part to the adoption of community-based participatory approaches in technology research and extension (Lundgren, 1993 in Mazur, 2011a). The farmer field school (FFS) approach fosters 'interactive learning' (IAASTD, 2009a). In east and southern Africa, FFS have contributed to establishing producer and consumer markets for vitamin A enriched orange-fleshed sweet potatoes (Ochieng, 2007). Shortcomings of FFS, however, include relatively high investment costs to establish, sustain and replicate, and being less inclusive of poorer farmers (Davis,

2006).

However, farmer-led and participatory approaches have some limitations. To address the relative neglect of value chain development compared to food security appropriate technologies would need to be adopted. Involving private sector market actors will increase the relevance and further adoption of such technologies (Heemskerk et al., 2003). The focus on applied and adaptive research and technology transfer rather than generation of scientific data probably cannot be wholly overcome, given the nature of scientists' rewards system which values analysis of meso and macro level data (Probst et al., 2003 cited in Mazur, 2011a). However, it may be possible to generate results that are satisfactory within the context of a particular production system. Further, researchers working with development practitioners can understand how participatory approaches can be adapted and used with large numbers of farmers to achieve wider impact, while still retaining the expected human and social capital benefits of participation (IAASTD, 2009a).

A current example that exemplifies these principles is the collaborative research and development project on enhancing nutritional value and marketability of beans through research and strengthening key value-chain stakeholders in Uganda and Rwanda (Mazur et al., 2011). The R&D team (farmers groups, non-governmental organization extension staff, national agricultural organization researchers, university researchers, and private business sector) is improving harvested bean quality and yields, enhancing the nutritional value and appeal of beans through appropriate handling and processing practices and technologies, and addressing constraints to increased market access and consumption. This project (2008-

2012) is embedded within a broader, long-term sustainable rural livelihoods program involving 1,200 small scale farm households in eastern Uganda that supports community-based training and outreach for improving agricultural productivity, nutrition, and incomes (Mazur, 2011b; Sseguya et al., 2009; Butler and Mazur, 2007). It also addresses key elements of natural resource management (Mazur and Stakhanov, 2008).

Creating space for local experimentation and innovation is a critical means of generating large-scale impacts from incremental changes. Such successes do emerge from localized experiments that allow participants to learn from their mistakes, adapt to changes in the landscape, evolve as the playing field becomes more complex, and pursue incremental approaches to scaling up. By vesting communities with a stake in ownership of the development process, grassroots participation contributes much to the long-term sustainability of the desired change. "Involving communities and smaller groups in local consultations, policy deliberations, scientific research, and experimentation is all part of building from the bottom-up to achieve success. Similarly, involving local practices, customs, and knowledge in an intervention are the seeds of big successes" (Spielman and Pandya-Lorch, 2009:13). Scaling up also requires strong links to non-governmental and grassroots organizations with the capacity to help farmers and communities introduce and manage improved practices (Haggblade et al., 2010b).

Evolving forms of protection of rights over local and traditional knowledge include material transfer agreements that involve providing material (resources or information) in exchange for monetary or non-monetary benefits. Examples of fair and equitable benefit sharing

between users and custodians of traditional knowledge can be found in several countries (IAASTD, 2009a). In West Africa, farmers developed varieties of cowpea more resistant to bruchid beetles in storage. The gene responsible for this resistance was later identified, isolated and patented by the UK's Agricultural Genetics Company. An instructive example of benefit sharing was provided by LUBILOSA, an international locust control endeavor that resulted in a commercialized mycoinsecticide whose benefits are shared with national institutions (IAASTD, 2009a).

7.5 Galvanizing action and leadership for agricultural transformation and food security in Africa – reflections on the various capacity issues

Africa's food production per capita is declining partly due to population pressures and conditions that have undermined significant transformation of the agricultural sector in noteworthy ways to enhance food security. Rapid population growth rates combined with rising per capita income in some countries has caused relatively rapid growth in food consumption and thus pushing up imports of basic food staples.

There are a number of considerations that will provide the most practical and economical approach to achieving agricultural transformation and food security. It is important to enhance the efficiency of the existing agricultural economy through capacity development initiatives on a broad front. Africa needs to broaden the range of alternative production possibilities available to farm operators and strengthen their capacity to make and execute

decisions on the basis of more adequate knowledge of agricultural technology. Infrastructure, R&D and training programs are some of the supportive initiatives required. Limited resources demand identifying priority programs and also makes it desirable to identify those geographical regions within a country that have high potential for large increases in production. Equally, capacity to supply the food to expanding urban centers or a capacity for low-cost production of export crops with good market prospects are particularly pertinent considerations now and likely to be in future. Strong and democratic local government institutions, increasing literacy, and instituting rural social change by community development or other techniques are required for these huge tasks.

This Report recognizes that there are severe limitations on the capacity of an underdeveloped African country to do everything at once. That said, it can be argued that the following number of strategic galvanized actions and leadership steps are required to achieve agricultural transformation and food security in Africa:

(a) Markets, public investment and governance

There are two fundamental prerequisites for sustained agricultural growth among small-holder farmers: (1) sustained increases in agricultural productivity as a result of improved technology (broadly defined), and (2) favorable incentives for farmers and agribusinesses in the form of financially attractive market outlets (Haggblade, 2010). Yet, as shown in the data collected and analyzed for the ACIR, few countries have seen the productivity increases needed to guarantee food security. Furthermore, Africa's small-scale farmers growing

staple foods now have less access to markets and credit, pay higher prices for modern inputs, and are more fully exposed to the vagaries of market prices and production risks compared to two decades ago. Inadequate processing and storage infrastructure close to the main producing areas inhibits value addition, contributing to low farm-gate prices for outputs. Taken together, these factors constitute real disincentives for resource-poor farmers to shift from subsistence to market-oriented agriculture and have resulted in a significant reduction in the adoption of modern crop varieties and fertilizers (IAASTD, 2009a). Currently, financing of African farm inputs depends largely on cash crop credit schemes and associated spillovers, as well as on the non-farm earnings of farm households and remittances. Trade liberalization may further penalize African farmers. “Many models of Doha Round trade liberalization suggest that African farmers may lose out as access to protected European agricultural markets opens up to competition from Brazil, India, Indonesia, and Thailand, particularly under partial liberalization scenarios” (Haggblade et al., 2010b).



Compelling¹ roles for government investment in public goods (agricultural research, rural education, rural road networks, communications, transportation facilities, control of

contagious livestock diseases, extension systems, health systems, and market infrastructure) can be easily identified as contributing to increased production and incomes. Investments in roads, for example, reduce marketing costs, lower input prices, and raise output prices received by farmers, thus raising their incomes. Since the mid-1980s (era of economic structural adjustment programs), spending on transport and communication has fallen significantly (IAASTD, 2009b). Africa today has only a fraction of the infrastructure of Asia in the 1950s: only 12% of roads in sub-Saharan Africa are paved compared to 57% in South Asia; the road density (km² of road/surface area) is 0.13 in sub-Saharan Africa compared to 0.85 in South Asia; access to electricity is 26% versus 52% (Livingston et al., 2011). The use of mechanization is also substantially lower than in other regions. In sub-Saharan Africa only 15 tractors are in use per 100 km², in contrast to 170 in East Asia and South Asia, and 100 in Latin American/Caribbean (Livingston et al., 2011:13). African countries, on average, currently devote 5-7% of their public expenditures to agriculture, compared to 8-10% percent in Asia (Livingston et al., 2011:7). Despite its value to society, agriculture does not attract private sector investment because of little immediate opportunity for profit (Spielman and Pandya-Lorch, 2009). Unfortunately, many African governments have yet to successfully manage the role of the public sector in providing (or at least financing) key public goods, and to implement policies, laws, and regulations that create an enabling economic and institutional environment in which private and civil society agents, including farmers, can flourish (Haggblade et al., 2010b). Critics highlight Africa's weak state institutions, poor governance, bad policies, and regional conflicts that

compromise the efficiency of public interventions in agriculture as well as in other sectors (Collier, 2007). Years of under-funding and relative neglect have greatly weakened the ability of public extension and research organizations to deliver demand-driven, client focused services (OECD, 2006).

Much of the failure of agriculture to achieve its potential is institutional. Public institutions need to be strengthened in their capacity to develop an appropriate blend of policies, regulatory frameworks and investments to re-launch the agricultural sector. At the same time, the role of private sector institutions needs to be strengthened to help address a range of problems including: limited access to financial services including credit and risk management instruments, to key inputs such as seed and fertilizer, and to output markets (OECD, 2006). Decision makers should design and implement strategies that take a comprehensive approach to raising agricultural productivity, increasing incomes, and reducing poverty (Spielman and Pandya-Lorch, 2009). Most discussions of broad-based agricultural development focus on the interaction of five main factors - innovation, inputs, infrastructure, institutions and incentives (Hazell, 1999; IAASTD, 2009b). Often, the solutions needed to address agricultural development challenges require dedicated individuals to make the difference - champions to push the issue to the forefront of the public's consciousness, demonstrate what can be done in the face of seemingly insurmountable challenges, or mobilize the political and financial capital to overcome inertia (Spielman and Pandya-Lorch, 2009). These efforts can be reinforced by African farmers, organized in strong sub-regional and national associations, who successfully lobby to shape the policy

environment and influence the design and development of government support programs (Haggblade, 2010; IAASTD, 2009b).

National and regional market development is predicated on effective public-private partnership. In the long run, to function efficiently, private traders require stable, predictable policies. Governments want to see reliable, competitive, efficient markets develop. The mutual trust required to achieve both ends grows through dialogue, transparency, predictability, and market competition (Haggblade, 2010). Large retailers, processors, and exporters require large lots, consistent quality, standard packaging, food safety compliance, and guaranteed timing of delivery – things most smallholders find difficult to achieve without some sort of collective action, investments, or support. This implies a growing public role in helping to enable collective smallholder action by facilitating institutional innovation, establishing standards, supporting provision of accurate and timely market information, enforcing contracts, and mediating disputes (Haggblade et al., 2010b; Spielman and Pandya-Lorch, 2009).

Key tenets of agricultural success expressed by policy makers are adoption of a value chain approach embedded within an environment of democratic decentralization and good governance.

An environment of good governance for the generation and application of AKST [agricultural knowledge, science and technology] would include empowerment of farmers to take on a larger role in agricultural research and development; activities to ensure the inclusion of marginalized groups such as women and pastoralists; decentral-

ization of economic and political structures of governance; promotion of the principles of subsidiarity and plurality in service provision; use of local and traditional knowledge, and private and public sector skills; and well defined and enforced property rights (IAASTD, 2009a:99).

Regional approaches to value chain development are key to address the relatively small geographic size and population of many African countries that have many sociocultural and agro-ecological similarities across borders. During the 2006 African Food Security Summit, strategic commodities were identified as entry points for a regional approach to value chain development that offers an opportunity to realize the benefits of this new vision to agricultural development in Africa (IAASTD, 2009a). Expanding regional trade markets can serve as a vent for surplus production; they can help to increase the volumes traded in thin domestic markets and diminish the likelihood of price collapse following significant gains in agricultural productivity (Haggblade et al., 2010b). Increased trade opportunities associated with regional integration could help to facilitate private sector involvement and ultimately, market led productivity and production improvements.

Experience demonstrates that by directly relying on poor people to drive development activities, treating them as assets and partners in the development process and building on their institutions and resources, community driven development has the potential to make agricultural development and poverty reduction efforts more demand responsive, inclusive, sustainable, and cost-effective than traditionally centralized

approaches. Community driven development is more likely to be effective if these conditions are met (IAASTD, 2009a:102):

- Local government institutions are strengthened to provide organizational and technical support, adequate resources, decision-making authority and mechanisms for grassroots participation;
- Rural communities and farmers' associations are entrusted with legal authority and are able to build their capacity to take full part in agricultural development matters (e.g., contracting loans, initiating and implementing programs and projects);
- Linkages are created between research institutions, extension services and technology users for exchange of knowledge and experience on development issues; and
- Legal and financial frameworks are developed that encourage local communities to claim ownership of these services and infrastructure.

Managing risks and reducing vulnerabilities are essential elements in sustainable pro-poor agricultural development. The World Bank's social risk management strategy can serve as a useful framework for African governments. The strategy repositions the traditional areas of social protection (labor market intervention, social insurance and social safety nets) in a framework that includes:

- Three strategies to deal with risk (prevention, mitigation, coping);
- Three levels of formality of risk management (informal, market-based, publicly mandated);
- Many actors (individuals, households, communities, NGOs, governments at various levels and international organizations) against the background of asymmetric

information and different types of risk. This expanded view of social protection emphasizes the double role of risk management instruments in protecting basic livelihoods and promoting risk taking. It focuses on the poor since they are the most vulnerable to risk and typically lack appropriate risk management instruments, constraining them from riskier but also higher return activities and thus from moving out of chronic poverty (OECD, 2006).

A very mixed success story of the intersection of markets, public investment, and governance is Rwanda's recent dramatic transformation of agriculture. Goals of the Crop Intensification Program (CIP) are to increase national food self-sufficiency and reduce food imports. The program involves regional specialization, monoculture, and cooperativization; mass rollout of commercial seeds, imported fertilizers (from 4 to 22 kg per hectare), and pesticides; erosion control; structuring of markets and private sector entities; improved access to credit, a strengthened role for agronomists, and massive spending. Aided by abundant rainfall, maize and wheat harvests increased by 227% and 173%, respectively, between 2007 and 2009; and cassava experienced similar growth. Average maize yields increased from 1.5 to over 4 tons per hectare for open-pollinated varieties and from 6 to 7 tons for hybrids imported from Kenya and Tanzania. Overall, Rwanda's agricultural production increased by about 14% per annum, and with grain imports decreasing by 20% per annum.



The underside² of these spectacular short-term results is a coerced shift from subsistence to market-oriented monoculture agriculture that may compromise small-scale farmers' livelihoods and food security (Milz, 2010). Intercropping is prohibited. Crops (sweet potatoes, vegetables) other than those prescribed (maize, soybeans) have been uprooted by authorities (e.g., in Cyuve, Musanze district, and a Gitarama cooperative), despite expressed interests of small-scale farmers, especially women, to continue growing a variety of crops to minimize risk. They are now dependent on a complex supply chain for seeds they once produced themselves. Planting dates are rigidly prescribed, overriding farmers' years of experience with weather conditions. The Land Act of 2005 provides for fines and land confiscation if rules are not obeyed. Given that many farmers have pledged their land as loan security, as the law now allows, they are highly risk-averse and are constrained to plant exactly what the government specified.

The tradeoffs between short-term success and long-term vulnerability are clear. Crop and varietal diversification important in pest and disease control also provide farmers with the crop germplasm necessary to breed plants for changing environmental conditions. Replacing native crop diversity with one or two 'improved' varieties over large areas poses unprecedented risks. The impact of crop regionalization and concomitant loss of agricultural diversity is revealed in farmers' markets. Little local produce is available, while staple items are now being shipped around the country. While waiting to sell their produce through prescribed official channels, many farmers have only maize to eat and no money to buy other food. The nutritional quality of most vegetables and tubers is declining, post-harvest losses are greater, and

food prices are on the rise. Thus, unintended consequences of the policy include negative impact on food security and nutrition. Like the Asian Green Revolution of the 1960s, the CIP in Rwanda is concentrating on a minority of better-off farmers, most of who are organized in cooperatives that cultivate on flatlands and in marshes. Other than some government support for terracing and erosion control, there is little help available for the great majority of hill-dwelling peasants, who are dealing with serious erosion, soil fertility, and land fragmentation problems.

(b) Technology and agricultural research collaboration

Farmers have used technological innovations to aid their agricultural practices since the beginning of time. There is no reason to expect that to change in the foreseeable future. The question is not about the place of technology per se in agricultural practices. Rather, the nature of the technology and its impact on agricultural practices. African governments continue to assume the primary role in agriculture for the national development effort. The delay in crafting and initiating biotechnology policies in Africa, for example, had nothing to do with governments being cautious or thoughtful about the place and role of biotechnology in agricultural development. This is because a focus on institutional effectiveness will be able to address any likely health or environmental problems that might be associated with agricultural biotechnology. The delay rather highlights the perennial lack of political commitment and foresight in addressing the needs of the citizenry. Given that resources are always scarce, the need for serious domestic planning cannot be overemphasized. Three main policy

issues deserve some attention: creating capable institutions; the role of donors; and, cooperation among national, regional and global institutions.

- (i) *Creating capable institutions*: policy makers should understand that the creation of institutions, while desirable, is not the end or substitute for capable institutions. Capable institutions are able to discharge their mandate and do so because they have both adequate and consistent resources – both human and physical. The funding regime for policy and research units has to dramatically improve. Whether or not agricultural research is administered by a single unit or an umbrella organization, the need for exceptional leadership in coordinating the activities in order to optimize the policy strides towards technological innovations should be paramount in policy planning. Knowledge producing institutions within the agricultural system should assume a prominent role in their research activities in support of the national development effort. Ejeta (2010) is therefore correct in stressing the need to focus on locally developed and locally relevant technologies, pay attention to human capital development and institutional capacity in an environment of strong national leadership. Then again, institutions, for example, need to have the required resources to engage in policy research, in order to produce the nuanced research and knowledge that is required to address the role of specific circumstances of agricultural technology in the national agricultural development agenda (Urama et. al., 2010; Eicher et al, 2006; Tettey, 2006; UNESCO, 2006). Hence, the continuing neglect of small-scale farmers in agricultural policy

making needs to be rectified (Puplampu, 2004:114). As end-users, all farmers, particularly the small-scale producers, should have a more visible and active role in the generation and utilization of agricultural knowledge to address prevailing problems. A concerted effort to integrate farmers' knowledge into agricultural policy and research should be taken more seriously (Lwoga, Ngulube and Stilwell, 2011; Richards, 1985).

- (ii) *Role of donors in crafting institutions and policy frameworks in Africa:* It goes without saying that the agenda of foreign sources of funding might not dovetail neatly into domestic policy priorities. That suggests that African governments will have to be aware of the domestic policy priorities when allocating scarce national resources. It is when national agricultural institutions are capable that they will play their expected role in the national development effort. The Africa Rice story (Chapter 5) is a worthy example of how institutions can perform when they have the required resources. That example also shows that global institutions can contribute their quota if they have to liaise with capable internal institutions and, by extension, the need to strengthen national capacity, particularly in science, technology and higher education, to enable them negotiate better terms with their external or global partners (Commission for Africa, 2005).

As an indication of the inherent challenges in increasing production of food and other agricultural products, $\frac{1}{3}$ - $\frac{1}{2}$ of crop research worldwide focuses on maintenance breeding to stabilize yields in the face of evolving pests and diseases, with timelines for effective research often measured in decades rather

than years. Yet the effort can be worthwhile, with physical productivity of new crop varieties, cattle breeds, and input packages frequently exceeding 100%, and returns to labor typically 50-100% (Haggblade, 2010). In Africa, the relatively small size of most countries prevents them from maintaining comprehensive research and development (R&D) programs for all of their important crops and livestock species. There are nearly 200 public research institutions and another 200 universities (Haggblade et al., 2010b). Partnerships in agricultural and social science research and education offer potential to advance public interest science and increase its relevance to development goals (Lele et al., 2010). Ensuring that research findings make their way to farmers is another area that can really speed up productivity increases and raise production volumes.

- (iii) *Collaboration among national, regional and global institutions:* This policy should be at the center of the agricultural biotechnology policy and institutions in Africa. At the national level, policy and planning institutions “should ensure the elimination of duplication and aim at deepening the synergies that the various institutions could bring to bear on their respective activities” (Puplampu and Essegbey, 2004:286). Lessons learned from the national level could then be extended to the regional framework. That framework can best operate when the specific strengths of the national context are brought to bear within a collaborative framework. The Forum for African Agricultural Research (FARA)-sponsored regional nodal centers and similar initiatives, for instance, the African Agricultural Technology

Foundation, are steps in the right direction (Mignouna et al., 2008; FARA, 2006). Finally, global institutions can serve as clearing houses for best practices and collaborative policy planning and research activities. However, such institutions are not problem-free and African governments need to be aware of the limitations of global institutions. For example, CGIAR, FAO and UNEP are useful global institutions in agricultural biotechnology policy and research. CGIAR, for example, continues to be handicapped by the activities of some agro-biotechnology companies and their demands for intellectual property rights (Meldolesi, 2002). Once African policy makers realize the constraints facing global institutions, they will, hopefully, reorient their mindset and attitudes to ensure that national and regional institutions have consistent and sufficient resources and hence capable institutions that can discharge their mandate.

The preceding discussion on strategic galvanized actions and leadership steps, particularly the nexus between technology and agricultural research, has implications for Africa. First, as succinctly articulated in the immediate paragraph above, recognizing and building on the numerous effective R&D programs that involve significant cross-country collaboration and technology spillovers is critical. To the extent that molecular biology and genetic engineering may be important for addressing crop problems in Africa's drought- and pest-prone environments, and for overcoming many entrenched livestock diseases, regional and international partnerships will be vital to leverage the current limitations of few countries (South Africa, Kenya and Uganda) having the regulatory environment

and research capacity (Haggblade et al., 2010b). Regional level efforts include the West African and Central African Council for Agricultural Research and Development (WECARD/ CORAF) (established 1987), Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) (established 1994), Southern African Centre for Cooperation in Agricultural Research and Training (SACCAR) (established 1984), and Forum for Agricultural Research in Africa (FARA) (established 2002), the umbrella organization bringing together and forming coalitions of major stakeholders in agricultural research and development in Africa. FARA is testing 'Innovation Platforms' to better understand how processes for systemic innovation can be organized among researchers from different disciplines, the private business sector (input suppliers, output markets, market information systems, microfinance institutions), practitioners (NGOs, extension departments), decision makers, rural communities and farmer organizations in order to make innovations useful, affordable and accessible to end users (CGIAR-ISPC, 2010).

Second, it is invaluable to involve farmers in agricultural research and extension. Such collaborative efforts will not only facilitate adaptive site-specific research in diverse and complex environments, but also foster researchers learning from and with farmers. However, while collaboration is now recognized as essential to R&D for increasing food security and reducing poverty, little funding is directed toward understanding how such collaborations can be most effective and efficient with limited resources. About one-half of all agricultural research activities in the developing world are directed toward crop improvement (53% in

Asia/Pacific, 46% in SSA, 43% in Latin America/Caribbean). Of the remaining 50%, 15-20% goes to livestock, 7-13% to natural resources related research, and 4-8 % to forestry. Post-harvest related research accounts for less than 5% in every region. Many farmers across Africa currently suffer significant post-harvest losses from grain shattering, spillage during transport, and from bio-deterioration during each step of the chain, including storage. Cereal grain losses in East and Southern Africa are 14-17% (PHL Network, 2010; World Bank, 2011c). Yet relatively low-cost storage and transport facilities and protocols are increasingly available in forms and at prices accessible to smallholders based on innovations from Southeast and South Asia (Livingston et al., 2011). Socioeconomic research currently receives the least support (Lele et al. 2010), but will become increasingly important as demographic changes reshape the nature of farming in Africa as the farm population ages, rural male workers migrate to cities, and rural areas become urbanized (IAC 2004). Agricultural research will need to devote more attention to women farmers and older farmers (IAASTD, 2009a).

(c) Urban food security and urban agriculture

As argued in Chapter 3, urban agriculture – if properly promoted – can play a crucial role in Africa's quest for food security, including food availability, enhancement of nutrition for residents and dietary diversity. Other major contributions to the economies of African countries include employment and income generation for millions of people, along with a host of environmental benefits. Indeed, given the enormity of the food crisis facing Africa

currently, alternative sources of food supply need to be explored to supplement the existing sources. To use urban agriculture as an additional source of food supply, policy makers need to pay attention to the range of variables that impinge upon it, but too often have been largely ignored. There are issues that demand serious considerations for the potential of urban agriculture as a contributor to Africa's food security to be fully realized viz.:

- (i) *Strategic planning for urban agriculture* - Urban agriculture presently exists in a context where institutional responses to farming in the cities are generally based on subjective judgments of city assembly officials. This precarious policy environment, in which farming is prohibited, promoted on ad hoc basis, or considered a secondary issue, reveals the need for African city governments to develop a city-wide vision that supports urban agriculture. This vision should clearly demonstrate how urban agriculture contributes to broader goals of national agriculture, livelihood, and food security.
- (ii) *Countering institutional prejudice* - As a prerequisite for long-term development of agricultural economies in African urban areas, systemic biases against urban agriculture need to be addressed. Policy makers need the capacity to research and establish the merits of urban agriculture, the impacts of land use change, the shifting mix of actors, and challenges of urban agriculture in the context of rapidly changing urban conditions. This institutional bias can also be addressed through sponsorship of aware-

ness and education programs (e.g., radio or television shows, school curriculum) that advocate for urban agriculture. Such programs will provide more visibility and legitimacy to urban agriculture.

(iii) *Community participation in municipal key decisions on urban agriculture* - Policy and legal challenges facing urban agriculture development are intertwined with more general issues of urban governance and decision-making processes. Therefore, wider consultations and participation by city residents are needed on urban agriculture planning issues, including input on undesirable aspects of zoning codes. Mechanisms to ensure adequate and fair representation by all stakeholders should be fostered. This includes establishing municipal procedures to deal directly with issues related to urban agriculture.

(iv) *Develop linkages with other sectors* - The ability of urban farmers to access the technical and financial support available to rural farmers is vital to the sustainability of this sector. Policy makers need to consider the large population of poor urban farmers who are sidelined in the national subsidized agriculture input and extension programs implemented by many African governments. Local and national governments should also provide an appropriate structure of incentives to promote urban agriculture, including policies aimed at stimulating more effective market chains. This can only happen if urban agriculture is viewed as an integral part of a broad national food security policy.

(v) *Coordinating multiple levels of responsibility* - By virtue of its nature, urban agriculture

mobilizes a wide range of stakeholders and interests. For example, across many African cities, two of the most vital elements of agriculture, land and water, are coordinated by disparate institutional settings. Meaningful, long-term urban agriculture planning requires coordination between various government ministries and departments, including those that oversee lands, public health, inter and intra-regional transport and the environment.

(vi) *Water for food* - Integration of urban agriculture into the African cities' planning vision should be accompanied by policies that seek to expand the water supply infrastructure to accommodate urban agriculture. Given that the use of tapped water for urban farming in Africa raises vital ethical questions, efforts should focus on developing technologies that promote safe water recycling for urban agriculture use. Small-scale and low technologies, such as treadle pumps, can be important for smallholder urban farmers, who usually do not have sufficient resources to acquire more sophisticated irrigation systems. Even then, water technology choices need to be matched with urban agriculture water needs of specific African cities, given marked regional variations in rainfall.

(vii) *Appropriate land tenure choices* - National and local governments should support either affordable urban land tenure reforms or long-term leases for poor urban farmers. Unfortunately, the choices may not be straightforward, and policies that advance one-size-fits-all solutions will suffocate urban agricultural development. A continuum of land tenure systems exist in African cities,

each with relative strengths with respect to the long-term success of urban agriculture. Thus, national and local governments should carefully examine the merits of alternative tenure systems in consideration of their appropriate social and spatial contexts and should promote models on the basis of prevailing circumstances, which may vary across urban areas both within and between countries. Officials should also pay attention to potential negative side-effects of proposed land tenure changes among vulnerable urban populations.

(viii) *More inclusive land zoning codes* – Before making efforts to integrate urban agriculture into broader city planning and development policies, policy makers need to identify and reformulate aspects of municipal statutes that are detrimental to city farming. For example, zoning codes should be revised to support urban food production. The current official position of urban farming, where it is largely dependent on the subjective judgments of city authorities, means that the future of urban agriculture rests on a highly shaky policy ground.

(ix) *Mobilization for urban agriculture* – To meet the dual challenge of raising the profile of urban agriculture and generating the political will to put it permanently on the national development agenda, a broad-based coalition of stakeholders is needed to lobby policy makers. Although the involvement of various state-level actors are vital for enhancing the profile of urban agriculture, non-state and other informal actors should also be actively engaged in this process. Both

local and international NGOs can play a pivotal role in this cause, especially given their ability to solicit the views of hard-to-reach populations and to articulate these views in ways that could be used to galvanize a broad-based coalition that will serve as a platform for pro-urban agriculture policy change at both local and national levels.

(x) *Measures to protect the economic interest of farmers* – The growing demand for fresh fruits and vegetables create a strategic opportunity that urban farmers can exploit. These emerging market niches can provide important income sources for the urban poor. However, appropriate policy measures are needed to protect the economic interests of these farmers against powerful markets in a globalized world. In addition, policies are needed to ensure that these markets are not pursued at the expense of domestic food needs, as has usually occurred with export-driven agriculture.

(d) Financing agricultural transformation

Africa's financial system has been intensively liberalized over the last two decades and this has tended to stifle access to financial services for the transformation of the agricultural sector. The need for finance is widely recognized and several approaches and interventionist schemes have been designed from time immemorial to supply credit to the agricultural sector. These included the supply-led approaches leading to the establishment of agricultural development banks across the continent over the years. To date however, the small-scale farmers who constitute the majority of producers rely largely

on informal and semi-formal finance. Access to formal finance especially from commercial banks in Africa is less than 10 percent. Many countries are yet to meet the Maputo Declaration target.

The innovative approaches enunciated in this Report have implications for capacity building and development at three levels viz: policy reform and formulation, business enterprises and financial institutions.

- (i) *Policy and Regulatory Reforms* - Securing access to finance is means of ensuring food security. African governments have to be sensitized and convinced of the need to provide an enabling environment for finance to flourish. The justification for reforms (both macroeconomic and sector-specific) has to be clearly articulated and the benefits substantiated to guarantee the commitment of policy makers to effect the required changes and to continue to strengthen the policy environment. Both the executive and legislative arms of government will need technical support in this regard.
- (ii) *Enterprise Level* - All the actors in the agricultural value chain (farmers, input dealers, assemblers, processors, wholesalers, exporters, importers) need to know how to secure access to finance to operate and develop their businesses. With regard to farm enterprises (crop and livestock related) there is need for training in farm accounting and business management as well as other areas specified in Table 7.1.
- (iii) *Banking and Other Financial Institutions* - Financial institutions often seek to contain their risks and costs in financing agriculture. They need to have competence in developing commercially attractive financial services that meet the needs of the various actors in the value chain and how a value chain focus can result in market growth and reduced credit risk. Details of the capacity building requirements for commercial banks and microfinance institutions are presented in Table 7.1.

TABLE 7.1
Capacity Building Needs in Agricultural Finance Delivery System

No.	CLIENTS	CAPACITY DEVELOPMENT NEEDS
1	Commercial Banks	<ul style="list-style-type: none"> ▪ Understand value chain concepts and competitiveness ▪ Risk assessment and identification of strategic opportunities to strengthen value chains ▪ How cohesive value chains can be used to reduce risks and facilitate access to finance ▪ How to apply value chain financial products to meet the needs of various actors in the value chain ▪ Designing appropriate financial products ▪ Develop better understanding of specific supply chains and their economics –identify key agribusinesses and their clients/suppliers and mapping opportunities for lending ▪ Understanding, quantifying and managing risks around specific commodities and supply chains ▪ Separating systemic (e.g. weather, yield, price) from idiosyncratic risks (e.g. client performance) ▪ Use of technologies to reach new clients and reduce the cost of serving them (e.g. mobile banking, mobile phones, etc.) ▪ Development of loan products to better meet client needs and the particularities of commodities and supply chains ▪ Designing Risk Sharing Facilities (Reduce credit risk on the specific agriculture loan portfolio, Increase capacity to originate new loans Improve key balance sheet ratios, risk management and operational efficiency and Potentially increase risk-adjusted return on capital) ▪ ICT infrastructure banking services to difficult-to-reach communities
2	Microfinance institutions	<ul style="list-style-type: none"> ▪ Designing and lending products for agriculture and value chain financing ▪ Ways to vet new clients for credit approval ▪ Understanding financial risks ▪ Identifying opportunities and managing risks
3	Farmers, suppliers, processors, buyers and others	<ul style="list-style-type: none"> ▪ farm accounting and business management ▪ Understanding financial risks ▪ Identifying opportunities and managing risks ▪ Understanding market needs ▪ Training in loan application writing for bankable agricultural projects with emphasis on cash flows and project costs ▪ Methods in mitigating and adapting to climate change
4	Intervention agencies National and International NGOs Development partners	<ul style="list-style-type: none"> ▪ Building cohesive value chains ▪ Internal and external approaches to value chain finance ▪ Promotion, awareness raising, and training of potential clients: SME agribusinesses and farmers ▪ R & D and use to improve agricultural productivity ▪ Mind-set change from negative public perception against agriculture especially by the youths ▪ Land titling and collateralization – ways of turning farm plots into collaterals which commercial banks often demand

Source: Adapted from Olomola (2011)

(e) Infrastructure

Infrastructural development is crucial for the transformation of agriculture and food security. There are a number of areas that need attention: energy, transportation, water and sanitation, health and education – especially in fragile and distressed areas. Strengthening African countries' investment framework is critical to generate more employment and inclusive growth. Mobilizing investment in infrastructure and agriculture, priority sectors for NEPAD since its inception, is of particular importance for creating more jobs and economic diversification.

It is estimated that 1 to 2 percent of African GDP is lost due to infrastructure deficiencies, and the average productivity of agricultural land in Africa has been only 40 percent of that of Asia and 50 percent of that of Latin America over the last decade (Amano, 2011). Agricultural produce continue to be lost due to inadequate and tradition storage facilities.



For example, in many parts of Africa, paved rural roads scarcely exist. Much produce is taken to market by cart or bicycle over unpaved roads or by foot along narrow paths cut through the brush. Africa has the lowest density of paved roads of any world region. Out of 1.8 million

kilometers of roads in sub-Saharan Africa, only about 16 per cent are paved. Moreover, many of Africa's paved roads have deteriorated badly due to overuse³ and poor maintenance (Harsch, 2004). Because of poor road quality, truck drivers in rural Cameroon for example often charge an extra CFA1,000-CFA2,000 (US\$2.00-\$4.00) for just a short trip of 6 kilometers. Higher transport costs raise the prices farmers must charge, reducing their competitiveness in both domestic and international markets.

Because farmers will not have much incentive to grow more without the roads, storage facilities and other physical infrastructure they need to market their crops, the CAADP urges that more than half of the investments projected under the plan be directed toward rural infrastructure (not counting irrigation systems). In addition to roads and other “hard” infrastructure, the CAADP argues, farmers also need “soft” infrastructure: communications and accurate price and market information in order to take the best advantage of changing market opportunities.

External markets also are vital for many of Africa's producers of cotton, cocoa, coffee, tea and other export crops. Yet world market conditions have not been favorable to African farmers. Not only are international agricultural prices volatile, but African exports face restrictions on access to Northern markets and are severely hurt by the high subsidies paid to rich farmers in the industrialized countries. However, there are some positive trends. Private participation in infrastructure is increasing faster in Africa than in other developing regions, while 60 percent of the world's uncultivated land lies within the continent (Amano, 2011). Governments are aware of these opportunities. Yet, more robust policy frameworks to attract more

and better investment in these sectors are needed. A number of African countries are experimenting with infrastructure development through public-private-partner-ships (PPP) financing modalities. The OECD recently launched the Aid for Investment (Afi) project to support the financing of infrastructure in Africa: US\$45 billion has been spent, with US\$93 billion required leaving a financing gap of US\$8 billion.

(f) Climate change and climate adaptation

Chapter 5 raised insights with regard to climate change, environmental degradation and agriculture in Africa with a number of policy recommendations (see table 7.2). However, given that implementation of adaptation and mitigation measures takes place at the household and/or farm level, policy measures at this scale are discussed as follows:

TABLE 7.2
Summary of policy recommendations

Spatial Scale	Key recommendations
Global	<ul style="list-style-type: none"> • Drawing insights and learning points from successful implementation of existing Multilateral Environmental Agreements (MEAs) • Lobbying for a fair, ambitious and legally binding future climate deal • Striking a balance between adaptation and mitigation agendas • Continued mobilization of adaptation funds • Need for effective governance mechanisms for adaptation
Africa	<ul style="list-style-type: none"> • Need for Africa Union based framework legislation on environment • Promotion of the adaptation agenda and general climate change mainstreaming • Speaking with one voice in international climate negotiation regimes • Developing a standing climate risk and vulnerability country list • Drawing up an inventory for climate change and agriculture initiatives
National	<ul style="list-style-type: none"> • Mainstreaming climate change within and across institutions and legislation • Drawing up risk and vulnerability atlases and new agro-ecological maps • Finance, economic and planning ministers to embrace climate change • Financing capacity building and utilization, awareness raising as well as research and development • Enhancing roles of extension work(ers) • Enhancing good governance • Growing strategic food reserves
Municipal	<ul style="list-style-type: none"> • Mainstreaming climate change and disaster risk management within and across departments • Harmonizing planning, environmental and disaster risk management laws • Harnessing the power of the mobile phone • Making use of regional plans
Household and/or Farm (critical focus)	<ul style="list-style-type: none"> • Refer to detailed account under this section

Source: Nhamo (2011)

The household and/or farm level presents the most applicable platform to implement policy measures arising from the other spatial scales identified. Based on the key impacts as well as adaptation and mitigation measures discussed earlier in the Chapter 5, the following policy recommendations are made:

- i. *Water Sector* - African governments need to work out appropriate treaties for shared river basins such as the Nile. Integrated water catchment management plans should be part of the treaties. Damming still remains one of the options in countries where appropriate sites exist. Water rights must be allocated in a manner that recognizes farmers and other users. Subsistence farmers usually suffer from restricted access to water. Governments should also allocate water for ecological purposes.
- ii. *Crop sector* - Improved weather forecasts and early warning systems must be the first line of adaptation and this should be instituted. The mobile phone presents numerous opportunities in this regard since most remote areas in Africa are now networked. There is need for crop diversification, planting different varieties, adding non farm activities to farm activities, increasing the use of irrigation, and water and soil conservation techniques. There is also need to harness local and indigenous knowledge systems and fuse it with modern scientific knowledge brought to communities through extension work(ers). Responsible national departments should have standing programs to assist farmers, for example, replanting in the event of droughts. Governments could assist subsistence and small scale farmers with low-cost finance and instituting Weather Index Insurance. Compensation for crop and farmland losses that result from major disasters by governments is a measure that requires further understanding.
- iii. *Livestock sector* - Policies on methane management are critical. In addition, measures to assist, especially subsistence and pastoral communities are needed. This includes traditional programs in terms of animal breeding and marketing of products. As with the crop sector, the role of extension work as well as local and indigenous knowledge systems cannot be overlooked. Governments should have standing programs to assist farmers in re-stocking and translocations after periods of droughts and other disasters. Policies to enhance livestock selection, changes in grazing patterns and water availability must be instituted. Early warning should be part of farm level management.
- iv. *Horticulture Sector* - This sector is sensitive to water availability and temperature change. Measures therefore must be taken to address water shortage and deal with increasing dry conditions. This is an aspect that requires the use of varieties that are resistant to heat stress. Farmers need to be aware of developments concerning the carbon footprint, an aspect that farmer associations and governments need to address. The role of extension work(ers) cannot be overemphasized.
- v. *Fisheries Sector* - Measures to integrate fisheries with other farming systems such as crop should be put in place to assist farmers cope with droughts. Knowledge sharing in terms of climate change is critical for

communities dependent on fisheries for their livelihoods. Programs to conserve mangroves under Reducing Emissions from Deforestation and Forest Degradation plus (REDD+) projects are viable adaptation and mitigation measures in fisheries.

(g) Strategic Partnerships

While public and private sector interventions that increase the availability, access, and quality of food are all desirable, the resources available to undertake these interventions are limited. This mandates weighing the benefits against costs in terms of economic and financial gains, environmental impacts, and sociopolitical importance (Spielman and Pandya-Lorch, 2009). The way forward is a facilitated process of negotiation, shared (social) learning, and agreement on concerted action, based on trust, fairness and reciprocity (IAASTD, 2009b). There is increasing evidence that societies are capable of agreeing on sustainable solutions and of creating institutional conditions that support the implementation of such solutions. Many successes are built around the notion of cooperation and collaboration. Partnerships among diverse actors in the agricultural sector - research institutes, community-based organizations, private companies, government agencies, and international bodies - are evident in almost all successes (Spielman and Pandya-Lorch, 2009). African societies and governments need to continue to take a flexible and opportunistic approach that builds on strategic partnerships between key actors at the local, meso, and macro levels (non-governmental and community-based organizations, and private firms).

Such an approach is reflected in the process of

articulating and promoting the Comprehensive Africa Agriculture Development Programme (CAADP), the key platform for the restoration of agriculture growth, food security, and rural development in Africa. The CAADP's *Framework for African Food Security* (FAFS) provides a comprehensive approach to reducing hunger and poverty, improving rural livelihoods, and facilitating equitable, environmentally, socially and economically sustainable development in Africa. It covers: (a) risk management, (b) increasing food supply, (c) increasing the incomes of the most vulnerable, and (d) nutrition and diet quality (CAADP, 2010). The four priority areas for action ('pillars') are: (1) programs to extend the land under sustainable land management and reliable water control systems; (2) programs that improve rural infrastructure and trade-related capacity for market access; (3) programs that increase food supply and reduce hunger; and (4) programs that promote agricultural research, technology, dissemination and adoption; embedded in this is agricultural research for technology generation, and the ultimate dissemination and adoption of those technologies.

A key part of the CAADP process involves defining a framework under which stakeholders, such as the private and public sectors, civil society and NGOs, can contribute to the development and implementation of policies and strategies to promote agricultural growth. It has made good progress: developing frameworks to guide national and regional policymaking; engaging with national governments to develop comprehensive, coherent, cost-sensitive and evidence-based strategies for agricultural development; and promoting broad

engagement of stakeholders in the policy-making process. Examples of applying the CAADP framework at national level are observed in Ethiopia and Ghana where the CAADP has contributed to the analysis of key issues facing agriculture and is working with governments to ensure that policy and investment are consistent with CAADP framework. In Rwanda, the CAADP framework played a key role in engaging donors in a dialogue about the strategy and financing needs for agriculture. At the country level, there has been considerable progress in engaging a broad range of stakeholders in the CAADP process. Ethiopia's CAADP National Steering Committee involves several government ministries, civil society bodies and a farmers-cooperative. In Ghana, farmers' associations and private sector federations have contributed to policy-making through the CAADP process, and interactions between the Ministries of Agriculture and Finance on budgeting have been strengthened. Similar processes are under way in Tanzania and Kenya (CAADP, 2010).

Many initiatives in support of the CAADP agenda are implemented through collaborative arrangements with different civil society organizations, including NGO groups, farmers associations, and the Pan African Agribusiness Consortium - a network of networks involving national and sub-regional associations of producers, input suppliers, marketers, transporters, processors, research systems, financiers and exporters as well as corporate enterprises to improve agricultural productivity and the competitiveness of Africa's agriculture (Lele et al., 2010). African governments have agreed to increase public investments in agriculture by a minimum of 10% of their national budget, and to raise agricultural productivity by at least 6%.

However, CAADP remains heavily dependent on donor funding. The African Peer Review Mechanism monitors CAADP's implementation and progress toward its established targets (Haggblade et al., 2010b).

7.6 Importance of implementation, monitoring and evaluation -the special role of data and statistics/ACIR findings

Effective planning, monitoring and evaluation are essential for the achievement of policy and program objectives discussed in this Report. Without good planning, monitoring and evaluation, it would be impossible to assess progress of implementation and to demonstrate achievement of results. The realization of the purpose of these development initiatives are contingent on a logical relationship between planning, monitoring and evaluation, a weakness in any of them will negatively affect successful implementation and achievement of intended results. Like any development effort, agricultural transformative initiatives and food security effort across Africa, require effective planning, monitoring and evaluation. As already noted, the planning process should be participatory and inclusive. It must be systematic and comprehensive involving all relevant stakeholders to ensure that emerging issues, views and needs of stakeholders are captured to inform the prioritization and sequencing of intervention. As a critical part of any transformational process, planning establishes the basis for effective monitoring and evaluation by setting out the results to be achieved in a clear and measurable manner, delineating the key implementation processes, defining resource requirements and detailing timelines for the

achievement of intended results. Monitoring and evaluation mechanisms must be agreed upon at the design stage of the project to ensure timely collection, analysis and reporting on progress of implementation and achievement of results. Monitoring must be continuous and cumulative in order to provide managers and stakeholders with timely information to guide decision making and proactively identify and solve implementation challenges and bottlenecks on time.

Evaluation on the other hand, facilitates systematic assessment and use of timely as well as relevant in-depth information that enables managers and stakeholders to respond to the 'why' and 'how' results are being achieved or otherwise. Conscientious effort must be made to conduct and use evaluation information at agreed intervals to improve agricultural productivity as well as other interventions aimed at transforming agriculture in Africa. To ensure increased and sustained demand and utilization of evaluation information for decision making, efforts must be made to balance the accountability and learning dimensions of the process. Agricultural project monitoring and evaluation are mainly intended to enhance project implementation and the achievement and demonstration of results of agricultural interventions. It is also aimed at stimulating learning and increasing the understanding of stakeholders at all the stages of the project cycle. The monitoring and evaluation process can be defined within three broad stages along the policy, program or project cycle; the upstream-policy formulation or project design, midstream-implementation and downstream – completion and review.

At the upstream level monitoring and evaluation provides quality assurance by ensuring that the

design logic and results are consistent with the underlying concepts, risks and assumptions. The process also entails the assessment of the evaluability of the outcomes. It further ensures that results are realistic, achievable and monitorable. The midstream or implementation stage encompass the design and operationalization of monitoring and evaluation systems including data collection, collation, analysis and reporting tools to guide implementation and effective decision making. Midterm review is also conducted at this stage to facilitate midcourse changes and programmatic fine tuning. At the end of the project, evaluations are conducted to ascertain the achievement or otherwise of intended results as well as document lessons that can support future decision making. This process is very critical for agricultural interventions in that it provides the basis for future funding and demonstrates its value in terms of the benefits generated.

7.7 Capacity to influence international policy

Africa needs capacity at the regional and national level to influence agricultural policy in a globalized world. This includes working for trade policies that make sense for the objectives of the continent, embedding effective agricultural policies in the negotiations for external assistance, and having a voice in the regulation of harmful technological choices of investments in the agricultural sector on the continent. There are also capacity issues related to trade, pricing and technology choice. The level of research and analysis needed to understand the effect of policy choices in a globalized world is particularly relevant, as was

indicated by the impact on food prices and social stability of subsidies for maize growing and biofuels in countries far from the continent. Scientific capacity and its link to policy capacity at the regional level to better understand and influence changes in sectors related or impacting agriculture like climate change is also critical.

7.8 Conclusion

Agriculture can be perceived of as a “low-hanging fruit” for the achievement of the MDGs. Four of the goals—those for poverty and hunger, gender equity, environmental sustainability, and equitable exchange in international trade—are closely linked to the need for agricultural transformation and food security in Africa. African countries need to develop policies and frameworks that allow for poverty reduction as well as sustainable livelihoods, and need to be well aware of emerging challenges such as climate change and the need for climate adaptation. Strategies must be developed to deal with household vulnerabilities by strengthening resilience and reducing risks. Innovative sources of financing have to be sought in the context of the evolving global aid architecture. Indeed, ODA is one of the major instruments for enhancing global justice and equity if used appropriately by both donors and recipient African countries. Assistance – especially food aid has been known to have immediate positive impact on food insecurity. Because of climate change, developed countries' emissions of greenhouse gases (GHG) already undermine the productivity of farming systems essential to survival of the poor in many African countries. The burden of climate change needs to be fairly shared.

Given the heterogeneity and complexity of agroecological conditions and farming systems across Africa, externally generated blueprints have little or no positive role in Africa's agricultural transformation. Genuinely collaborative research involving scientists and local farmers and other stakeholders is necessary to identify and adopt suitable practices for sustainable agricultural intensification which blend local and exogenous knowledge, and create space for local experimentation and innovation – key undervalued elements in 'sustainability.' Such R&D efforts can generate a 'basket' of agricultural technology and management practices that provide farmers with flexibility in choosing among options that best match the site-specific diversity of their fields and socioeconomic circumstances, effectively boost farm productivity, and are resilient to weather variability, resource availability and market fluctuations. Successful technologies improve existing farming systems rather than seek to replace them. In addition to crop and soil-related initiatives, irrigation systems that are initiated, funded and managed by smallholder farmers have proven successful and merit further support. Similarly, successful CBNRM requires genuine proprietorship - the right to use resources, and determine rules of access, modes of usage, and distribution of benefits.

In light of the prominent role women play in agriculture and the provisioning of food for African households, gender equity, environmental-sustainability and agricultural transformation are closely intertwined. Women must have reproductive choices and freedom of participation in decision-making. Contraceptive prevalence and usage; and the ability of women to make reproductive choices are critical to the environment and for women's empowerment.

Women's political empowerment is not only intrinsically important, but it also has consequences for pro-environment policy and agricultural practice. This is more so when women are actively involved farmers organization.

There are readily identifiable roles for government investment in public goods (agricultural research, rural education, rural road networks, communications, transportation facilities, control of contagious livestock diseases, extension systems, health systems, and market infrastructure). Governments also have the responsibility to implement policies, laws, and regulations that create an enabling economic

and institutional environment in which private and civil society agents, including farmers, can flourish. Social equity concerns challenge policy-makers, researchers, practitioners and donors to work together to provide not only the technological means, but also the social support needed to encourage and enable uptake of new techniques by those previously lacking skills training, extension services or credit facilities.

Regional interventions and a voice internationally remain important to create space for Africa to succeed in transforming its agriculture. A holistic approach is required to get the drive towards agricultural transformation and food security in Africa right!

End Notes

Chapter 1

- ¹ For an illustration of the capacities China has grown and how it has used knowledge and innovation to benefit from Foreign Direct Investment see Fu (2008), "Foreign Direct Investment, Absorptive Capacity and Regional Innovation Capabilities: Evidence from China", *Oxford Development Studies*, 36, 1: 89-110.
- ² Confirmation of the findings by a relevant statistical test will be possible in the future when there is ample data. However, having the result hold two years in a row indicates that the structural assumptions made in 2011 still hold in 2012 and that the indices and sub-indices can be compared to extract trends and relationships.
- ³ Cohen's kappa measures the agreement between two raters who each classify N items into C mutually exclusive categories. The equation for K is: $K = \frac{Pr(a) - Pr(e)}{1 - Pr(e)}$
Where Pr(a) is the relative observed agreement among raters, and Pr(e) is the hypothetical probability of chance agreement, using the observed data to calculate the probabilities of each observer randomly saying each category. If the raters are in complete agreement then $K = 1$. If there is no agreement among the raters other than what would be expected by chance, then $K \leq 0$.

Chapter 2

- ¹ Food inventories play a moderating role in agricultural prices, by augmenting demand in times of glut and supplementing supply in times of scarcity, little doubt that they are a key focus of the international policy debate on the food price crisis.
- ² The "large-country" assumption in international trade theory posits that shocks to excess demand (for large-country importers) or excess supply (for large-country exporters) have sizeable impacts on world market prices; in contrast to small-country exporters or importers that are presumably price-takers on world markets, bereft of any influence on the world market price for a commodity or product. The upshot is that monitoring of dynamics in large-country importers or exporters is crucial for international commodity market surveillance.

Chapter 3

- ¹ Inputs per hectare on farm(ed) land.
- ² n.d: no data available for lower or upper limit. The proportion includes both part-time and full-time urban farmers.

Chapter 5

- ¹ At the heart of biotechnology is the application of technological breakthroughs in the natural sciences and bioengineering

techniques, in direct or indirect ways, to living organisms. These breakthroughs have given rise to genomics, molecular breeding and diagnostic, gene extraction and sequencing as well as recombinant deoxyribonucleic acid (rDNA). The specific focus in this study is the application of biotechnology to the production of agricultural crops.

- ² Is generally considered as the set of ideals or intellectual phenomena generated with the scientific method. The scientific method proceeds on the assumption that systematic processes can be employed to study phenomena, and such outcomes are rational. As used here, scientific knowledge is associated with knowledge producing entities like policy analysts and researchers in state and non-state institutions (national, international, public or private).
- ³ In broad strokes society is a collection of individuals united by social relations which mark those associated individuals from others who do not belong to that set of relations. Society is thus an operating unit. The state and non-state institutions are the main operating units in society. Their interaction is governed by political, economic and socio-cultural factors, including laws and values. As an operating unit, no society exists in a watertight compartment. Societies are influenced by waves of currents from each other.
- ⁴ Agricultural research - is primarily concerned with generating scientific knowledge that can be utilized in agricultural organization, whether at the level of production, marketing or consumption. The dissemination of research findings, by a capable extension service, will enhance the value of agricultural production, distribution as well as consumption. Agricultural research consists of both technical and social considerations and this complementary relationship is significant for research outcomes with respect to utilization. The technical and social aspects of agricultural research intersect at the farm level where production takes place, in the community where support services for agricultural production are organized and at the societal level where consumers make use of agricultural produce (Ruttan, 1982:298). Agricultural research takes place within the context of research systems, in many cases state or non-state (national or international, public or private).
- ⁵ Preferences for choice, quality and food safety.

Chapter 7

- ¹ Photo taken by Frannie Léautier on the road from Ibadan to Lagos in December 2011 showing a marketplace and the active trade between buyers and sellers with the transport and parking space limitations
- ² Photo courtesy of Frannie Léautier - highlighting agricultural activities on the road from Harare to Tengenenge, Zimbabwe (January 2011).
- ³ Photo courtesy of Frannie Léautier (November 2011) - the road from Douala to Yaoundé depicting the impact of logging on transport infrastructure.

Bibliography

A. BACKGROUND PAPERS

- Arku, G., Mkandawire, P., Aguga, N. and Kuire, V.** (2011). *What is the Role of Urban Agriculture in Africa's Quest for Food Security?* Africa Capacity Indicators Report (ACIR) 2012 Background Paper – Number 8. ACBF, Harare, Zimbabwe.
- Arthur, P.** (2011). *Food Security and Food Sovereignty in Africa: The Issues, Policy Challenges and Opportunities.* Africa Capacity Indicators Report (ACIR) 2012 Background Paper – Number 4. ACBF, Harare, Zimbabwe.
- Mazur R. E.** (2011a). *Rural Poverty, Sustainable Livelihoods and Agricultural Transformation in Africa.* Africa Capacity Indicators Report (ACIR) 2012 Background Paper – Number 7. ACBF, Harare, Zimbabwe.
- Nhamo, G.** (2011). *Impacts of Climate Change and Environmental Degradation on Africa's Agricultural Industry.* Africa Capacity Indicators Report (ACIR) 2012 Background Paper – Number 5. ACBF, Harare, Zimbabwe.
- Olomola, A. S.** (2011). *Financing of Agricultural Transformation and Food Security in Africa.* Africa Capacity Indicators Report (ACIR) 2012 Background Paper – Number 6. ACBF, Harare, Zimbabwe.
- Puplampu, K. P.** (2011a). *The State and Agricultural Policy in Africa: A Sociological Analysis.* Africa Capacity Indicators Report (ACIR) 2012 Background Paper – Number 2. ACBF, Harare, Zimbabwe.
- Puplampu, K. P.** (2011b). *Science-society Relations and Biotechnology Revolution: Policy and Institutional Considerations for African Agriculture.* Africa Capacity Indicators Report (ACIR) 2012 Background Paper – Number 3. ACBF, Harare, Zimbabwe.

B. REFERENCES

- Abbott, P. and Young, L.** (2001). "State Trading Enterprises and the WTO: Importing Versus Exporting." In H.J. Michelmann, J. Rude, J. Stabler and G. Storey (eds.), *Globalization and Agricultural Trade Policy*, Boulder: Lynne Rienner Publishers, 133-150.
- ACBF.** (African Capacity Building Foundation). (2011). *Africa Capacity Indicators 2011: Capacity Development in Fragile States.* Harare: ACBF.
- Adesina, A. A.** (2009). "Africa's Food Crisis: Conditioning Trends and Global Development Policy." Plenary Keynote Paper Presented at the International Association of Agricultural Economists Conference, Beijing, China. August 16.
- Aerni, P.** (2005). "Stakeholder Attitudes towards the Risks and Benefits of Genetically Modified Crops in South Africa." *Environmental Science and Policy*, 8: 464-476.
- Aerni, P. and Bernauer, T.** (2005). "Stakeholder Attitudes towards GMOs in the Philippines, Mexico, and South Africa: The Issue of Public Trust." *World Development*, 34, 3: 557-575.
- Africa Partnership Forum.** (2008). *Climate Change Challenges to Africa: A Call for Action.* Tokyo: Africa Partnership Forum.
- African Centre for Biosafety.** (2009). "Kenyan Biosafety Bill – May 2009". [Internet] Available at: <http://biosafetyafrica.net/index.html/index.php/20090520224/Kenyan-Biosafety-Bill-May-2009/menu-id-100025.html> Retrieved August 4, 2009
- AfDB.** (African Development Bank). (2008). Review of the Performance of the Current Fisheries Portfolio of the African Development Bank: Brief to the Board. [Internet] Available from: <http://www.afdb.org>.
- African Union.** (2003). "Declaration on Agriculture and Food Security in Africa" Second Ordinary Assembly of the African Union, Maputo, July 2003 – Assembly/AU/Decl 7(II). [Internet] Available at: www.nepad.org.
- . (2006). *African Strategy on Biosafety*, Addis Ababa: African Union.
- Adelman, I.** (1984). "Beyond export-led growth." *World Development* 12 (9): 937-949.
- Ahmed, R. and Hossain, M.** (1990). "Developmental Impact of Rural Infrastructure in Bangladesh." IFPRI. Research Report 83. Washington, D.C.: IFPRI.
- Alene, A. D. and Coulbaly, O.** (2009). "The Impact of Agricultural Research on Productivity and Poverty in Sub-Saharan Africa." *Food Policy*, 34, 2: 198-209.
- Algan, N. and Kunczek, O.** (1998). "Transboundary population movements: Refugees, environment and politics." *The Turkish Yearbook of international relations*, XXVIII: 75-103.
- Alhassan, W. S.** (1999). *Agricultural Biotechnology Survey of Ghana, Kenya, Uganda, Zimbabwe and South Africa*, Accra: Food and Agricultural Organization (FAO)
- . (2001). *The Status of Agricultural Biotechnology in Selected West African and Central African Countries.* Ibadan: IITA Consultation Group on International Agricultural Research.

- — —. (2006). *Status of Biosafety in the West African Sub-Region. Biotechnology Communication Workshop for Media, Spokesperson, NGO, Farmer Groups*, Elking Hotel, Accra, Ghana, 2-8 June.
- Allison, E. H., Andrew, N. L., and Oliver, J.** (2007). "Enhancing the Resilience of Inland Fisheries and Aquaculture Systems to Climate Change." *SATeJournal*, 4: 1-35.
- Alston, J. M. and Pardey, P. G.** (2006). "Developing-Country Perspectives on Agricultural R&D: New Pressures for Self-Reliance" in Pardey, P.G., J.M. Alston and R.R. Piggott (eds.) *Agricultural R&D in the Developing World: Too Little, Too Late?* Washington, D.C.: International Food Policy Research Institute, 11-28.
- Alston, J. M., Pardey, P. G. and Piggott, R. R.** (2006). "Introduction and Overview" in Pardey, P.G., J.M. Alston and R.R. Piggott (eds.) *Agricultural R&D in the Developing World: Too Little, Too Late?* Washington, D.C.: International Food Policy Research Institute, 1-8
- Amano, M.** (2011). "Opening remarks" at 5th NEPAD-OECD Ministerial CONFERENCE - Accelerating reform in Africa: Mobilizing investment in infrastructure and agriculture, 26-27 April, Dakar, Senegal.
- Amara, H. A. and Founou-Tchuigoua, B.** (eds). (1990). *African Agriculture: The Critical Choices*. London: Zed Books.
- Amigun, B., Kaviti-Musango, J., and Stafford, W.** (2011). "Biofuels and sustainability in Africa", *Renewable and Sustainable Energy Reviews*, 15, 1360-1372.
- Amin, S.** (1973). *Neo-Colonialism in West Africa*. Harmondsworth: Penguin Books.
- Anania, G., Bohman, M. E., Carter C. A., McCalla, A. F.** (eds). (2004). *Agricultural Policy Reform and the WTO: Where are We Heading?* Cheltenham, UK; Northampton, MA: Edward Elgar.
- Anderson, K. and Jackson, L.** (2005). "Some implications of GM food technology policies for Sub-Saharan Africa." *Journal of African Economies*, 14, 3: 385-410.
- Anderson, K. and Masters, W.A.** (eds). (2009). *Distortions to Agricultural Incentives in Africa*. Washington, DC: World Bank.
- Anderson, K. and Valenzuela, E.** (2007). "The World Trade Organization's Doha Cotton Initiative: A Tale of Two Issues." *World Economy*, 30, 8: 1281-1304.
- Andrée, P.** (2007). *Genetically Modified Diplomacy: The Global Politics of Agricultural Biotechnology and the Environment*. Vancouver: UBC Press
- Anseeuw, W.** (2010). "Agricultural Policy in Africa – Renewal or Status Quo?: A Spotlight on Kenya and Senegal." In V. Padayachee (ed) *The Political Economy of Africa*. New York: NY: Routledge, 247-265.
- Aredo, D.** (1993). "The Informal and Semi-Formal Financial Sectors in Ethiopia: A Study of the IQQUB, IDDIR, and Savings and Credit Co-operatives." *AERC Research Paper* 21 (October)
- Ariga, J. and Jayne T. S.** (2011). "Fertilizer in Kenya: Factors Driving the Increase in Usage by Smallholder Farmers." In Chuhan-Pole, P. and Angwafo, M. (eds.), *Yes Africa Can: Success Stories from a Dynamic Continent*. Washington, D.C.: World Bank, 269-288.
- Arthur, P.** (2004). "The Multilateral Trading System, Economic Development and Poverty Alleviation in Africa." *Canadian Journal of Development Studies*, 25, 3: 429-444.
- Auffhammer, M.** (2011). "Agriculture: Weather dilemma for African maize." *Nature Climate Change*, 1: 27-28.
- Ayele, S.** (2008). "Biotechnology and biodiversity debates and policies in Africa." *International Journal of BioTechnology*, 10, 2/3, 2.
- Ayele, S. and Wield, D.** (2005). "Science and Technology Capacity Building and Partnership in African Agriculture: Perspectives of Mali and Egypt." *Journal of International Development*, 17: 631-646.
- Ayele, S., Wield, D. and Chataway, J.** (2006). "Partnerships in African Crop Biotech." *Nature Biotechnology*, 24, 6: 619-621.
- Badjeck, M. C., Allison, E. H., Halls, A. S., and Dulvy, N. K.** (2009). "Impacts of Climate Change Variability and Change on Fishery-based Livelihoods." *Marine Policy*, 1-9.
- Baffes, J.** (2004). "Tanzania's Cotton Sector: Reforms, Constraints and Challenges." *Development Policy Review*, 22, 1: 75-96.
- — —. (2009). "The 'Full Potential' of Uganda's Cotton Industry." *Development Policy Review*, 27, 1: 67-85.
- Banful, A. B.** (2011). "Old Problems in the New Solutions? Politically Motivated Allocation of Program Benefits and the 'New' Fertilizer Subsidies." *World Development*, 39, 7: 1166-1176.
- Barham, J. and Chitemi, C.** (2009). "Collective Action Initiatives to Improve Marketing Performance: Lessons from Farmer Groups in Tanzania." *Food Policy*, 34, 1: 53-59.
- Barrett, C. B., Carter, M. R. and Little, P. D.** (2006). "Understanding and Reducing Persistent Poverty in Africa: Introduction to a Special Issue." *Journal of Development Studies* 42, 2: 167-177.
- Barret, C. B. and Mutambatsere, E.** (2005). "Agricultural markets in developing countries." In Blume, L. E. and Durlauf, S. N. (eds) *The New Palgrave Dictionary of Economics*, 2nd Edition. London: Palgrave Macmillan,
- Barrett, K. and Brunk, G.** (2007). "A Precautionary Framework for Biotechnology." In I. Taylor (ed.) *Genetically Engineered Crops: Interim Policies, Uncertain Legislation*. New York: Haworth Food and Agricultural Products Press, 133-152.
- Barro, R. J. and Sala-i-Martin, X.** (1995). *Economic growth*. New York: McGraw-Hill.
- Bates, R. H.** (1981). *Markets and States in Tropical Africa: The Political Basis of Agricultural Policies*. Berkeley: University of California Press.

- . (1983). *Essays on the Political Economy of Rural Africa*. Cambridge: Cambridge University Press.
- . (1984). "Some Conventional Orthodoxies in the Study of Agrarian Change." *World Politics*, 36, 2: 234-254 (January)
- . (1988). "Governments and Agricultural Markets in Africa," In Robert Bates (ed.), *Toward a Political Economy of Development*, Berkeley: University of California Press, 331-358.
- Bates, R. H. and Block, S.** (2011). "Political Institutions and Agricultural Trade Interventions in Africa." *American Journal of Agricultural Economics*, 93, 2: 317-323.
- Bauer, M., Petkova, B. and Boyadjieva, P.** (2000). "Public Knowledge of and Attitudes to Science: Alternative Measures That May End the "Science War". *Science, Technology and Human Values*, 25, 1; 30-52.
- Bauer, P. T.** (1963). *West African Trade: A Study of Competition, Oligopoly, Monopoly in a Changing Economy*. London: Routledge and Kegan Paul.
- Beckman, B.** (1976). *Organizing the Farmers: Cocoa Politics and National Development in Ghana*. Uppsala: Scandinavian Institute of African Studies.
- Beintema, N. and Stads, G.J.** (2004). "Sub-Saharan African Agricultural Research: Recent Investment Trends." *Outlook on Agriculture* 33:239-246.
- . (2011). *African Agricultural R&D in the New Millennium: Progress for Some, Challenges for Many*. Washington, DC: International Food Policy Research Institute.
- Béké, T. E.** (2011). "Review of Agricultural and Environmental Studies" - *Revue d'Etudes en Agriculture et Environnement*, 92, 2: 117-141.
- Bernard, T. and Spielman, D. J.** (2009). "Reaching the Rural Poor through Rural Producer Organizations: A study of Agricultural Marketing Cooperatives in Ethiopia." *Food Policy*, 34, 1: 60-69.
- Berry, S. S.** (1993a). *No Condition is Permanent: The Social Dynamics of Agrarian Change in Sub-Saharan Africa*. Madison, Wisconsin: The University of Madison Press.
- . (1993b). "Understanding Agricultural Policy in Africa: The Contributions of Roberts Bates." *World Development*, 21, 6: 1055-1062.
- Biggs, S. and Farrington, J.** (1991). *Agricultural Research and the Rural Poor: A Review of Social Science Analysis*. Ottawa: International Development and Research Council.
- Binswanger, H.** (1986). "Agricultural mechanization – a comparative historical perspective." *Research Observer*, 1, 1: 27-56.
- Binswanger H. P., Khandker S. R., Rosenzweig M. R.** (1993). "How infrastructure and financial institutions affect agricultural output and investment in India." *Journal of Development Economics*, 41, 2: 337-366.
- Blair, T.** (2010). "Not Just Aid: How Making Government Work Can Transform Africa." Essay prepared for a public address by Tony Blair hosted by the Center for Global Development in Washington, D.C., on December 16, 2010. [Internet] Available at: http://www.cgdev.org/files/1424675_file_Blair_Not_Just_Aid_WE_B.pdf
- Bond P.** (2004). "The ANC's 'left turn' and South African sub-imperialism." *Review of African Political Economy*, 31, 102: 599-616.
- Bonnen, J. T.** (1998). "Transforming Human Capital, Technology and Institutions." In Eicher, C.K and J.M Staatz (eds). *International Agricultural Development*, 3rd Edition, Johns Hopkins University Press.
- Bonyo, J.** (2011). Shilling Falls to New Lows as Food Imports Fuel Demand for Dollar. *Daily Nation*.
- Boone, C.** (1994). "States and Ruling Classes in Post-Colonial Africa: The Enduring Contradictions of Power." In Migdal, J.S., Kohli, A. and Shue, V. (eds.), *State Power and Social Forces: Domination and Transformation in the Third World*. Cambridge: Cambridge University Press, 108-140.
- Booth, D.** (2005). "The Africa Commission Report: What about the Politics?" *Development Policy Review*, 23, 4: 493-498.
- . (2011). "Aid effectiveness: bringing country ownership (and politics) back in", ODI Working Paper 336. [Internet] Available at: <http://www.odi.org.uk/resources/docs/6028.pdf>
- Borras, S. and Franco, J.** (2010). "Towards a Broader View of the Politics of Global Land Grab: Rethinking Land Issues, Reframing Resistance." Initiatives in Critical Agrarian Studies Working Paper Series
- Boudreaux, K. C.** (2011). "Economic Liberalization in Rwanda's Coffee Sector: A Better Brew for Success". In Chuhan-Pole, P. and Angwafo, M. (eds.), *Yes Africa Can: Success Stories from a Dynamic Continent*. Washington, D.C.: World Bank, 185-199.
- Boyer, J.** (2010). "Food Security, Food Sovereignty, and Local Challenges for Transnational Agrarian Movements: The Honduran Case." *The Journal of Peasant Studies*, 37, 2: 319-351.
- Boyle, M. A. and Holben, D. H.** (2006). *Community Nutrition in Action: An Entrepreneurial Approach*, 4th ed. Belmont: Thomson Wadsworth.
- Brett, E. A.** (2003). "Participation and Accountability in Development Management." *Journal of Development Studies*, 4, 2: 1-29.
- Brewer, A.** (1990). *Marxist Theories of Imperialism*. 2nd Edition. Boston: Routledge and Kegan
- Brink, J. A., Woodward, B. R. and DaSilva, E. J.** (1998). "Plant biotechnology: a tool for development in Africa." *EJB Electronic Journal of Biotechnology*, 1, 3: 1-10.

- Brunel, S.** (2007). *Géopolitique de l'Afrique*. Philippe Hugon: Sedes.
- Bruntrup, M.** (2011). "The Comprehensive Africa Agriculture Development – An Assessment of a Pan-African Attempt to Revitalise Agriculture." *Quarterly Journal of International Agriculture*, 50, 1, 79-106.
- Brush, S. B.** (2000). "The Issues of *in situ* Conservation of Crop Genetic Resources." In S. B. Brush (ed.) *Genes in the Field: On-Farm Conservation of Crop Diversity*. Rome: International Plant Genetic Resources Institute. pp. 3-26
- Bryld, E.** (2003). "Potentials, problems, and policy implications for urban agriculture in developing countries." *Agriculture and Human Values*, 20, 1: 79-86.
- Butler, L. M. and Mazur, R. E.** (2007). "Principles and Processes for Enhancing Sustainable Rural Livelihoods: Collaborative Learning in Uganda." *International Journal of Sustainable Development and World Ecology*, 14, 6: 604-617.
- CAADP. (The Comprehensive Africa Agriculture Development Program in Practice).** (2010). *Highlighting the Successes – The Comprehensive Africa Agriculture Development Program in Practice*. Pretoria: Commissioned by the NEPAD Planning and Coordinating Agency.
- Callaghy, T. M.** (1988). "The State and Development of Capitalism in Africa: Theoretical, Historical and Comparative Reflections." In Rothchild, R. and Chazan, N. (eds.) *The Precarious Balance: State and Society in Africa*. Boulder and London: Westview Press, 67-99.
- Castells, M.** (1997). *The Power of Identity*. Oxford: Blackwell.
- CBFF (Congo Basin Forest Fund).** (2008). *Congo Basin Forest Fund*. London: CBFF.
- Centre for Human Rights and Global Justice.** (2010). *Foreign land deals and human rights: Case studies on agriculture and biofuels investment*. New York: NYU School of Law.
- CGAP (Consultative Group to Assist the Poor).** (2007). "Sustainability of Self-Help Groups in India: Two Analyses." Consultative Group to Assist the Poor, Occasional Paper, No. 12. August
- CGIAR-ISPC. (Consultative Group on International Agricultural Research - Independent Science and Partnership Council).** (2010) Report of the Second External Review of the Sub-Saharan Africa Challenge Program (SSA-CP). CGIAR- ISPC Secretariat.
- Chambers, R.** (1987). *Rural Development: Putting the Last First*, Harlow: Longman.
- Chambers, R. and Conway, G.** (1991). "Sustainable Rural Livelihoods: Practical Concepts for the 21st Century." IDS Discussion Paper, No. 296. Sussex: Institute of Development Studies.
- Chandy, L. and Gertz, G.** (2011). *Poverty in Numbers: The Changing State of Global Poverty from 2005 to 2015*. Washington, DC: The Brookings Institution.
- Charman, A. J. E.** (2008). *Empowering Women through Livelihoods Orientated Agricultural Service Provision*. UN-WIDER Research Paper 2008-01. UNU World Institute for Development Economics Research (UNU-WIDER), Helsinki, Finland
- Chazan, N. Lewis, P., Mortimer, R., Rothchild, D. and Stedman, S. J. (eds.).** (1992). *Politics and Society in Contemporary Africa*. 2nd Ed. Boulder, Colorado: Lynne Rienner.
- Chemnitz, C. and Hoeffler, H.** (2011). Adapting African agriculture to climate change. *International Journal for Rural Development*, 21: 32-35.
- Cherry, M.** (2002). "African Scientists Urge GM Acceptance" SciDev.Net [Internet] Available at <http://www.scidev.net/en/news/african-scientists-urge-gm-acceptance.html>
- Cheru, F.** (2002). *African Renaissance: Roadmaps to the Challenges of Globalization*. London: Zed Books.
- Christian Aid.** (2005). *The Damage Done – Aid, Death and Dogma*. London: Christian Aid.
- Chuhan-Pole, P. and Angwafo, M. (eds).** (2011). *Yes Africa Can: Success Stories from a Dynamic Continent*. Washington, D.C.: World Bank.
- CIAT.** (2002). The Soil, Water and Nutrient Management Program: Rising to the Challenge of Soil Degradation. Cali: CIAT [Internet] Available at: http://www.ciat.cgiar.org/tsbf_institute/pdf/swnm_textonly_brochure.pdf.
- Clay, E. J. and Schaffer, B. B.** (1984). "Introduction Room for Manoeuvre: The Premise of Public Policy." In Clay, E.J. and Schaffer, B. B. (eds.) *Room for Manoeuvre: An Exploration of Public Policy Planning in Agricultural and Rural Development*. London: Heineman Educational Books, 1-12.
- Cleaver, K. M. and Schreiber, G. A.** (1994). *Reversing the Spiral: The Population, Agriculture and Environment Nexus in sub-Saharan Africa*. Washington, DC: The World Bank.
- Cocciarelli, S., Suput, D. and Boshara, R.** (2010). "Financing Farming In The U.S. - Opportunities To Improve The Financial and Business Environment For Small And Midsized Farms Through Strategic Financing", A Report on Six Working Sessions. The W.K. Kellogg Foundation Food and Community Programme, July.
- Cofie, O., Veenhuizen, R. and Drechsel, P.** (2003). "Contribution of Urban and Peri-urban Agriculture to food security in Sub-Saharan Africa." Paper presented at the Africa session of 3rd WWF, Kyoto, 17th March 2003.
- Cohen, J. I.** (2005). "Poorer Nations Turn to Publicly Developed GM Crops." *Nature Biotechnology*, 23, 1: 27-33.
- Cohen, J. I and Paarlberg, R.** (2004). "Unlocking Crop Biotechnology in Developing Countries – A Report from the Field." *World Development*. 32, 9: 1563-1577.
- Cohen, J. I. and Pinstrup-Andersen, V.** (2002). "Biotechnology and the Public Good" *SciDev Net* [Internet] Available at: <http://www.scidev.net/en/opinions/biotechnology-and-the-public-good.html>
- Cohen, W. M. and Levinthal, D. A.** (1990). "Absorptive capacity: A new perspective on learning and innovation." *Administrative Science Quarterly*, 35, 1: 128-152.

- Coleman, W. D.** (1997). "Associational Governance in a Globalizing Era: Weathering the Storm." In Hollingsworth, J.R. and R. Boyer (eds.) *Contemporary Capitalism: The Embeddedness of Institution*. Cambridge: Cambridge University Press, 127-153.
- Collier, P.** (2007). *The Bottom Billion: Why the Poorest Countries are failing and What Can be Done About It*. Oxford: Oxford University Press.
- Collins, H. M. and Evans, R.** (2002). "The Third Wave of Science Studies: Studies of Expertise and Experience" *Social Studies of Science*, 32, 2: 235-296.
- Commission for Africa.** (2005). *Our Common Interest – Report of the Commission for Africa*, London: Commission for Africa.
- Conway, G., Waage, J. with Delaney, S.** (2010). *Science and Innovation for Development*. London: UK Collaborative on Development Sciences.
- Cooksey, B.** (2011). "Marketing Reform? The Rise and Fall of Agricultural Liberalisation in Tanzania." *Development Policy Review*, 29, Supplement, S57-81.
- Cornwall, A. and Brock, K.** (2005). "What Do Buzzwords Do for Development Policy? A Critical Look at 'Participation', 'Empowerment' and 'Poverty Reduction.'" *Third World Quarterly*, 26, 7: 1043-1060.
- Cotula, L., Vermuelen, S., Leonard, R., and Keeley, J.** (2009). *Land grab or development opportunity?* London/Rome: IIED/FAO/IFAD.
- Daddieh, C. K.** (1994). "Contract Farming and Palm Oil Production in Côte d'Ivoire and Ghana". In P.D. Little and M.J. Watts (eds.), *Living Under Contract - Contract Farming and Agrarian Transformation in Sub-Saharan Africa*, Madison: The University of Wisconsin Press, 188-215.
- Daily, G. and Ehrlich, P. R.** (1996). "Socioeconomic equity, sustainability and earth's carrying capacity," *Ecological Adaptations*, 6, 4, pp. 991-1001.
- Dalohoun, D. N., Hall, A and Van Mele, P** (2009). "Entrepreneurship as driver of a 'self-organizing system of innovation': the case of NERICA in Benin" *International Journal of Technology Management and Sustainable Development*. 8, 2: 87-101.
- Danielou, M. and Ravry, C.** (2005). *The Rise of Ghana's Pineapple Industry – From Successful Takeoff to Sustainable Expansion*. Africa Region Working Paper Series, No. 93, Washington D.C.: World Bank.
- DaSilva, E. J.** (2001). "GMOs and Development." *Electronic Journal of Biotechnology*, 4, 2, [Internet] Available at: <http://www.ejbiotechnology.info/>.
- . (2002). "Biotechnology and the Developing World" *Electronic Journal of Biotechnology*, 5, 1, [Internet] Available at: <http://www.ejbiotechnology.info/>
- Da Vià, E.** (2011). "The Politics of 'Win-Win' Narratives: Land Grab as Development Opportunity." Paper presented at the University of Sussex: Institute of Development Studies Conference on Global Land Grabbing, 6–8 April, Sussex, UK.
- Davis, C.** (2011). *A climate change handbook for North-Eastern south Africa*. Pretoria: Council for Scientific and Industrial Research.
- Davis, K.** (2006). "Farmer Field Schools: A Boon or Bust for Extension in Africa?" *Journal of International Agricultural and Extension Education* 13:91-97.
- . (2010). "The What, How, and How of Shaping Change in African Communities Through Extension." *Extension Farming Systems Journal*, 6, 1: 84-91.
- de Bon, H., Parrot, L., and Moustier, P.** (2010). "Sustainable urban agriculture in developing countries: A review." *Agronomy for Sustainable Development*, 30, 1: 21-32.
- de Janvry, A. and Sadoulet, E.** (2010). "Agriculture for Development in Africa: Business-as-Usual or New Departures." *Journal of African Economies*, Supplement 2, 19: 7-39.
- de Waal, A. and Whiteside, A.** (2003). "New Variant Famine: AIDs, and Food Crisis in Southern Africa," *Lancet*, 362, 9391: 1234-1237.
- de Zeeuw, H., Guendel, S. and Waibel, H.** (2000). "The integration of agriculture in urban policies." In N. Bakker, M. Dubelling, S. Gundel, V. Sabel-Koschella, and A. Zeeuw (eds.), *Growing Cities, Growing Food: Urban Agriculture on the Policy Agenda*. Feldafing, Germany: Food and Agriculture Development Centre (ZEL).
- De Leeuw, J., Ericksen, P., Gitau, J., Zwaagstra, L., and MacMillan, S.** (2011). *ILRI research charts ways to better livestock-related drought interventions in Kenya's drylands*. Rome: International Livestock Research Institute.
- Deiniger, K., Beyerlee, D., Lindsay, J., Norton, A., Selod, H. and Stickler, M.** (2011). *Rising Global Interest in Farmland: Can it Yield Sustainable and Equitable Benefits?* Washington, DC: World Bank. [Internet] Available at: http://siteresources.worldbank.org/INTARD/Resources/ESW_Sept7_final_final.pdf
- Deo, S. D. and Swanson, L. E.** (1991). "The Political Economy of Agricultural Research in the Third World." In Friedland, W. H. (ed.) *Towards a New Political Economy of Agriculture*, Boulder: Westview Press, 189-212.
- Dercon, S.** (2005). "Risk, Poverty and Vulnerability in Africa." *Journal of African Economies* 14 (4): 483-488.
- Development Associates, Inc.** (2003). *Mozambique: Human Capacity Building Assessment: Agriculture Sector*. [Internet] Available at: http://www.usaid.gov/our_work/agriculture/bifad/mozambique_ag_capacity.pdf. (Accessed 8th July 2011).
- Devereux, S. and Maxwell, S.** (2001). *Food security in Sub-Saharan Africa*, London: Intermediate Technology Development Group.
- Devèze, J. C.** (ed.). (2011). *Challenges for African Agriculture*. Washington, D.C.: World Bank.
- Di Falco, S. and Chavas, J. P.** (2006). "Crop Genetic Diversity, Farm Productivity and the Management of Environmental Risk in Rain-fed Agriculture." *European Review of Agricultural Economics*, 33, 2: 89-314.
- Diagne, A.** (2006). "Diffusion and Adoption of NEICA Rice Varieties in Côte d'Ivoire." *The Developing Economies*, XLIV, 2: 208-231

- Diagne, A., Wopereis, M. and Akintayo, I.** (2011). "Increasing Rice Productivity and Strengthening Food Security through New Rice for Africa (NERICA)." In Chuhan-Pole, P. and Angwafo, M. (eds.), (2011) *Yes Africa Can: Success Stories from a Dynamic Continent*. Washington, D.C.: World Bank, 253-267.
- Diao, X.** (2010). "The Economic Importance of Agriculture for Sustainable Development and Poverty Reduction: Findings from a Case Study OF Ghana." paper was first presented to the Working Party on Agricultural Policy and Markets, 15-17 November, Paris: OECD. [Internet] Available at: <http://www.oecd.org/dataoecd/50/2/46341169.pdf>
- Diao, X., Hazell, P. Resnick, D. and Thurlow, J.** (2007). *The Role of Agriculture in Development: Implications for Sub-Saharan Africa*. Research Report 153, Washington, DC: International Food Policy Research Institute.
- Diaz-Bonilla, E., Frandsen, S. E. and Robinson, S. (eds.)** (2006). *WTO Negotiations and Agricultural Trade Liberalization – The Effect of Developed Countries' Policies on Developing Countries*. Cambridge, MA: CABI.
- Diemer, G. and Huibers, F. (eds.)** (1996). *Crops, People and Irrigation*. UK: ITDG Publications.
- Dilley, M.** (2007). *Assessment and management of climate-related risks: Focus on Africa*. New York: UNDP.
- Dinham, B. and Hines, C.** (1983). *Agribusiness in Africa*. London: Earth Resources Research.
- Dixon, J., Gulliver, A. and Gibbon, D.** (2001). *Farming Systems and Poverty: Improving Farmers' Livelihoods in a Changing World*. Rome: Food and Agricultural Organization of the United Nations, and Washington, DC: World Bank.
- Djibo, O.** (2012). "The Capacity Development Strategic Framework and its Implementation." Presentation at ACIR 2012 Validation Workshop with UNECA, Addis Ababa, Ethiopia (14 February 2012)
- Dorosh, P. A. and Haggblade, S.** (2003). "Growth Linkages, Price Effects and Income Distribution in Sub-Saharan Africa." *Journal of African Economies*, 12, 2: 207-235.
- Dorward, A., Chirwa, E. and Jayne, T. S.** (2011). "Malawi's Agricultural Input Subsidy Program Experience over 2005-09". In Chuhan-Pole, P. and Angwafo, M. (eds.) (2011) *Yes Africa Can: Success Stories from a Dynamic Continent*. Washington, D.C.: World Bank, 289-317.
- Dow, K., Carr, E. R., Douma, A., Han, J. and Hallding, K.** (2005). *Linking water scarcity to population movements: From global models to local experiences*. Stockholm: Stockholm Environmental Institute.
- Drechsel, P., Graefe, P. S., Sonou, M. and Cofie, O.** (2006). *Informal Irrigation in Urban West Africa: An Overview*. IWMI-RUAF-FAO. IWMI Research Report.
- Drimie, S. and Casale, M.** (2009). "Multiple stressors in Southern Africa: The link between HIV/AIDS, food insecurity, poverty and children's vulnerability now and the future." *AIDS Care*, 21, S1: 28-33.
- DST (Department of Science and Technology).** (2010). *The south African Risk and Vulnerability Atlas*. Pretoria: DST.
- Dunmore, C.** (2011). "Support for biofuels driving up food costs: report," [Internet] Available at: <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/support-for-biofuels-driving-up-food-costs-report/article2056078/>. (Accessed 11th July 2011.)
- Dutschke, M. and Wertz-Kanounnikoff, S.** (2009). *Financing REDD: Linking country needs and financing sources*. Bogor: Center for International Forest Research.
- Easterling, W.** (2011). "Guidelines for adaptation agriculture to climate change." In D. Hillel and C. Rosenzweig (eds.), *Handbook of climate change and agroecosystems: impacts, adaptation and mitigation*. London: Imperial College Press, 269-286
- Economist.** (2011). "Agriculture and Nutrition: Hidden Hunger." *The Economist, Print Edition*, March 26th – April 1st 2011.
- Edelman, M.** (2003). "Transnational peasant and farmer movements and networks," In M. Kaldor, H. Anheier & M. Glasius (eds.), *Global Civil Society Yearbook 2003*, London: London School of Economics, Centre for the Study of Global Governance, 185-220.
- Ehrlich, P. R., Ehrlich, A. H. and Daily, G. C.** (1993). "Food security, population, and environment." *Population and Development Review*, 19, 1; 1-32.
- Eichenwald, K., Kolata, G. and Petersen, M.** (2001). "Biotechnology Food: From the Lab to a Debacle." *New York Times*, January 25, A1.
- Eicher, C. K.** (1989). *Sustainable Institutions for African Agricultural Development*. The Hague: ISNAR (Working Paper, No. 19).
- Eicher, C. K., Maridia, K. and Sithole-Niang, I.** (2006). "Crop Biotechnology and the African Farmer." *Food Policy*, 31: 504-527.
- Einsiedel, E.** (2000). "Cloning and its discontents – a Canadian Perspective." *Nature Biotechnology*, Vol. 18, September, 943-944.
- Ejeta, G.** (2010). "African Green Revolution Needn't Be a Mirage." *Science*, 327, 5967, 831-832.
- Elliott, H. and Perrault, P. T.** (2006). "Zambia: A Quiet Crisis in African Research and Development." In Pardey, P.G. J.M. Alston and R.R. Piggott (eds.) *Agricultural R&D in the Developing World: Too Little, Too Late?* Washington, D.C.: International Food Policy Research Institute, 227-256.
- Ellis, F.** (1992). *Agricultural Policies in Developing Countries*. Cambridge: Cambridge University Press.
- Ellis, F. and Freeman, H. A.** (2004). "Rural Livelihoods & Poverty Reduction Strategies in Four African Countries." *Journal of Development Studies*, 40, 4: 1-30.
- — —. (eds.) (2005). *Rural Livelihoods and Poverty Reduction Policies*. New York: Routledge.
- Emmanuel, A.** (1972). *Unequal Exchange: A Study of the Imperialism of*

- Trade. London: Monthly Review Press.
- Engels, F.** (1986). *The Origin of the Family, Private Property and the State*. Harmondsworth: Penguin Books (First Published 1884).
- Entine, J.** (ed) (2006). *Let Them Eat Precaution: How Politics Is Undermining the Genetic Revolution in Agriculture*. Washington D.C.: American Enterprise Institute.
- Essegbey, G. O.** (2008). "Biotechnology Policy: The Myth and Reality in Sub-Saharan Africa." In G. Ruivenkamp, S. Hisano and J. Jongerden (eds.) *Reconstructing Biotechnologies – Critical Social Analyses*. Wageningen: Wageningen Academic Publishers, 269-297.
- Essegbey, G. O. and Pupilampu, K. P.** (2007). "Biotechnology Innovations in Ghana: Re-conceptualizing the Role of Stakeholders." *Tailoring Biotechnologies*, 3, 1: 71-90.
- Ethiopian Horticultural Development Agency.** (2011). *Exporting fruit and vegetables from Ethiopia*. Addis Ababa: Ethiopian Horticultural Development Agency.
- ETC (Erosion, Technology and Concentration)** (2006). *Groups in Latin America and Africa call for Rejection of World Bank-GEF Biosafety Projects*. (News Release, June 27th [Internet] Available at: <http://www.etcgroup.org>).
- Fan, S. and Zhang, X.** (2008). "Public Expenditure, Growth and Poverty Reduction in Rural Uganda." *African Development Review*, 20, 3: 466-496.
- Fan, S., Omilola, B. and Lambert, M.** (2009). "Public Spending for Agriculture in Africa: Trends and Composition", ReSAKSS Working Paper No. 28, (April). International Food Policy Research Institute (IFPRI), Washington, D.C.
- FAO. (Food and Agricultural Organization).** (2000). *Socio-Economic Impact of Smallholder Irrigation Development in Zimbabwe*. Harare: FAO.
- . (2004a). *The State of Agricultural Commodity Markets, 2004*. Rome: FAO of the United Nations Organization.
- . (2004b). *The State of Food and Agriculture, 2003-4: Agricultural Biotechnology, Meeting the Needs of the Poor?* Rome: FAO.
- . (2004c). "Financing Agriculture and Rural Development in Africa: Issues, Constraints and Perspectives." 23rd Regional Conference for Africa, Johannesburg, South Africa, March 1-5.
- . (2007). *Dams and Agriculture in Africa*. Rome: Food and Agriculture Organization of the United Nations.
- . (2008). *Climate change adaptation and mitigation: Challenges and opportunities for food security*. Rome: Food and Agricultural Organisation.
- . (2009a). "The special challenge for sub-Saharan Africa." High Level Expert Forum - How to Feed the World in 2050. Rome, FAO. (12-13 October) http://www.fao.org/fileadmin/templates/wsfs/docs/Issues_papers/HLEF2050_Africa.pdf [Accessed January 22 2012]
- . (2009b). *The State of Food Insecurity in the World: Economic Crises – Impacts and Lessons Learned*. Rome: Food and Agricultural Organization of the United Nations.
- . (2009c). *Climate change in Africa: The threat to agriculture*. Rome: Food and Agriculture Organization of the United Nations.
- . (2010a). The Speech of the Director General at the 10th FAO Africa Regional Conference, Luanda, Angola.
- . (2010b). *Towards a Work Programme on Agriculture*. Rome: Food and Agricultural Organization of the United Nations.
- . (2011). *The State of Food and Agriculture – Women in Agriculture: Closing the Gender Gap for Development*. Rome: Food and Agricultural Organization of the United Nations.
- FAO/World Bank.** (2011). *Missing Food: The case of post-harvest grain losses in sub-Saharan Africa*, Report No. 60371, Washington, DC: World Bank. [Internet] Available at :<http://siteresources.worldbank.org/INTARD/Resources/MissingFoods10_web.pdf>, (Accessed 11th July 2011).
- FARA.** (Forum for Agricultural Research in Africa). (2006). *Framework for African Agricultural Productivity*. Accra, Ghana: FARA.
- Farming First.** (2010). *Climate Leaders Fail to Include Agricultural Work Programme in Cancun Deal*. Cancun: Farming First.
- Fisher, G., Shah, M. and Velthuizen, V.** (2011). *Climate change and agriculture in Africa*. Luxembourg: International Institute for Applied systems Analysis.
- Flaherty, K., Ayoola, Gbolagade, O., and Beintema, N.** (2010). *Nigeria. ASTI Country Note*. Washington, DC and Abuja: International Food Policy Research Institute, Agricultural Research Council of Nigeria and Farm and Infrastructure Foundation.
- Fogel, R.W.** (1994). "Economic growth, population theory, and physiology: The bearing of long-term processes on the making of economic policy. (Nobel Prize lecture)." *American Economic Review*, 84, 3: 369–395
- Ford, M. and Holmquist, F.** (1988). "Crisis and State Reform." In Chazan, N. and Shaw, T. (eds.), *Coping with Africa's Food Crisis*. Boulder and London: Lynne Rienner, 213-238.
- Foucault, M.** (1980). *Power/Knowledge: Selected Interviews and Other Writings*. New York: Pantheon Books.
- . (1983). "The Subject and Power." In H.L. Dreyfus and P. Rabinow (Eds.) *Michel Foucault: Beyond Structuralism and Hermeneutics*. Chicago: University of Chicago Press. 2nd Edition, 208-226
- . (1990). *The History of Sexuality: An Introduction*. New York: Vintage Books
- Fouillet, C.** (2007). "Les risques climatiques : quel rôle pour la microassurance?" *Autrepart*, 44(4): 203-216.
- Francesconi, G. N. and Heerink, N.** (2011). "Ethiopian Agricultural Cooperatives in an Era of Global Commodity Exchange: Does Organizational Form Matter?" *Journal of African Economies*, 20, 1:

153-177.

- Friedberg, S. and Horowitz, L.** (2004). "Converging Networks and Clashing Stories: South Africa's Agricultural Biotechnology Debate." *Africa Today*, 51: 3-25.
- Friedman, H.** (1993). "The Political Economy of Food: A Global Crisis." *New Left Review*, 197, January/February, 29-57.
- Fu, X.** (2008). "Foreign Direct Investment, Absorptive Capacity and Regional Innovation Capabilities: Evidence from China." *Oxford Development Studies*, 36, 1: 89-110
- G8 Research Group.** (2006). *Gleneagles Final Compliance Report – July 8, 2005 to June 1, 2006*. Toronto: University of Toronto Munk Centre for International Studies at Trinity College
- G8.** (n.d.). "G8 Efforts Towards Global food Security," [Internet] Available at http://www.g8italia2009.it/static/G8_Allegato/G8_Report_Global_Food_Security,2.pdf (Accessed 19th August 2011).
- Gabre-Madhin, E., Barrett, C. B. and Dorosh, P.** (2002). "Technological Change and Price Effects in Agriculture: Conceptual and Comparative Perspectives." Washington DC: International Food Policy Research Institute (IFPRI).
- Gabre-Madhin, E. Z. and Haggblade, S.** (2003). Successes in African Agriculture: Results of an Expert Survey, *MSSD Discussion Paper No. 53, January 2003*, International Food Policy Research Institute, Washington D.C.
- Gakou, M. L.** (1987). *The Crisis in African Agriculture*. London: Zed Books.
- Gajigo, O. and Lukoma, A.** (2011): "Infrastructure and Agricultural Productivity in Africa", Market Brief 23 November. Tunis: Africa Development Bank. [Internet] Available at: <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Infrastructure%20and%20Agricultural%20Productivity%20in%20Africa%20FINAL.pdf>
- Galjart, B.** (1971). "Rural Development and Sociological Concepts." *Rural Sociology*, 36; 31-40.
- Garside, B., MacGregor, J. and Vorley, B.** (2008). *Review of food miles, carbon and African horticulture: Environmental and developmental issues*. London: International Institute for Environment and Development.
- Gaskell, G. and Bauer, M.** (eds.) (2001). *Biotechnology 1996-2000: The Years of Controversy*. London: Science Museums.
- Gaskell, G. and Durant, J.** (eds.) (2002). *Biotechnology: The Making of a Global Controversy*. New York: Cambridge University Press.
- GEF (Global Environment Facility)** (2000). *Initial Strategy for Assisting Countries to Prepare for the Entry into the force of the Cartagena Protocol on Biosafety*. Geneva: UNEP/GEF.
- Geisler, C. and Sousa, R.** (2000). "Africa's other environmental refugees." *Africa Forum*, 1-4.
- George, S.** (1986). *How the Other Half Dies*. Harmondsworth: Penguin Books.
- Gerth, H. H. and Mills, C. W.** (1946). *From Max Weber: Essays in Sociology*. New York: Oxford University Press.
- Ghana Web.** (2005). "MPs bemoan the seemingly low interest in scientific research." [Internet] Available at: www.ghanaweb.com December 8. (Accessed July 31, 2007).
- Gibbon, P.** (2007). "Africa, Tropical Commodity Policy and the WTO Doha Round." *Development Policy Review*, 25, 1: 43-70.
- Giddens, A.** (1990). *The Consequences of Modernity*. Stanford: Stanford University Press.
- Giehler, T.** (1999). "Sources of Funds for Agricultural Lending." AFR No. 4. Rome.
- Gillespie, S.** (ed.) (2006). *AIDS, poverty, and hunger: Challenges and responses*. Highlights of the International Conference on HIV/AIDS and Food and Nutrition Security, Durban, South Africa, April 14–16, 2005. Washington, D.C.: International Food Policy Research Institute.
- Gillson, I., Poulton, C., Balcombe, K. and Page, S.** (2004). *Understanding the Impact of Cotton Subsidies on Developing Countries*. ODI Working Report May, Sussex: ODI.
- Giyose, B.** (2011). "Building platforms for sustainable food and nutritional security programmes in Africa," USDA Protein Seminar, [Internet] Available at: http://wishh.org/workshops/intl/southafrica/mar11/giyose_nepad.pdf. (Accessed 19th August 2011).
- Glover, D.** (2010). "Exploring the Resilience of BT Cotton's 'Pro-poor Success Story.'" *Development and Change*, 41, 6: 955-981.
- Gockowski, J., Afari, S., Sarpong, D. B., Osei-Asare, Y. B., Dziwornu, A. K.** (2011). "The Increasing Income of Ghanaian Cocoa Farmers: Is Introduction of Fine Flavour Cocoa a Viable Alternative?" *Quarterly Journal of International Agriculture*, 50, 2: 175-200.
- Godfray, C., Beddington, J., Crute, I., Haddad, L., Lawrence, D., Muir, J., Pretty, J. and Toulmin, C.** (2010). "Food Security: the Challenge of Feeding 9 Billion People." *Science*, 327, 5967: 812-818.
- Gollin, D., Parente, S. and Rogerson, R.** (2002). "The role of agriculture in development." *American Economic Review*, 92, 2: 160–164.
- Gouse, M.** (2009). "Ten Years of Bt Cotton in South Africa: Putting the Smallholder Experience into Context." In R. Tripp (ed.) *Biotechnology and Agricultural Development: Transgenic Cotton, Rural Institutions and Resource-Poor Farmers*. London and New York: Routledge, 200-224.
- Gouse, M., Kirsten, J., Shankar, B. and Thirtle, C.** (2005). "Bt Cotton in KwaZulu Natal: Technological Triumph but Institutional Failure." *AgbiotechNet*, 7: 134-141
- Green, E., Hillbom, E. and Lindgren, M.** (2011). "Principal Trends and Debates in African Agricultural Development", paper presented at ECAS 2011 - 4th European Conference on African Studies. Uppsala: Nordic Africa Institute. [Internet] Available at: <http://www.nai.uu.se/ecas-4/panels/61-80/panel-71/Erik-Green-Ellen-Hillbom-and-Mattias-Lindgren-Full-paper.pdf>

- GRET (Groupe de recherche d'échanges technologies).** (2006). *Horticulture in East and Southern Africa (ESA)*. Neuilly-sur-Seine: PriceWaterhouseCoopers.
- Gross, A.** (2006). "Can Sub-Saharan African Countries Defend their Trade and Development Interests Effectively in the WTO? The Case of Cotton." *European Journal of Development Research*, 18, 3: 368-386.
- GTZ (German Agency for Technical Cooperation).** (2008). *Climate change and agriculture: Threats and opportunities*. Bonn: Federal Ministry for Economic Cooperation and Development.
- Gupta, A. and Falkner, R.** (2006). "The Influence of the Cartagena Protocol on Biosafety: Comparing Mexico, China and South Africa." *Global Environmental Politics*, 6, 4: 23-55.
- Guvheya, G. and Léautier, F.** (2011). "Capacity Development for Agricultural Transformation in SSA: A Strategic Framework." Mimeo. Harare: The African Capacity Building Foundation.
- Haggblade, S.** (2010). "Lessons from Past Successes." In Haggblade, S. and Hazell, P. B. R. (eds.), *Successes in African Agriculture – Lessons for the Future*. Baltimore: Johns Hopkins University Press, pp. 323-348
- Haggblade, S., Hazell, P.B.R. and Gabre-Madhin, E.** (2010a). "Challenges for African Agriculture." In Haggblade, S. and Hazell, P.B.R. (eds.), *Successes in African Agriculture – Lessons for the Future*. Baltimore: Johns Hopkins University Press, 3-26.
- Haggblade, S., Hazell, P. B. R. and Kisamba-Mugerwa, W.** (2010b). "Implications for the Future." In S. Haggblade and P.B.R. Hazell (eds.), *Successes in African Agriculture – Lessons for the Future*. Baltimore: Johns Hopkins University Press, 349-372
- Halpin, D.** (2005). "Agricultural Interest Groups and Global Challenges: Decline and Resilience." In Halpin, D. (ed.) *Surviving Global Change? Agricultural Interest Groups in Comparative Perspective*. Aldershot: Ashgate, 1-28.
- Hanjra M. A. and Qureshi, M. E.** (2010). "Global water crisis and future food security in an era of climate change." *Food Policy*, 35: 365-377.
- Hanlon, J.** (2000). "Power without Responsibility: The World Bank and Mozambican Cashew Nuts." *Review of African Political Economy*, 27, 83: 29-45.
- . (2001). "Mozambique Wins Long Battle Over Cashew Nuts and Sugar." *Review of African Political Economy*, 28, 87 (March): 111-12.
- Hansen, E.** (1989). "The State and Food Agriculture." In Hansen E. and K. Ninsin (eds.) *The State, Development and Politics in Ghana*. London: CODESRIA 184-221.
- Hanson, K. T.** (2005). "Landscapes of survival and escape: social networking and urban livelihoods in Ghana." *Environment and Planning A*, 37: 1291-1310
- Hanson, K. T. and Kararach, G.** (2011) "The Challenges of Knowledge Harvesting and the Promotion of Sustainable Development for the Achievement of the MDGs in Africa." ACBF Occasional Paper No. 12. Harare: ACBF (February).
- Harsch, E.** (2004). "Agriculture: Africa's 'engine for growth'." *Africa Recovery*, 17, 4 (January):13.
- Harsh, M.** (2005). "Formal and Informal Governance of Agricultural Biotechnology in Kenya: Participation and Accountability in Controversy Surrounding the Draft Biosafety Bill." *Journal of International Development*, 17: 661-677.
- Harvey, M. and Pilgrim, S.** (2011). "The new competition for land: Food, energy, and climate change." *Food Policy*, 36: S40-S51.
- Hassanali, A.** (2000). "Kenya" In Tzotzos, G.T. and K.G. Skryabin (eds.) *Biotechnology in the Developing World and Countries in Transition*, Wallingford: CABI Publishing, 91-131.
- Haverkort, A. W., Van'tHooft, K. and Hiemstra, W.** (eds.) (2002). *Ancient Roots, New Shoots, Endogenous Development in Practice*. London: Zed Books.
- Hazarika, G. and Guha-Khasnobis, B.** (2008). *Household Access to Microcredit and Children's Food Security in Rural Malawi: A Gender Perspective*. IZA Discussion Paper No. 3793. Bonn, Germany, Institute for the Study of Labor.
- Hazell, P.** (1982). "Application of Risk Preference Estimates in Firm-Household and Agricultural Sector Models." *American Journal of Agricultural Economics*, 64:384-90.
- . (1999). *Agricultural Growth, Poverty Alleviation, and Environmental Sustainability: Having It All*. 2020 Brief No. 59. Washington, DC: International Food Policy Research Institute.
- Hazell, P., and Haggblade, S.** (1991). "Rural-urban growth linkages in India." *Indian Journal of Agricultural Economics*, 46, 4: 512-529.
- Heemskerk, W., Lema, N., Guindo, D., Schouten, C., Semgalawe, Z., Verjuil, H., de Steenhuijsen-Piters, B. and Penninkhoff, P.** (2003) *A guide to demand-driven agricultural research: The Client-Oriented Research Management Approach*. KIT, IER (Mali), DRD (Tanzania).
- Hegney, D., Ross, H., Baker, P., Rogers-Clark, C., King C, Buikstra, E., Watson-Luke, A. and Stallard, L.** (2008). *Building Resilience in Rural Communities Toolkit*. Toowoomba, Queensland: The University of Queensland and University of Southern Queensland.
- Heidhues, F. and Obare, G.** (2011). "Lessons from Structural Adjustment Programmes and their Effects in Africa." *Quarterly Journal of International Agriculture*, 50, 1: 55-64.
- Held, D. and McGrew, A.** (eds.) (2004). *The Global Transformations Reader: An Introduction to the Globalization Debate*. Cambridge: Polity Press.
- Hisali, E., Birungi, P. and Buyinza, F.** (In press) Adaptation to climate change in Uganda: Evidence from micro level data. *Global Environmental Change*.
- Hirschman, A.O.** (1958). *The Strategy of Economic Development*, New Haven, Yale University Press.
- Hodgson, J.** (1999). "UK interest groups take all sides of GM issue." *Nature Biotechnology*, 17, July: 630-631.

- Hollinger, F.** (2004). "Financing Agricultural Term Investments", No 7 in the Series Agricultural Finance Revisited, FAO/GTZ. Rome
- Holt-Gimenez, E.** (2008). "Out of AGRA: The Green Revolution Returns to Africa." *Development*, 51, 4:464-471.
- Hoogvelt, A. M. M.** (2001). *Globalization and the Postcolonial World - The New Political Economy of Development*. Baltimore, Maryland: The Johns Hopkins University Press. 2nd Edition.
- Hopper, W. D.** (1993). Indian Agriculture and Fertilizer; an Outsider's Observations. Keynote address to the FAI Seminar on Emerging Scenario in Fertilizer and Agriculture: Global Dimensions. New Delhi: FAI.
- Hormeku, T.** (2003). "Progress in WTO Negotiations Cannot be at Our Expense, Say Developing Countries." *Third World Network - Africa*
- Hussein, K.** (2002). *Livelihoods Approaches Compared: A Multi-Agency Review of Current Practice*. London: Department for International Development and Overseas Development Institute.
- Huaha, M., Ndanshau, M. O. and Kipokola, J. P.** (1993). "Scope, Structure and Policy Implications of Informal Financial Markets in Tanzania." *AERC Research Paper* 18.
- IAASTD (International Assessment of Agricultural Knowledge, Science and Technology for Development).** (2009a). *Agriculture at a Crossroads - International Assessment of Agricultural Knowledge, Science and Technology for Development: Sub-Saharan Africa Report*. Washington, DC: Island Press.
- . (2009b). *Agriculture at a Crossroads - International Assessment of Agricultural Knowledge, Science and Technology for Development: Synthesis Report*. Washington, DC: Island Press.
- IAC (Inter Academy Council).** (2004). *Realizing the Promise and Potential of African Agriculture: Science and Technology Strategies for Improving Agricultural Productivity in Africa*. Amsterdam: IAC.
- ICTSD and IPC.** (2010). *Agricultural technologies for climate change mitigation and adaptation in developing countries: Policy options for innovation and technology diffusion*. Geneva: ICTSD-IPC.
- IFAD (International Fund for Agricultural Development).** (n. d.). "Food security: A conceptual framework" [Internet] Available at: http://www.ifad.org/hfs/thematic/rural/rural_2.htm. (Accessed 19th August 2011).
- . (2001). *Rural Poverty Report: The Challenge of Ending Rural Poverty*. UK: IFAD. Oxford University Press.
- IFPRI (International Food Policy Research Institute).** (n.d.). 'Bioenergy,' [Internet] available at <http://www.ifpri.org/book-774/ourwork/researcharea/bioenergy>. (Accessed 19th August 2011).
- . (2006a). *The Role of Agriculture Development: Implications for sub-Saharan Africa*. Discussion Paper 29. Washington DC: IFPRI.
- . (2006b). *Annual Report, 2005-2006*, Washington D.C.: IFPRI
- . (2011). *Leveraging Agriculture for Improving Nutrition and Health*. Conference Program in New Delhi, India. Washington, DC: International Food Policy Research Institute. [Internet] Available at: <http://2020conference.ifpri.info/>
- Ikdahl, I.** (2008). "Go Home and Clear the Conflict": Human Rights Perspectives on Gender and Land in Tanzania." In B. Englert and E. Daley (eds.) *Women's Land Rights and Privatization in Eastern Africa*. Woodbridge, UK: James Currey, 40-60
- IMF** (2011). "Regional Economic Outlook Sub-Saharan Africa Sustaining the Expansion." Washington DC: International Monetary Fund, October. <http://www.imf.org/external/pubs/ft/reo/2011/afr/eng/sreo1011.pdf>
- Innes, J. E. and Booher, D. E.** (2004). "Framing Public Participation: Strategies for the 21st Century." *Planning Theory and Practice*, 5, 4, 419-436.
- IPCC (Intergovernmental Panel on Climate Change).** (2007a). *Climate Change 2007: The Physical Science Basis: Summary for Policy Makers. Contribution of Working Group 1 to the Fourth Assessment Report of IPCC*. Cambridge, UK: Cambridge University Press.
- . (2007b). *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group 2 to the Fourth Assessment Report of IPCC*. Cambridge, UK: Cambridge University Press.
- . (2007c). *Climate change 2007: Synthesis report*. Washington D.C.: IPCC.
- IISD (International Institute for Sustainable Development).** (2011). *The Forest Day Bulletin Vol. 148 No. 4*. [Internet] Available at: <http://www.iisd.ca/>.
- ITU (International Telecommunication Union).** (2010). *Measuring the Information Society*. Geneva. Switzerland
- Jacobi, P., Amend, J. and Kiango, S.** (1999). *Urban agriculture in Dar es Salaam: Providing an indispensable part of the diet*. Leuden: Resource Centre on Urban Agriculture and Forestry.
- Jaffe, G.** (2005). "Implementing the Cartagena Biosafety Protocol Through National Biosafety Regulatory Systems: An Analysis of Key Unresolved Issues." *Journal of Public Affairs*, 5, 299-311.
- Jaffe, S. M.** (1994). "Contract Farming in the Shadow of Competitive Markets: The Experience of Kenyan Horticulture". In P.D. Little and M.J. Watts (eds.) *Living Under Contract - Contract Farming and Agrarian Transformation in Sub-Saharan Africa*. Madison: The University of Wisconsin Press, 97-139.
- James, C.** (2010). *Global Status of Commercialized Biotech/GM Crops: 2010*. ISAAA Brief No. 42. ISAAA: Ithaca, New York.
- Jansen, K. and Roquas, E.** (2005). "Absentee Expertise: Science Advice for Biotechnology Regulation in Developing Countries." In Leach, M., Scoones, I. and B. Wynne (eds.) *Science and Citizens: Globalization and the Challenge of Engagement*. Zed Books: London, 142-154.
- Janssen, W.** (2002). *Institutional Innovations in Public Agricultural Research in Five Developed Countries*. Hague: ISNAR (Briefing Paper No. 52), July.
- Jayne, T. D., Mather, D. and Mghenyi, E.** (2010). "Principal Challenges Confronting Smallholder agriculture in Africa." *World*

Development, 38, 10:1384-1398.

- Jayne, T., Goverh, J., Mwanaumo, A., Nyoro, J. K. and Chapoto, A.** (2002). "False Promise or False Premise: The Experience of Food and Input Market Reform in Eastern and Southern Africa." *World Development*, 30, 11:1967-1985.
- Jenkins, J. C. and Scanlan, S.** (2001). "Food Security in Less Developed Countries, 1970-1990." *American Sociological Review*, 66: 718-744.
- Jobodwana, Z. N.** (2011) "WTO African Cotton Wars: The Intractable Agriculture Policy Reforms." *US-China Law Review*, 8, 2:87-120.
- Johnkingsley, J.** (2011). "Nigeria's Senate passes biosafety bill." *SciDev Net* [Internet] Available at: <http://www.scidev.net/en/news/nigeria-s-senate-passes-biosafety-bill.html>
- Johnson, O. E. G.** (2007). *African Economic Development: Cooperation, Ownership and Leadership*. Lewiston, NY: Edwin Mellen Press.
- Johnson-Sirleaf, E.** (2008). 'Remarks by Her Excellency Ellen Johnson Sirleaf, President of Liberia.' Whitehouse Summit on International Development, October 21, 2008.
- Johnston, B. F. and Mellor, J. W.** (1961). "The Role of Agriculture in Economic Development." *American Economic Review*, 51, 4: 566-93.
- Juma, C.** (2008). "Agricultural Innovation and Economic Growth in Africa: Renewing International Cooperation" *International Journal of Technology and Globalization*, 4, 3: 256-275.
- . (2011). *The New Harvest: Agricultural Innovation in Africa*, New York: Oxford University Press.
- Juma, C. and Serageldin, I.** (2007). *Freedom to Innovate: Biotechnology in Africa's Development - A Report of the High-Level African Panel on Modern Biotechnology*. Addis Ababa and Pretoria: African Union (AU) and New Partnership for Africa's Development (NEPAD).
- Kagame, P.** (2011). "Africa Has a Great Promise." Speech by H.E. Paul Kagame, President of The Republic of Rwanda, at High Level Forum on Aid Effectiveness, Busan, Korea, 30th November. [Internet] Available at: http://www.nepad.org/system/files/President_Paul_Kagame_Keynote_address-HLF4.pdf
- Kahare, P.** (2011). "Drought Persuades Kenya to Import GM Maize" *SciDev Net* [Internet] Available at: <http://www.scidev.net/en/science-and-innovation-policy/news>
- Kameri-Mbote, P.** (2007). "Will Kenya's Biosafety Bill of 2005 Ever Become Law?" *SciDev Net*, June 12. [Internet]. Available at: <http://www.scidev.net>
- Kaminski, J.** (2011). "Cotton Dependence in Burkina Faso: Constraints and Opportunities for Balanced Growth." in Chuhan-Pole, P. and Angwafo, M. (eds.), 107-124.
- Kaminski, J., Headey, D. and Bernard, T.** (2011). "The Burkinabè Cotton Story 1997-2007: Sustainable Success or Sub-Saharan Mirage?" *World Development*, 39, 8: 1460-1475.
- Kararach, G.** (2011). *Macroeconomic policy and the political limits of reform programmes in developing countries*. Nairobi: African Research and Resource Forum.
- Kay, G. B.** (1972). *The Political Economy of Colonialism in Ghana Documents and Statistics 1900-1960*. Cambridge: Cambridge University Press.
- . (1975). *Development and Underdevelopment: A Marxist Analysis*. New York: St. Martin's Press.
- Kay, M.** (2001). *Smallholder Irrigation Technology: Prospects for Sub-Saharan Africa*. Rome: Food and Agriculture Organization of the United Nations.
- Keen, D.** (1994). *The Benefits of Famine A Political Economy of Famine and Relief in Southwestern Sudan, 1983-1989*. Princeton: Princeton University Press.
- Kelemu, S., Mahuku, G., Fregene, M., Pachico, D., Johnson, N., Calvert, L., Rao, I., Buruchara, R., Amede, T., Kimani, P., Kirkby, R., Kaaria, S. and Ampofo, K.** (2003). "Harmonizing the Agricultural Biotechnology Debate for the Benefit of African Farmers." *African Journal of Biotechnology*, 2, 11: 394-416
- Kidane, W., Maetz, M. and Dardel, P.** (2006). *Food Security and Agricultural Development in Sub-Saharan Africa*. Rome: FAO.
- Kiely, R.** (1995). *Sociology and Development: The Impasse and Beyond*. London: UCL Press.
- Kijima, Y., Otsuka, K. and Ssreunkuuma, D.** (2011). "An inquiry into constraints on a Green revolution in sub-Saharan Africa: The case of NERICA rice in Uganda," *World Development*, 39, 1: 77-86.
- Kolavalli, S. and Vigneri, M.** (2011). "Cocoa in Ghana: Shaping the success of an economy," in Punam Chuhan-Pole and Manka Angwafo (eds.) *Yes Africa Can: Success stories from a dynamic continent*, Washington, DC: World Bank, pp. 201-217, [Internet] Available at: <http://siteresources.worldbank.org/AFRICAEXT/Resources/258643-1271798012256/Ghana-cocoa.pdf>. (Accessed 10th July 2011).
- Komen, J., Mignouma, J. and Webber, H.** (2000). *Biotechnology in African Agricultural Research: Opportunities for Donor Organizations*. The Hague: ISNAR (Briefing Paper No. 43. February).
- Konings, P.** (1998). "Unilever, Contract Farmers and Co-operatives in Cameroon: Crisis and Response." *Journal of Peasant Studies*, 26, 1; 112-138.
- Kumwenda, O.** (2011). "Analysis: More African Countries Seen Growing GM Crops" [Internet] Available at: <http://www.reuters.com>
- La-Anyane, S.** (1963). *Ghana Agriculture: Its Economic Development from the Early Times to the Middle of the Twentieth Century*. London: Oxford University Press.
- Lagi, M., Bertrand, K. Z. and Bar-Yam, Y.** (2011). "The Food Crises and Political Instability in North Africa and the Middle East", New England Complex Systems Institute. [Internet] Available at: <http://arxiv.org/pdf/1108.2455.pdf> Accessed January 18, 2012.
- Larrain, J.** (1989). *Theories of Development*. Cambridge: Polity Press.
- Leach, M., Scoones, I. and Wynne, B.** (eds.). (2005). *Science and Citizens: Globalization and the Challenge of Engagement*. Zed Books:

London

- Lee, D. and Smith, N.** (2008). "The political economy of small African states in the WTO." *The Round Table*, 97, 395: 259-271.
- Lee-Smith, D.** (2010). "Cities feeding people: An update on urban agriculture in equatorial Africa." *Environment and Urbanization*, 22, 2: 483-499
- Lele, U., Pretty, J., Terry, E. and Trigo, E.** with assistance from Klousia, M. and Goswami, S. (2010). *Transforming Agricultural Research for Development. The Global Forum for Agricultural Research*. Report for the Global Conference on Agricultural Research (GCARD) 2010. Montpellier, France: March 28-31.
- Leys, C.** (1975). *Underdevelopment in Kenya: The Political Economy of Neo-colonialism 1964-1971*. Berkeley: University of California Press.
- . (1996). "Rational choice or Hobson's choice? The 'new political economy' as development theory." *Studies in Political Economy*, 49: 37-69.
- Lewis, A. W.** (1954). "Economic Development with Unlimited Supplies of Labor." *Manchester School of Economic and Social*, 22, May: 139-191.
- Liebenburg, F. and Kirsten, J.** (2006). "South Africa: Coping with Structural Changes" in Pardey, P.G. J.M. Alston and R.R. Piggott (eds.) *Agricultural R&D in the Developing World: Too Little, Too Late?* Washington, D.C.: International Food Policy Research Institute, 195-226.
- Little, P. D. and Watts, M. J.** (eds.) (1994). *Living Under Contract – Contract Farming and Agrarian Transformation in Sub-Saharan Africa*. Madison: The University of Wisconsin Press.
- Livingston, G. Schonberger, S. and Delaney, S.** (2011). "Sub-Saharan Africa: The state of smallholders in agriculture." Paper presented at the IFAD Conference on New Directions for Smallholder Agriculture. Rome: International Fund for Agricultural Development, 24-25 January.
- Lobell, D. B., Banziger, M., Magorokosho, C. and Vivek, B.** (2011). "Nonlinear heat effects on African maize as evidenced by historical yield trials." *Nature Climate Change*, 1: 42-45.
- Lofchie, M. F.** (1986). "Africa's Agricultural Crisis: An Overview." In Commins, S., Lofchie, M.F. and Payne, R. (eds.) *Africa's Agrarian Crisis: The Roots of Famine*. Boulder: Lynne Rienner, 3-18.
- Lopes, C.** (2002). "Should we mind the gap?" In Fukuda-Parr, S. Lopes, C. and Malik, H. (eds.) *Capacity for development new solutions to old problems*. Earthscan Publications Ltd, London, UK, 121-146
- Lourenco-Lindell, I.** (1996). "How do the urban poor stay alive? Food provision in a squatter settlement of Bissau, Guinea-Bissau." *African Urban Quarterly*, 11, 2/3: 163-168.
- Lubeck, P. (ed.)** (1987). *The African Bourgeoisie Capitalist Development in Nigeria, Kenya and Ivory Coast*. Boulder: Lynne Rienner.
- Luseno, W. K., McPeak, J. G., Barrett, C. B., Little, P. D. and Gebru, G.** (2003). "Assessing the Value of Climate Forecast Information for Pastoralists: Evidence from Southern Ethiopia and Northern Kenya." *World Development*, 31, 9: 1477-1494.
- Lwoga, E. T., Ngulube, P. and Stilwell, C.** (2011). "Challenges of Managing Indigenous Knowledge with other Knowledge Systems for Agricultural Growth in Sub-Saharan Africa." *International Journal of Libraries and Information Services*, 61, 3: 226-238
- Maathai, W.** (1998). "The Link Between Patenting Life Forms, Genetic Engineering and Food Insecurity. Let Nature's Harvest Continue: African Counter-Statement to Monsanto." *Review of African Political Economy*, 25, 77: 526-530.
- MacGregor, J. and Groom, B.** (2007). *Air-freight fresh food: Guilty pleasure or sustainable development champion?*. London: Agrifood Standards.
- Makinde, D.** (2009). "NEPAD Biosciences Initiative: The African Biosafety Network of Expertise." *Delivering Agricultural Biotechnology to African Farmers: Linking Economic Research to Decision Making*, Imperial Resort Beach Hotel, May 19-21, Entebbe, Uganda.
- Makinde, D., Mumba, L. and Ambali, A.** (2009). "Status of Biotechnology in Africa: Challenges and Opportunities." *Asian Biotechnology and Development Review*, 11, 3: 1-10.
- Malakata, M.** (2007a). "Zambia adamant: no GM". *SciDev Net*. [Internet] Available at: <http://www.gmfreeireland.org/news/2007/aug.php> (3rd August).
- . (2007b). "Zambia takes steps towards biosafety law." *SciDev Net*. [Internet] Available at: <http://www.scidev.net/en/news/zambia-takes-steps-towards-biosafety-law.html>
- Malope, P. and Batisani, N.** (2008). "Land reforms that exclude the poor: The case of Botswana." *Development Southern Africa*, 25, 4: 383-397.
- Mann, N.** (2001). 'Blair's Global Vision', *BBC News Online* [Internet] Available at: http://news.bbc.co.uk/go/em/fr/1/hi/in_depth/uk_politics/2001/conferences_2001/labour/1575135.stm. (Accessed August 20, 2005).
- Masike, S. and Urich, P.** (2009). "The projected cost of climate change to livestock water supply and implications in Kgatleng District, Botswana." *World Journal of Agricultural Sciences*, 5: 597-603.
- Mason, N. M., Jayne T. S., Chapoto, A. and Donovan, C.** (2011). "Putting the 2007/2008 global food crisis in longer-term perspective: Trends in staple food affordability in urban Zambia and Kenya", *Food Policy*, 36(2011):350-367
- Mausch, K., Mithofer, D., Asfaw, S. and Waibel, H.** (2009). "Export Vegetable Production in Kenya under the EurepGAP Standard: Is Large 'More Beautiful' than Small." *Journal of Food Distribution*, 40, 3: 115-129.
- Maxwell, D.** (1995). "Alternative food security strategy: A household analysis of urban agriculture in Kampala." *World Development*, 23, 10: 1669-1681.
- Maxwell, S.** (2005). "Exhilarating, Exhausting, Intriguing: The Report of the Africa Commission." *Development Policy Review*, 23, 4: 483-492.

- Maykuth, A.** (2005). "Free Trade has devastated Ghana's economy, farmers say." *Philadelphia Inquirer*. June 29.
- Mazur, R. E.** (2011b). "Women in a Sustainable Rural Livelihoods Programme in Uganda." in *The State of Food and Agriculture 2010-11: Women in Agriculture - Closing the Gender Gap for Development*. Rome, Italy: Food and Agricultural Organization of the United Nations.
- Mazur, R. E., Musoke, H. K., Nakimbugwe, D. and Ugen, M.** (2011). "Enhancing Nutritional Value and Marketability of Beans through Research and Strengthening Key Value Chain Stakeholders in Uganda." Conference Note 1 for International Conference on 'Leveraging Agriculture for Improving Nutrition and Health' in New Delhi. Washington, DC: International Food Policy Research Institute. [Internet] Available at: <http://2020conference.ifpri.info/publications/papers/>
- Mazur, R. E. and Stakhanov, O. V.** (2008). "Prospects for Enhancing Livelihoods, Communities, and Biodiversity in Africa Through Community-Based Forest Management: A Critical Analysis." *Local Environment: The International Journal of Justice and Sustainability*, 13, 5:405-421.
- Meinzen-Dick, R., Quisumbing, A., Behrman, J., Biermayr-Jenzano, P., Wilde, V., Noordeloos, M., Ragasa, C. and Beintema, N.** (2010). "Engendering Agricultural Research." IFPRI Discussion Paper 973. Washington, DC:
- Meldolesi, A.** (2002). "CGIAR Under Pressure to Support Seed Treaty." *Nature Biotechnology*, 20, February: 103-105.
- Merrey, D. J., Sullivan, A., Mangisoni, J., Mugabe, S. and Simfukwe, M.** (2008). "Evaluation of USAID/OFDA Small Scale Irrigation Programs in Zimbabwe and Zambia 2003-2006: Lessons for Future Programs." USAID, Southern Africa Regional Office: Office of US Foreign Disaster Assistance.
- Meze-Hausken, A., Pat, A., and Fritz, S.** (2009). "Reducing Climate Risk for Micro-insurance Providers in Africa: A Case Study of Ethiopia." *Global Environmental Change*, 19: 66-73.
- MFW4A (Making Finance Work for Africa).** (2011). "Policy Support to Agricultural Finance in Africa." Paper Prepared for the Making Finance Work for Africa Conference, June 29-30, on Zipping Finance and Farming in Africa – Harnessing the Continent's Potential, Munyonyo Conference Centre, Kampala, Uganda
- Migdal, J. S., Kohli, A. and Shue, V. (eds.)** (1994). *State Power and Social Forces Domination and Transformation in the Third World*. Cambridge: Cambridge University Press.
- Mignouna, H. Abang, M. M., Omany, G., Nang'ayo, F., Bokanga, M., Boadi, R., Muchiri, N., and Terry, E.** (2008). "Delivery of Agricultural Technology to Resource-Poor Farmers in Africa." *Annals of the New York Academy of Sciences*, 1136; 369-376.
- Miller, K. A.** (2007). "Climate variability and tropical tuna: Management challenges for highly migratory fish stocks." *Marine Policy*, 31: 56-70.
- Milz, M.** (2010). "The Authoritarian Face of the "Green Revolution": Rwanda Capitulates to Agribusiness." *Barcelona: GRAIN*. [Internet] Available at: http://www.grain.org/bulletin_board/entries/4322-the-authoritarian-face-of-the-green-revolution-rwanda-capitulates-to-agribusiness.pdf
- Minard, S.** (2006). *Aquaculture in West Africa: A sustainable source of food and income*. Paris: OECD.
- Miner, W. M.** (2001). "Implications for State Trading in the Next WTO Negotiations." In Michelman, H.J., Rude, J., Stabler, J. and Storey, G. (eds). *Globalization and Agricultural Trade Policy*. Boulder: Lynne Rienner, 99-109.
- Minten, B.** (1999). "Infrastructure, market access, and agricultural prices: Evidence from Madagascar." MSSD Discussion paper no. 26, International Food Policy Research.
- Mkandawire, R.** (2009). "The Global Partnership for Agriculture And Food Security (GPAFS): A Perspective From Nepad/Caadp And The Potential Way Forward." High Level Meeting on Food Security for All, January 26-27, Madrid. Spain
- Mkandawire, T.** (1989). *Structural Adjustment and Agrarian Crisis in Africa: A Research Agenda*. Dakar: CODESRIA (Working Paper No. 2/89).
- . (2002). "Incentives, governance and capacity development: what role for technical assistance in Africa?" In Fukuda-Parr, S. Lopes, C. and Malik, H. (eds.) *Capacity for development new solutions to old problems*. Earthscan Publications Ltd, London, UK
- Moawad, H. and Madkour, M.** (2000). "Egypt." In G. Tzotzos and K. Skryabin (eds.) *Biotechnology in the Developing World and Countries in Economic Transition*. Wallingford: CABI Publishing, 77-92.
- Montefrio, M. J. and Sonnenfeld, D.** (2011). "Forests, fuel or food? Competing coalitions and biofuels policy making in Philippines." *Environment and Development*, 20, 1: 27-49.
- Moola, S. and Muunik, V.** (2007). *GMOs in Africa: Food and Agriculture*. Johannesburg: African Centre for Biosafety.
- Moore, D.** (ed.) (2007). *The World Bank: Development, Poverty, Hegemony*. Scottsville, South Africa: University of KwaZulu-Natal Press.
- Moore, D. B. and Schmitz, G. J. (eds.)** (1995). *Debating Development Discourse: Institutional and Popular Perspectives*. London: Macmillan Press.
- Morris, M., Kelly, V. A., Kopicki, R. J and Byerlee, D.** (2007). *Fertilizer Use in African Agriculture: Lessons Learned and Good Practice Guidelines*. Washington, DC: World Bank.
- Morrison, J. and Sarris, A. (ed.)** (2007). *WTO Rules for Agriculture Compatible with Development*. Rome: FAO.
- Morse, S.** (2004). "Why BT Cotton Pays for Small-Scale Producers in South Africa." *Nature Biotechnology*, 22, 4: 379-380.

- Moseley, G. and Gray, L. C.** (eds.) (2008). *Hanging by a Thread: Cotton, Globalization, and Poverty in Africa*. Athens, Ohio: Ohio University Press.
- Mougeout, L. J. A.** (2000). Urban Agriculture, Definition, Presence, Potentials and Risks and Policy Challenges. IDRC, Cities Feeding People Series. Report 31
- Moustier, P.** (1999). "Definitions and Boundaries of Peri-urban Agriculture in sub-Saharan Africa." *Peri-Urban Agriculture in Sub-Saharan Africa*, Centre de Cooperation Internationale en Recherche Agronomique pour le Developpement (CIRAD), 29-42.
- Moustier, P. and Danso, G.** (2006). "Local Economic development and marketing of urban produced food." In van Veenhuizen, R. (ed.), *Cities Farming for the Future, Urban Agriculture for Green and Productive Cities*. RUAF Foundation: IDRC and IIRR.
- Moyo, D.** (2010). *Dead Aid: Why Aid Is Not Working and How There Is a Better Way for Africa*. New York: Farrar, Straus and Giroux.
- Moyo, S.** (2010). "Agrarian question and the development state in Southern Africa." in Edigheji Omano (ed.), *Constructing a democratic developmental state in South Africa: potentials and challenges*. Pretoria, South Africa: Human Sciences Research Council (HSRC) Press.
- Mugwagwa, J., Wamae, W. and Outram, S.** (2010). "Agricultural Innovation and Food Security in Africa: Tracing Connections and Missing Links." *Journal of International Development*, 22, 3: 283-288.
- Muhammad, A., Amponsah, W. A. and Dennis, J. H.** (2010). "The Impact of Preferential Trade Agreements on EU Imports from Developing Countries: The Case of Fresh Cut Flowers." *Applied Economic Perspectives and Policy*, 32, 2: 254-274
- Munro, W. A.** (2008). "Risk, Rights, and Regulation: The Politics of Agricultural Biotechnology in South Africa." in Ruivenkamp, G., Hisano, S. and Jongerden, J. (eds.), 245-268.
- Mwalukasa, M.** (2000). "Institutional aspects of urban agriculture in the city of Dar Es Salaam." In Bakker, N., Dubelling, M., Gundel, S., Sabel-Koschella, V. and Zeeuw, A. (eds.), *Growing Cities, Growing Food: Urban Agriculture on the Policy Agenda*. Feldafing, Germany: Food and Agriculture Development Centre (ZEL).
- Nadav, C.** (1996). "Nutritional thresholds and growth." Working Paper. Department of Economics, Ben-Gurion University, Israel.
- Naqvi, S. M. K. and Sejian, V.** (2011). "Global climate change: Role of livestock." *Asian Journal of Agricultural Sciences*, 3: 19-25.
- Nature.** (2010). "Transgenic Harvest". *Nature*, 467, 7316. (7th October): 633-634
- Nazneen, K., Vijfhuizen, C., Braga, C. and Artur, L.** (2004). "Cashing in on Cashew Nuts: Women Producers and Factory Workers in Mozambique." In M. Carr (ed.) *Chains of Fortune: Linking Women Producers and Workers with Global Markets*. London: Commonwealth Secretariat, 75-101.
- Ndulu, B., Niekerk, L. K. and Reinikka, R.** (2005). "Infrastructure, Regional Integration and Growth in Sub-Saharan Africa." In *Africa in the World Economy - The National, Regional and International Challenges*. The Hague: Fondad
- NEPAD (New Partnership for African Development).** (2001). *NEPAD Policy Document* Midrand: NEPAD.
- — —. (2003). *Comprehensive Africa Agriculture Development Programme*. Midrand: NEPAD
- — —. (2006). *Africa's Science and Technology Consolidated Plan of Action*. Pretoria: NEPAD Office of Science and Technology.
- — —. (2009). *CAADP: How are countries measuring up to the Maputo Declaration?* Midrand: NEPAD
- — —. (2010). *The Comprehensive Africa Agriculture Development (CAADP) in Practice: Highlighting the Successes*. Midrand: NEPAD.
- Neuenschwander, P.** (1993). "Human Interactions in Classical Biological Control of Cassava and Mango Mealybugs on Subsistence Farms in Tropical Africa." In M.A. Altieri (ed.) *Crop Protection Strategies for Subsistence Farmers*. Boulder: Westview Press, 143-177.
- Ngaira, J. K. W.** (2007). "Impact of climate change on agriculture in Africa by 2030." *Scientific Research and Essays*, 2: 238-243
- Nhamo, G.** (2009). "Climate Change: Double Edged Sword for African Trade and Development." *International Journal of African Renaissance*, 4: 117-139.
- Nhamo, G. and Inyang, E. A.** (2011). *Framework and tools for environmental management in Africa*. Dakar: Codesria.
- Nhamo, G. and Van Zyl, C.** (2011). "Financing REDD+ in Africa." In *Green economy and climate mitigation: Topics of relevance topics Africa*. Pretoria: Africa Institute of South Africa.
- Nhemachena, C. and Hassan, R.** (2011). "Micro-level analysis of farmers' adaptation to climate change in Southern Africa." In C. Ringler, E. Bryan, R. Hassan, T. Alemu, & M. Hillesland (eds.), *How can African agriculture adapt to climate change? Insights from Ethiopia and South Africa*. Washington D.C.: International Food Policy Research Institute, 16-17
- Njoki, K.A.** (2010). "Experts to the Rescue? An Analysis of the Role of Experts in Biotechnology Regulation in Kenya." *Journal of International Development*, 22, 3: 325-340.
- Njoroge, J.** (2002). "Famine-stricken countries reject GM maize" *SciDev.Net* (July 29).
- Notenbaert, A., Mude, A., Van de Steeg, J. and Kinyangi, J.** (2010). "Options for adapting to climate change in the livestock-dominated farming systems in the greater horn of Africa." *Journal of Geography and Regional Planning*, 3: 234-239
- Nuffield Council on Bioethics.** (1999). *Genetically Modified Crops: The Ethical and Social Issues*. London: Nuffield Organization

- Nugent, R.** (2000). "The impact of urban agriculture on the household and local economies." In Bakker, N., Dubelling, M., Gundel, S., Sabel-Koschella, V. and Zeeuw, A. (eds.) *Growing Cities, Growing Food: Urban Agriculture on the Policy Agenda*. Feldafing, Germany: Food and Agriculture Development Centre (ZEL).
- Nyang'oro, J. E.** (1989). *The State and Capitalist Development in Africa: Declining Political Economies*. New York: Praeger.
- Nyanteng, V. K. and Seini, W. A.** (2000). "Agricultural Policy & the Impact on Growth & Productivity 1970-95." In Aryeetey, E., Harrigan, J. and Nisanke, M. (eds.), *Economic Reforms in Ghana The Miracle and the Mirage*. Trenton, New Jersey: Africa World Press, 267-283.
- Nyong, A.** (2005). "Impacts of Climate Change in the Tropics: the African Experience." Jos, Nigeria: University of Jos. [Internet] Available at http://www.stabilisation2005.com/Tony_Nyong.pdf.
- Ochem, A. E.** (2006). "New Developments on Biotechnologies: Challenges for Africa." ARCT Ministerial Conference on Frontier Environmentally Sound Technologies (FEST) for Africa's Sustainable Development – The Role of the Diaspora, M-Plaza Hotel, 27th – 29th April 2005. Accra, Ghana.
- Ochieng, C. M. O.** (2007). "Revitalizing African Agriculture through Innovative Business Models and Organizational Arrangements: Promising Developments in the Traditional Crops Sector." *Journal of Modern African Studies*, 45:143-169.
- OECD.** (Organization for Economic Cooperation and Development). (2006). *Promoting Pro-Poor Growth*. Paris: OECD Publishing.
- Ogallo, L.** (2010). "The Mainstreaming of Climate Change and Variability Information into Planning and Policy Development for Africa." *Procedia Environmental Sciences*, 1: 405–410.
- Okojie, C. and Shimeles, A.** (2006). *Inequality in sub-Saharan Africa: A Synthesis of Recent Research on the Levels, Trends, Effects and Determinants of Inequality in its Different Dimensions*. London: Overseas Development Institute.
- Olomola, A.** (1996). "Interlinked Transactions in Nigerian Rural Credit System" *NISER Monograph Series*, No. 10.
- . (1999). "Agricultural Credit Market Imperfections and Implications for Lending to Smallholders in Nigeria." In Olomola, A.S. and Akande, S. O. (eds.) *Agricultural Finance Issues in Nigeria*, NISER, Ibadan.
- . (2000). "Effects of Membership Homogeneity on the Design and Performance of Informal Finance Groups in Rural Nigeria" A Research Report Submitted to the African Economic Research Consortium (AERC) Nairobi, Kenya.
- . (2010). "Formal-Informal Institutional Linkages in Nigerian Agribusiness Sector and Implications for Pro-Poor Growth", Final Research Report Submitted to the IPPG Consortium, University of Manchester, UK. (March).
- Omilola, B., Yade, M., Karugia, L. and Chilonda, P.** (2010). *Monitoring and Assessing Targets of Comprehensive Africa Agriculture Development Programme and the First Millennium Development Goal (MDG) in Africa*. ReSAKSS Working Paper No. 31, Washington, DC.: International Food Policy Research Institute.
- Omiti, J. M., Chacha, R. M. and Andama, M. S.** (2002). "Biotechnology can improve food security in Africa," *African Journal of Food and Nutritional Sciences*, 2, 2: pp. 14-21.
- Osaghae, E. E.** (1985). "The African Food Crisis and the Crisis of Development in Africa: A Theoretical Exploration." *Africa Quarterly*, 24, 3/4: 34-51.
- Oxfam.** (2002). *Rigged Rules and Double Standards: Trade, Globalization and the Fight Against Poverty*. London: Oxfam
- . (2007). "What Agenda Now for Agriculture? A Response to the World Development Report 2008." Oxfam Briefing Note, by Arabella Fraser and Madelon Meijer (http://www.oxfam.org.uk/resources/policy/trade/downloads/bn_wdr2008.pdf)
- . (2008). Another Inconvenient Truth: How biofuel policies are deepening poverty and accelerating climate change, Oxfam Briefing Paper 114 [Internet] Available at <<http://www.oxfam.org/sites/www.oxfam.org/files/bp114-inconvenient-truth-biofuels-0806.pdf>> (Accessed at 11th July 2011).
- Oya, C.** (2006). "From State Dirigisme to Liberalization in Senegal: Four Decades of Agricultural Policy Shifts and Continuities." *European Journal of Development Research*, 18, 2: 203-234.
- Palma, G.** (1981). "Dependency and Development: A Critical Review." In Seers, D. ed. *Development Theory: A Critical Reassessment*. London: Frances Printer, 20-78.
- Panitchpakdi, S.** (2002). "Trade and Sustainable Development: The Doha Development Agenda", Speech by the Director General of the World Trade Organization. [Internet] Available at :<<http://www.wto.org>>. (Accessed July 10, 2005).
- Pantuliano, S. and Wekesa, M.** (2008). *Improving drought response in pastoral areas of Ethiopia Somali and Afar Regions and Borena: Zone of Oromiya Region*. London: CORE Group.
- Pasteur, K.** (2011). *From Vulnerability to Resilience: A Framework for Analysis and Action to Build Community Resilience*. Warwickshire, UK: Practical Action.
- Pauw, K., Thurlow, J. and Van Seventer, D.** (2010). *Droughts and floods in Malawi: Assessing the economywide effects*. Washington D.C.: International Food Policy Research Institute.
- Petherick, A.** (2011). "Food and the future." *Nature Climate Change*, 1: 20-21.
- Phillips, A.** (1989). *The Enigma of Colonialism: British Policy in West Africa*. London: James Currey.

- PHL Network.** (2010). *Estimated Post-Harvest Losses (2003-2009)*. Post-Harvest Losses Network. [Internet] Available at: www.aphlis.net/index.php?form=losses_estimates_
- Pisces.** (2009). *Sustainable biofuel crops and access in developing countries*. Nairobi: Pisces.
- Popiel, P. A.** (1994). "Financial Systems in Sub-Saharan Africa." *World Bank Discussion Paper*, No. 260, Africa Technical Department Series. Washington, DC: World Bank
- Poulton, C., Kydd, J., Wiggins, S., and Dorward, A.** (2006). "State Intervention for Food Price Stabilization in Africa: Can it Work?" *Food Policy*, 31, 4: 342-356
- Prabhakar, A. C.** (2010). "Global Economic and Financial Crisis: An Investigation of Food Crisis, Poverty and Inequality." *Asian Profile*, 38, 1: 1-28.
- Pretty, J and Hine, R.** (2001). *Reducing Food Poverty with Sustainable Agriculture: A Summary of New Evidence*. Final Report from the SAFE-World Research Project. Colchester, UK: Essex University.
- Puplampu, K .P.** (2003). "Globalization of Agriculture: Lessons from Ghana." In Smith, M. S. (ed.) *Globalizing Africa*. Trenton, New Jersey: Africa World Press, 385-396.
- . (2004a). "Research and Development in Africa: An Analysis of Policies and programs in the Agricultural Sector." In Adjibolosoo, S. (ed.) *The International Development Program of Activities: What Are We Doing Wrong?* Bloomington, IN: 1stBooks, 111-138.
- . (2004b). "National Agricultural Research Systems, the Biotechnology Revolution and Agricultural Development." In Prempeh, E. O. K., Mensah, J. and Adjibolosoo, S. (eds) *Globalization and the Human Factor: Critical Insights*. Aldershot: Ashgate, 99-120.
- . (2006). "The World Trade Organization, Global Trade and Agriculture." In Smith, M. S. (ed.) *Beyond the 'African Tragedy': Discourses on Development and the Global Economy*. Aldershot: Ashgate Publishing, 233-245.
- . (2010). "Bureaucratic Politics and the Search for Biotechnology Policy in Ghana." In Puplampu, K. P. and Tettey, W. J. (eds.) *The Public Sphere and the Politics of Survival: Voice, Sustainability and Public Policy in Ghana*, Accra: Woeli Publishing Services, 2010, 182-211.
- Puplampu, K. P. and Essegbey, G.** (2004). "Agricultural biotechnology and research in Ghana: Institutional capacities and policy options." *Perspectives on Global Development and Technology*, 3, 3: 271-290.
- Puplampu, K. P. and Tettey, W. J.** (2000). "State-NGO Relations in an Era of Globalization: The Implications for Agricultural Development in Africa." *Review of African Political Economy*, 84: 251-272.
- Raikes, P. and Gibbon, P.** (2000). "Globalisation' and African Export Crop Agriculture." *Journal of Peasant Studies*, 27, 2: 50-93.
- Rampton, S. and Stanber, J.** (2000). *Trust Us, We're Experts: How Industry Manipulates Science and Gambles with Your Future*. New York: Jeremy P. Tarcker/Putnam.
- Rauch, T.** (2011). "Fundamentals of African Agriculture." *Quarterly Journal of International Agriculture*, 50, 1: 9-27
- Rayner, S.** (2003). "Democracy in the Age of Assessment: Reflections on the Roles of Expertise and Democracy in Public-Sector Decision Making." *Science and Public Policy*, 30, 3: 163-170.
- Reardon, T., Timmer, P., Christopher B. and Berdegue, J.** (2003). "The Rise of Supermarkets in Africa, Asia and Latin America." *American Journal of Agricultural Economics*, 85, 5: 1140-1146.
- Reij, C., Scoones, I. and Toulmin, C. (eds.)** (1996). *Sustaining the Soil: Indigenous Soil and Water Conservation in Africa*. London: Earthscan.
- Resnick, D. and Birner, R.** (2010). "Agricultural Strategy Development in West Africa: The False Promise of Participation?" *Development Policy Review*, 28, 1: 97-115
- Reuveny, R.** (2007). Climate change-induced migration and violent conflict." *Political Geography*, 26: 656-673
- Richards, P.** (1985). *Indigenous Agricultural Revolution: Ecology and Food Production in West Africa*. Boulder: Westview Press
- Riisgaard, L.** (2009). "Global Value Chains, Labour Organization and Private Social Standards: Lessons from East African Cut Flower Industries". *World Development*, 37, 2, 326-340.
- Ringler, C.** (2011). "The impact of climate vulnerability and climate change on water and food outcomes: A framework for analysis." In Ringler, C., Bryan, E., Hassan, R., Alemu, T. and Hillesland, M. (eds.), *How can African agriculture adapt to climate change? Insights from Ethiopia and South Africa*. Washington D.C.: International Food Policy Research Institute, 4-5
- Ringler, C., Zhu, T., Cai, X., Koo, J. and Wang, D.** (2011). Climate change impacts on food security in sub-Saharan Africa: insights from comprehensive climate change modeling. In Ringler, C., Bryan, E., Hassan, R., Alemu, T. and Hillesland, M. (eds.), *How can African agriculture adapt to climate change? Insights from Ethiopia and South Africa*. Washington D.C.: International Food Policy research Institute, 44-45
- Rizzo, M.** (2009). "The Struggle for Alternatives: NGOs' Responses to the World Development Report 2008." *Journal of Agrarian Change*, 9, 2: 277-290
- Roe, D., Nelson, F. and Sandbrook, C. (eds.)** (2009). *Community Management of Natural Resources in Africa: Impacts, Experiences and Future Directions*. UK: International Institute for Environment and Development.
- Rootman, B.** (2011). "It is time for action, not agendas." South African Agricultural Minister [Internet] Available at: <http://www.fanpan.org/documents/d01262/>
- Rosegrant M., Cline, S. A., Li, W., Timothy, S. B. and Valmonte-Santo, R. A.** (2005). *Looking Ahead – Long-Term Prospects for Africa's Agricultural Development and Food Security*. Washington, D.C.: International Food Policy Research Institute, 2020 Discussion Paper 41.

- Rosegrant, M., Ringler, M. W., Todd, B. C., Diao, X., Resnick, X., Thurlow, J., Torero, J., Maximo, T., and David O (2006). *Agriculture and Achieving the Millennium Development Goals*. Washington D.C.: The World Bank
- Rothchild, D. and Chazan, N. (eds.). (1988). *The Precarious Balance: State and Society in Africa*. Boulder and London: Westview Press.
- Roudier, P., Sultan, B., Quirion, P. and Berg, A. (2011). "The impact of future climate change on West African crop yields: What does the recent literature say?" *Global Environmental Change*, 21: 1073–1083.
- Royal Society (2009). *Reaping the Benefits: Science and the Sustainable Intensification of Global Agriculture*. London: The Royal Society.
- Ruttan, V. W. (1982). *Agricultural Research Policy*. Minnesota: Minnesota University Press
- Safty, A. (2003). *Value Leadership and Capacity Building*. Istanbul, Turkey/USA: The School of Government and Leadership, University of Bahcesehir: Universal Publishers/uPUBLISHISH.com.
- Salmi, J. (2005). "Tertiary Education in the Twenty-First Century Challenges and Opportunities." World Bank: Human Development Department LCSDH Paper Series No. 62, June.
- Sahn, D. E., Dorosh, P. A. and Younger, S. D. (1997). *Structural Adjustment Reconsidered — Economic Policy and Poverty in Africa*. Cambridge: Cambridge University Press
- Sangho, Y., Labaste, P. and Ravry, C. (2011). "Growing Mali's Mango Exports: Linking Farmers to Market Through Innovation in the Value Chain." In Chuhan-Pole, P. and Angwafo, M. (eds.), 167-183.
- Satgar, V. (2011). "Challenging the Globalized Agro-Food Complex: Farming Cooperatives and the Emerging Solidarity Economy Alternative in South Africa." *WorkingUSA*, 14, 2: 177-190.
- Saul, J. S. (1974). "The State in Postcolonial Societies: Tanzania." In Miliband, R. and Saville, J. (eds.), *Socialist Register*. London: Merlin Press, 349-372.
- Savitch, H. V. (1998). "Global Challenge and Institutional Capacity: Or, How We Can Refit Local Administration for the Next Century." *Administration and Society*, 30, 3: 248-273
- Scanlan, S. J. (2001). "Food availability and access in less-industrialized societies: A test and interpretation of neo-Malthusian and technological theories." *Sociological Forum*, 16, 2: 231-262
- Schaffer, B. B. (1984). "Towards Responsibility: Public Policy in Concept and Practice." In Clay, E. J. and Schaffer, B. B. (eds.), 142-190.
- Schanbacher, W. (2010). *The politics of food: The global conflict between food security and food sovereignty*. Westport, CT: Praeger.
- Schaughency, E. and Ervin, R. (2006). "Building Capacity to Implement and Sustain Effective Practices to Better Serve Children." *School Psychology Review*, 35, 2: 155-166
- Schiere, R., Ndikumana, L. and Walkenhorst, P. (eds.) (2011): *China and Africa: An Emerging Partnership for Development?* Tunis: African Development Bank
- Scholte, J. A. (2005). *Globalization: A Critical Introduction*. Hampshire: Palgrave.
- Schuurman, F. (ed.). (2001). *Globalization and Development Studies – Challenges for the 21st Century*. London: SAGE Publications.
- Scoones, I. (2006). *Science, Agriculture and the Politics of Policy: The Case of Biotechnology in India*. New Delhi: Orient Longman.
- . (2008). "A new start for Zimbabwe? Challenging the Myths about Zimbabwean Agriculture and Land Reform." Brighton, Institute of Development Studies. (15 September). <http://www.ids.ac.uk/go/idspublication/a-new-start-challenging-the-myths-about-zimbabwean-agriculture-and-land-reform> [accessed January 20, 2012]
- Scott, C. (2004). "Angola rejects GM Food Aid" *SciDev.Net*[Internet] Available at: [<http://www.scidev.net/News/index.cfm?fuseaction=printaarticle&itemid=1311&language=1>]
- Seck, D. and Busari, D.T. (eds.). (2009). *Growth and Development in Africa*. Trenton, NJ: Africa World Press.
- Seck, P. A., Tollens, E., Wopereis, M.C.S., Diagne, A. and Bamba, I. (2010). "Rising Trends and Variability of Rice Prices: Threats and Opportunities for Sub-Saharan Africa." *Food Policy*, 35, 5: 403-411
- SEEN. (n.d.). *Environmental degradation: SEEN Environmental Learning Information Sheet No 5*. London: SEEN.
- Seibel, H. D. (1986). "Rural Finance in Africa: The Role of Informal and Formal Financial Institutions." *Development and Change*, 6: 12-14.
- Seibel, H. D., Giehler, T. and Karduck, S. (2005). "Reforming Agricultural Development Banks." Division 41, Section Financial Systems Development, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, Eschborn.
- Seo, S. N. (2010). "Is an integrated farm more resilient against climate change? A micro-econometric analysis of portfolio diversification in African agriculture." *Food Policy*, 35, 1: 32–40
- Shanin, T. (1990). *Defining Peasants: Essays Concerning Rural Societies, Expolary Economies, and Learning from them in the Contemporary World*. Oxford and Cambridge, MA: Basil Blackwell.
- Shaw, T. (2011). "Africa Capacity Indicators 2011: Capacity Development in Fragile States- book review." *The Round Table*, 100, 414 (June): 323–342
- Shiva, V. and Holla-Bahr, R. (1996). "Piracy by Patent: The Case of the Neem Tree." In J. Mander and E. Goldsmith (Eds.) *The Case Against the Global Economy and for a Turn Toward the Local*. San Francisco: Sierra Club Books, 146-159.
- Sissoko, K., Van Keulen, H., Verhagen, J., Tekken, V. and Battaglini, A. (2011). "Agriculture, livelihoods and climate change in the Western African Sahel." *Regional Environmental Change*, 11: S119-S125
- Skocpol, T. (1985). "Bringing the State Back In: Strategies of Analysis in Current Research." In Evans, P.B., Rueschemeyer, D. and Skocpol, T. (eds.), *Bringing the State Back In*. Cambridge: Cambridge University Press, 4-37

- Smith, L. C., Alderman, H. and Aduajom, D. (2006) *Food Insecurity in Sub-Saharan Africa: New Estimates from Household Expenditure Surveys*. Washington, D.C: International Food Policy Research Institute.
- Smith, M. S. (ed.). (2003). *Globalizing Africa*. Trenton, NJ: Africa World Press.
- — — (ed.). (2006). *Beyond the 'African Tragedy': Discourses on Development and the Global Economy*. Aldershot: Ashgate Publishing.
- Solow, R. (1952). "On the Structure of Linear Models", *Econometrica* vol. 20(1).
- South African Fruit and Wine Initiative. (2010). *The South African Fruit and Wine Industry carbon calculator*. Cape Town: South African Fruit and Wine Initiative.
- Sowman, M. and Cardoso, P. (2010). "Small-scale fisheries and food security strategies in countries in the Benguela Current Large Marine Ecosystem (BCLME) region: Angola, Namibia, and South Africa." *Marine Policy*, 34:163-170.
- Spielman, D. J. and Pandya-Lorch, R. (2009). "Fifty Years of Progress." In Spielman, D.J. and Pandya-Lorch, R. (eds.) *Millions Fed – Proven Successes in Agricultural Development*. Washington, DC: International Food Policy Research Institute, 1-18
- Sseguya H, Mazur, R. E. and Masinde, D. M. (2009). "Harnessing Community Capitals for Livelihood Enhancement: Experiences from a Livelihood Program in Rural Uganda." *Community Development*, 40:123-138.
- Steffens, M. (2007). "Agri-biotech in Africa: Safety First?" *SciDev.Net*, June 12.
- Steger, M. B. (2009). *Globalization: A Very Short Introduction*. Oxford: Oxford University Press.
- Stiglitz, J. E. and Charlton, A. (2005) *Fair Trade for All: How Trade Can Promote Development*. Oxford: Oxford University Press.
- Suresh, B. (2009). "Global Economic Crisis and Nutrition Security in Africa." *African Journal of Food, Agriculture, Nutrition and Development*, 9, 9: 1797-1806.
- SWAC. (Sahel and West Africa Club) (2006). "Food sovereignty in West Africa: From principles to reality." Document prepared for the first Regional Summit on Food sovereignty organized by ROPAA (Network of West African Peasant Organizations and Producers), Niamey, Niger (November) [Internet] Available at: <<http://www.oecd.org/dataoecd/55/5/38525866.pdf>> (Accessed 12th July 2011).
- Swedish FAO Committee. (2009). Towards food security in Africa: Examples of successful development, Publication series No. 6. [Internet] Available at <<http://www.sweden.gov.se/content/1/c6/13/97/43/7d8fc6d9.pdf>> (Accessed 13th July 2011).
- Swindale, A. and Bilinsky, P. (2006). "Development of a universally applicable household food insecurity measurement tool: Process, current status, and outstanding issues." *Journal of Nutrition*, 136, 5:1449-1452
- Syngenta Foundation for Sustainable Agriculture. (2002). The Socio-Political Impact of Biotechnology in Developing Countries. [Internet] Available at: <http://www.syngentafoundation.com/biotechnology_developing_countries.htm>
- Tacoli, C. (1998). "Beyond the rural-urban divide." *Environment and Urbanization*, 10, 1: 3-5
- Taeb, M. and Zakri, A. H. (eds.). (2008) *Agriculture, Human Security, and Peace: A Crossroad in African Development*. West Lafayette: Purdue University Press.
- Tall, A. (2010). "Climate Forecasting to Serve Communities in West Africa." *Procedia Environmental Sciences*, 1: 421-431.
- Tapsoba, E. K. (1981). "An Economic and Institutional Analysis of Formal and Informal Credit in Eastern Upper Volta: Empirical Evidence and Policy Implications." Unpublished Ph. D. Dissertation, Michigan State University
- Tarawali, S., Herrero, M., Descheemaeker, K., Grings, E., and Blummel, M. (2011). "Pathways for sustainable development of mixed crop livestock systems: Taking a livestock and pro-poor approach." *Livestock Science*, 139: 11-21.
- Taylor, I. E. P. (ed.) (2007). *Genetically Engineered Crops: Interim Policies, Uncertain Legislation*. New York: Haworth Press.
- Tendler, J. (1982). "Turning Private Voluntary Organizations into Development Agencies: Questions for Evaluation". Program Evaluation Discussion Paper No. 12. Washington, DC: US Agency for International Development.
- Tetty, W. J. (2006). *Staff Retention in African Universities: Elements of a Sustainable Strategy*. Washington D.C.: World Bank.
- Tetty, W. J. and Pupilampu, K. P. (2005) (ed). *The African Diaspora in Canada: Negotiating Identity and Belonging*. Calgary: University of Calgary Press.
- The Economist. (2011). "Feeding the World: the 9-Billion People Question." *The Economist Print Edition*, February 26th 2011
- Thirtle, C., Beyers, L., Ismael, Y. and Piesse, J. (2003). "Can GM-Technologies Help the Poor? The Impact of BT Cotton in Makhathini Flats, KwaZulu-Natal." *World Development*, 31, 4: 717-732.
- Thompson, C. B. (2007). "Africa: Green Revolution or Rainbow Evolution." *Review of African Political Economy*, 34, 113: 562-565.
- Thomson, J. A. (2004). "The Status of Plant Biotechnology in Africa." *AgBioForum*, 7, 1&2, 9-12.
- — — (2007). "Regulatory Regimes for GE Crops in Africa." In Taylor, I. E. P. (ed.) (2007) *Genetically Engineered Crops: Interim Policies, Uncertain Legislation*. New York: Haworth Press, 265-271.
- Thomson, J. A., Shepherd, D. N. and Miguouna, H. D. (2010). "Developments in Agricultural Biotechnology in Sub-Saharan Africa." *AgBioForum*, 13, 4: 314-319.

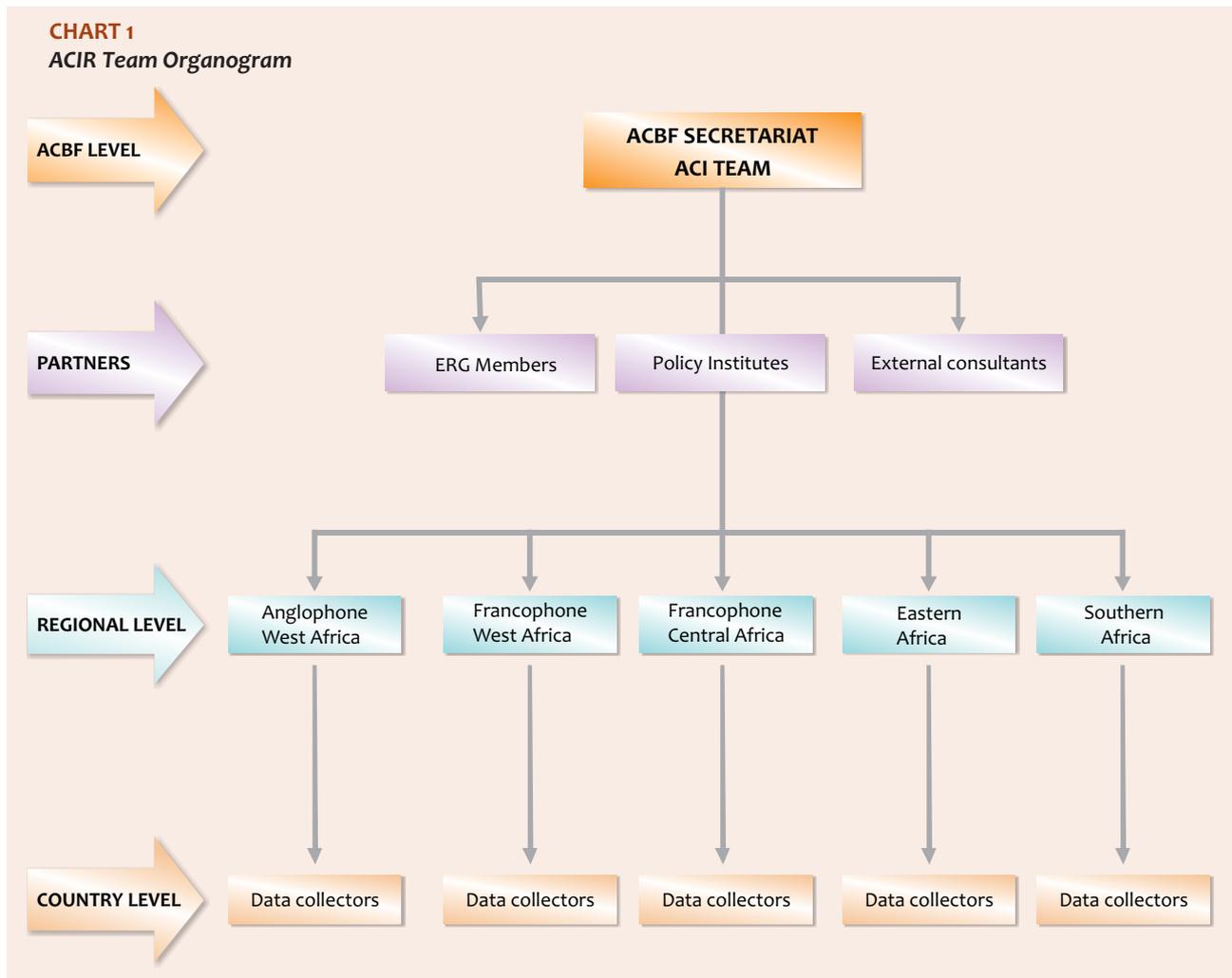
- Thornton, A.** (2008). "Beyond the metropolis: Small towns' case studies of urban and peri-urban agriculture in South Africa." *Urban Forum*, 19: 243-262.
- Tibaijuka, K.** (2009). *Building Prosperity: Housing and Economic Development*. London, UK and Sterling, VA, USA: Earthscan Publishing London.
- Tirado, M. C., Cohen, M. J., Aberman, N., Meerman, C. J. and Thompson, B.** (2010). "Addressing the challenges of climate change and biofuel production for food and nutrition security." *Food Research International*, 43: 1729-1744.
- Tomich, T. P., Kilby, P. and Johnston, B. F.** (1995). *Transforming Agrarian Economies: Opportunities Seized, Opportunities Missed*. New York: Cornell University Press.
- Toulmin, C.** (2009). *Climate change in Africa*. London: Zed Books.
- Transparency International** (2010). *Corruption Perceptions Index 2010*. Berlin: Transparency International.
- Tschirley, D. L.** (2010). "Institutional Diversity and Performance in African Cotton Sectors." *Development Policy Review*, 28, 3: 295-323.
- Turrall, S.** (2011). "Sustainable Livelihoods Approaches: Past, Present and... Future?" *SL Highlights*, June.
- Tweeten, L.** (1999). "The economics of global food security." *Review of Agricultural Economics*, 21, 2: 473-488.
- Twumasi-Afriyie, S., Nigussie, M. and Tanner, D.** (1999). "Quality Protein Maize in Ghana: A Partnership in Research, Development, and Transfer of Technology." In Breth, S.A. (ed.) *Partnerships for Rural Development in Sub-Saharan Africa*, Geneva: Centre for Applied Studies in International Negotiations, 17-26.
- UN. (United Nations).** (2009). *Rethinking Poverty – Report on World Social Situation 2010*. New York: United Nations Department of Economic and Social Affairs.
- . (2011a). "Press Conference on Somalia Famine" [Internet]. Available at: <http://www.un.org/News/briefings/docs/2011/110720_Somalia.doc.htm> (Accessed August 10, 2011).
- . (2011b). *Millennium Development Goal 8 – The Global Partnership for Development: Time to Deliver (MDG Gap Task Force Report 2011)*. New York: United Nations.
- UNCED. (United Nations Conference on Environment and Development).** (1993). *Agenda 21, Programme of Action for Sustainable Development – Rio Declaration on Environment and Development*. New York: United Nations Department of Public Information.
- UNCTAD. (United Nations Conference on Trade and Development).** (2004). *The Promise of Biotechnology, Capacity-Building for Participation of Developing Countries in the Bioeconomy*. New York and Geneva: United Nations
- UNDP. (United Nations Development Program).** (1994). "Human Development Report 1994 – New Dimensions of Human Security." New York, Oxford University Press. <http://hdr.undp.org/en/reports/global/hdr1994/>
- . (2001). *Human Development Report 2001 – Making Technologies Work for Human Development*. New York: Oxford University Press for UNDP.
- . (2003). *Human Development Report 2003 Millennium Development Goals: A compact among nations to end human poverty*. New York: Oxford University Press for UNDP.
- . (2006a). *Human Development Report 2006: Beyond Scarcity – Power, Poverty and the Global Water Crisis*. New York: Palgrave Macmillan.
- . (2006b). *Employment opportunities and working conditions of rural and peri-urban youth in Liberia*. UNDP: New York
- UNEP. (United Nations Environment Program).** (2000). *Sustaining Life on Earth. Secretariat of the Convention on Biological Diversity*. UNEP: Montreal.
- . (2006) *Building Biosafety Capacity: The Role of UNEP and the Biosafety Unit*. Geneva: UNEP-GEF Biosafety Unit.
- . (2008). *Africa Atlas of Our Changing Environment*. Nairobi: UNEP.
- . (2010). *Green Economy: Developing countries success stories*. Nairobi: UNEP.
- UNEP-GEF. (United Nations Environment Program-Global Environment Facility).** (2006a). *A Comparative Analysis of Experiences and Lessons from UNEP-GEF Biosafety Projects*. Geneva: UNEP-GEF Biosafety Unit
- . (2006b). *Building Biosafety Capacity: The Role of UNEP and the Biosafety Unit*. Geneva: UNEP-GEF Biosafety Unit.
- UNESCO. (United Nations Educational, Scientific and Cultural Organization).** (2006). *Revitalizing Science and Technology Training Institutions in Africa: The Way Forward*. Nairobi: UNESCO Regional Office
- UNFCCC (United Nations Framework Convention on Climate Change).** (1997). *Kyoto Protocol*. Kyoto: United Nations Framework Convention on Climate Change.
- . (2009). *Copenhagen Accord*. New York: UNFCCC Secretariat.
- Urama, K.C., Ozor, N., Kane, O., Hassan, M.** (2010). "Sub-Saharan Africa" In *UNESCO Science Report 2010 – The Current Status of Science around the World*. Paris: UNESCO, 279-319.
- USG. (United States Government).** (2011). *Feed the Future: Global Food Security Research Strategy*. Washington, DC: USG [Internet]. Available at: <<http://www.feedthefuture.gov>>.

- Vagneron, I., Faure, G. and Loeillet, D.** (2009). "Is There a Pilot in the Chain? Identifying the Key Drivers of Change in the Fresh Pineapple Sector." *Food Policy*, 34, 5: 437-446.
- Valente, C.** (2009). "Food (In) security impact of land redistribution in South Africa: macro-econometric evidence from national data." *World Development*, 37, 9: 1540-1553
- Varangis, P.** (2010). "How to Make Agri-finance Benefit Rural People in Emerging Markets." Presentation delivered at the NSF Global Forum, Beijing, China (September 14)
- Von Braun, J. and Meinzen-Dick, R.** (2009). "Land Grabs" by foreign investors in developing countries: risks and opportunities." Washington D.C.: IFPRI.
- Wafula, D. and Clark, N.** (2005). "Science and governance of modern biotechnology in Sub-Saharan Africa – the case of Uganda." *Journal of International Development*, 17: 679–694.
- Wakungu, J. W.** (2010). *Climate change: An African response*. Nairobi: African Centre for Technology Studies.
- Wallerstein, I.** (1985). "Three Stages of African Involvement in the World Economy." In Gutkind, P. and Wallerstein, I. (eds.) *Political Economy of Contemporary Africa*. Beverly Hills: Sage Publications, Second Edition, 35-63.
- Wamboga-Mugirya, P.** (2010). "Uganda starts 'historic' trails on GM staple crops." *SciDevNet*. [Internet]. Available at: <<http://www.scidev.net/en/agriculture-and-environment/agri-biotech-in-africa/news/uganda>>.
- Wambugu, F.** (2001). *Modifying Africa: How Biotechnology Can Benefit the Poor and Hungry: A Case Study from Kenya*. Nairobi: Kenya.
- Wang, T. Y.** (1999). "Resistance and Old Age: The Subject behind the American Seniors' Movement." In Chambon, A.S., Irving, A. and Epstein, L. (eds.) *Reading Foucault for Social Work*. New York: Columbia University Press, 189-217.
- Wanyama, F., Develtere, P. and Pollet, I.** (2009). "Reinventing the Wheel? African Cooperatives in a Liberalized Economic Environment." *Annals of Public and Cooperative Economics*, 80, 3: 361-392.
- Warren, D. M., Slikveer, L. J. and Brokensha, D.** (eds.) (1991). *Indigenous Knowledge Systems: the Cultural Dimension of Development*. London: Kegan Paul.
- Watts, M.** (1990). "Peasants under Contract: Agro-Food Complexes in the Third World." In Bernstein, H., Crow, B., Mackintosh, M. and Martin, C. (eds.) *The Food Question: Profits versus People?* London: Earthscan Publications, 149-162
- Weatherspoon, D. D. and Reardon, T.** (2003). "The Rise of Supermarkets in Africa: Implications for Agrifood Systems and the Rural Poor." *Development Policy Review*, 21, 3: 333-355.
- Wheeler, D.** (2010). *Quantifying vulnerability to climate change: implications for adaptation assistance*. Washington D.C.: Center for Global Development
- White, G.** (2011). *Climate Change and Migration: Security and Borders in a Warming World*. New York: Oxford University Press.
- Williamson, J.** (2000). *The Washington Consensus*. Washington DC: The World Bank.
- Windfuhr, M. and Jonsén, J.** (2005). *Food sovereignty: Towards democracy in localized food systems*, ITDG Publishing: Rugby, Warwickshire. [Internet] Available at <http://www.ukabc.org/foodsovereignty_itdg_fian_print.pdf> (Accessed 13th July 2011).
- Winter, J.** (2010). "Zimbabwe land reform not a failure". [Internet] Available at: <<http://www.bbc.co.uk/news/world-africa-11764004>> (Accessed 12th July 2011.)
- Wolford, W.** (2007). "Land reform in the time of neo-liberalism: A many-splendored thing." *Antipode*, 39, 3: 550-570
- World Bank** (1981). *Accelerated Development in Sub-Saharan Africa: An Agenda for Action*. Washington, D.C.: World Bank.
- (1989). *Sub-Saharan Africa: From Crisis to Sustainable Growth a Long Term Perspective Study*. Washington, D.C.: World Bank.
- (1991). *Agricultural Biotechnology: The Next "Green Revolution"* World Bank Technical Paper (No. 133), Washington D.C.: World Bank.
- (1994). *Adjustment in Africa Reforms, Results and the Road Ahead*. Washington, D.C.: World Bank.
- (2000). *Can Africa Claim the 21st Century*. Washington, DC: World Bank.
- (2006a). *World Development Indicators*. Washington, DC: World Bank.
- (2006b) *Project Brief on a Proposed Grant from the Global Environment Facility Trust Fund*. Washington D.C.: World Bank
- (2007a). *World Development Report, 2008 – Agriculture for Development*. Washington D.C.: World Bank.
- (2007b). *World Development Indicators*. Washington D. C.: World Bank.
- (2007c). *Snapshot Africa: Mozambique* Washington D.C.: World Bank
- (2009a). *Gender in Agriculture Sourcebook*. Washington, DC: The World Bank.
- (2009b). *Burkina Faso: Country Economic Memorandum, Promoting Growth, Competitiveness and Diversification*. Washington, DC: World Bank.
- (2010). *Awakening Africa's Sleeping Giant: Agricultural Development in the Guinea Savannah*. Washington, D.C. World Bank
- (2011a). *World Development Report 2011 - Conflict, Security, and Development*. Washington, DC: World Bank.
- (2011b). *Doing Business 2011: Making a Difference for Entrepreneurs*. Washington, DC: World Bank
- (2011c). *Rising Global Interest in Farmland — Can it Yield*

- Sustainable and Equitable Benefits? Washington, DC: World Bank
- . (2011d). *Missing Food: the Case of Postharvest Grain Losses in Sub-Saharan Africa*. Washington, DC: World Bank.
- . (2012). "Food prices watch." Washington DC: world Bank. <http://siteresources.worldbank.org/EXT/POVERTY/Images/336990-1327605927518/FPWJan2012v10noembargoFinal.pdf>
- WorldFish Centre.** (2007). *Fisheries and aquaculture can provide solutions to cope with climate change*. Penang: WorldFish Centre.
- . (2010). *Envisioning 2050: Climate change, aquaculture and fisheries in West Africa*. Penang: WorldFish Centre. [Internet] Available at: <www.ghanaweb.com> (Accessed December 8, July 31, 2007).
- WTO. (World Trade Organization).** (1995). *Agreement on Agriculture* [Internet]. Available at: <<http://www.wto.org>> (Accessed July 10, 2005).
- Wynne, B.** (1991). "Knowledge in Context." *Science, Technology, and Human Values*, 16, 1: 111-121.
- . (1995). "The public understanding of science." In Jasanoff, S., Markle, G., Petersen, J. C. and Pinch, T. (eds.) *Handbook of Science and Technology Studies*. Thousand Oaks, CA: Sage, 380-392.
- Yusuf, G.** (2009). "The Marginalization of African Agricultural Trade and Development: A Case Study of the WTO's Efforts to Cater to African Agricultural Trading Interests Particularly Cotton and Sugar." *African Journal of International and Comparative Law*, 17, 2: 213-239.
- Zahra, S. A. and George, G.** (2002). "Absorptive Capacity: A Review, Reconceptualization and Extension", *Academy of Management Review*, Volume 27, Issue 2, pages 185-203.
- Zerbe, N.** (2007). "Contesting Privatization: NGOs and Farmers' Rights in the African Model Law" *Global Environmental Politics*, 7, 1: 97-119.
- Zeza, A. and Tasciotti, L.** (2010). "Urban Agriculture, Poverty, and Food Security: Empirical Evidence from a Sample of Developing Countries." *Food Policy*, 35, 4: 265-273.
- Zoellick, R. B.** (2011). "Op-ED: Free Markets Can Still Feed the World." World Bank as publish in the *Financial Times*, January 5th

A - ACIR TEAM ORGANIZATION

The ACIR Team comprises a dedicated ACBF group supported by various stakeholders and partners at different level as presented in the chart below.



ACBF ACIR Team

A dedicated group of individuals (ACIRTeam) within the ACBF Secretariat is constituted to spearhead the process from conceptualization through to the publication of the ACI Flagship Report. Team members come from the various units and departments within the Secretariat.

External Reference Group (ERG)

The ERG is created to provide motivation and intellectual guidance, as well as to challenge the ACBF ACI team to develop its thinking behind the assessment and ensure that the team achieves its objective of delivering a quality publication. To this end, the External Reference Group acts as the ACI team's strategic partner to ensure that:

- The approach and methodologies employed in preparing the Flagship are theoretically sound,

conceptually appropriate, rigorous, balanced, and draws in divergence as appropriate;

- The data capturing instruments are adequately reviewed and appropriate;
- Comments on the ACI survey template, selected indicators, case studies and stories are provided in a timely manner;
- Presentation of findings balances views from across the broad spectrum of opinion and reflect current and innovative practice;
- The review and report balance public, legal and operational perspectives appropriately;
- There is feedback on implementation support and costing tools for specific topics examined in the ACIR, and on the appropriateness of, for example, the costing assumptions and the approach adopted within the tools as well as peer

- review of the background papers;
- Where needed, ACBF is supported in the identification of appropriate networks and/or experts with whom to engage to assist in the development of the tools; and
- All conclusions drawn and policy recommendations provided are sound and evidence-based.

Background papers

The goal of the competitive consultancy is to provide detailed background papers on agreed upon thematic issues that would assist the ACIR Team in better grasping and contextualizing the issues of capacity development for agricultural transformation and food security. Seven (07) thematic papers were accepted (following the extensive peer-review) and covered the following areas: State and Agricultural Policy in Africa; Science-Society Relations and the Biotechnology Revolution; Food Security and Food Sovereignty in Africa; Climate Change and Environmental Degradation; Poverty, Sustainable Livelihoods and Agricultural Transformation; Urban Agriculture; and, Agricultural Financing.

Focal regional points

On the basis of their geographic and linguistic affinity, the

targeted countries were grouped into five broad regions – Anglophone West Africa; Francophone West Africa; Central Africa; East Africa and the Horn; Southern Africa and the Indian Ocean. A Policy Unit was tasked with coordinating and supervising the country data collection process within each of the above-mentioned regions.

Data collectors

At the country level, a national familiar with the country context, was identified and selected through an open and competitive process, invited to a 3-day training session on the ACI survey instrument; following which he/she conducted the administration of the questionnaire. However Section G of the survey instrument on the CPIA was administered by seventeen (17) nationally and internationally recognized Policy Institutes in surveyed countries.

B - DATA COLLECTION

Coverage

In line with the target of covering all African countries, the number of countries covered during this second edition increased from 34 (in 2010) to 42 (see list below).

TABLE X

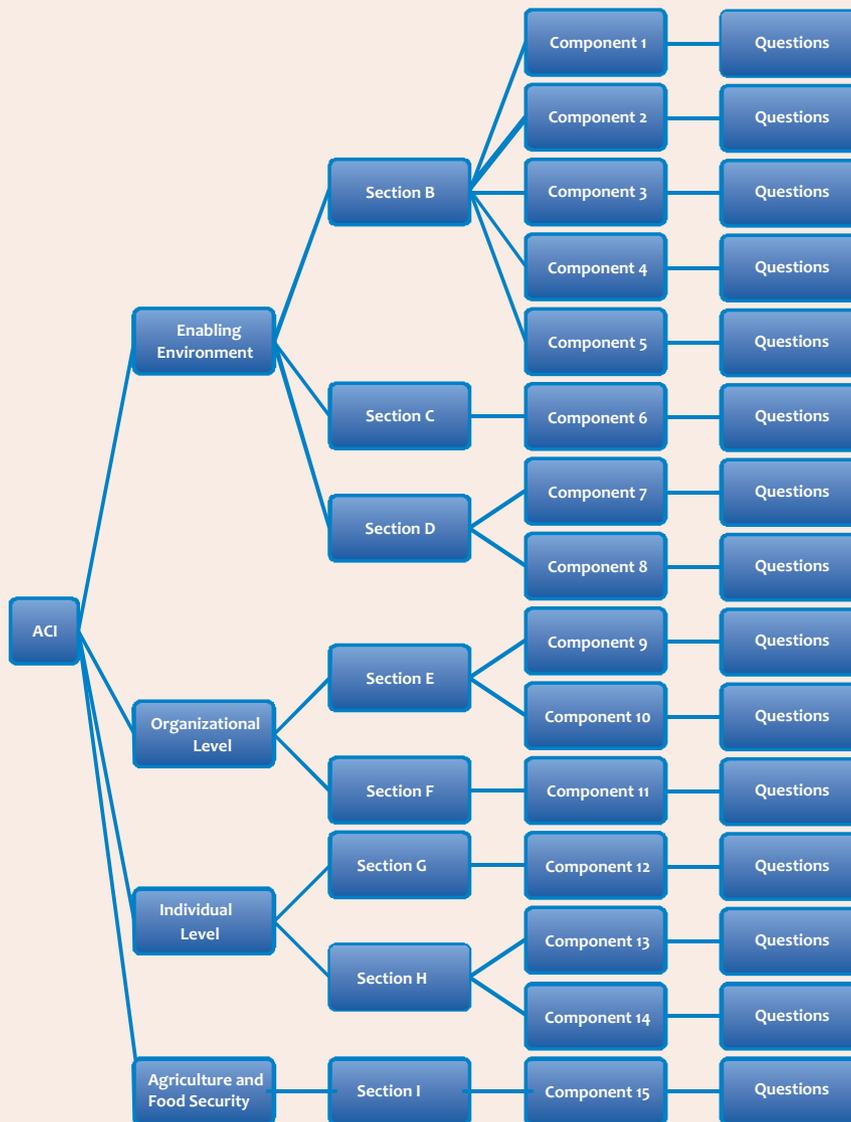
List of countries covered by the study

Group 1 West English -speaking countries	Group 2 West and North French -speaking countries	Group 3 Central Africa and other French-speaking countries	Group 4 Eastern Africa	Group 5 Southern Africa
Cape Verde	Benin	Burundi	Ethiopia	Angola
Gambia (The)	Burkina Faso	Cameroon	Kenya	Botswana
Ghana	Côte d'Ivoire	CAR	Malawi	Lesotho
Liberia	Guinea	Chad	Rwanda	Mauritius
Nigeria	Guinea Bissau	Congo (Rep. of)	Tanzania	Mozambique
Sierra Leone	Mali	Congo (Dem. Rep. of)	Uganda	Namibia
	Mauritania	Djibouti		South Africa
	Morocco	Gabon		Swaziland
	Niger	Madagascar		Zambia
	Senegal			Zimbabwe
	Togo			

Data collection instrument

The data collection instrument is designed along the three dimensions of capacity: (i) Enabling environment; (ii) Organizational level; and (iii) Individual level. These dimensions constitute the three primary components of the data collection instrument. However, two specific sections are dedicated to explicit issues: the Section G on the Country Policy and Institutional Assessment (CPIA) and the Section I on Agricultural Transformation and Food Security, the thematic focus of this year's Report. The structure of the questionnaire is presented in Chart 2 below. One single questionnaire was administered in each of the countries covered by the study.

CHART 2
Structure of the data collection instrument



Training workshop

As alluded to above, a training workshop was organized from 13-18 June 2011 for the all the selected in-country data collectors who were to administer the main questionnaire (excluding Section G on CPIA which was done by the Policy Institutes). During the workshop, the data collection instrument was reviewed, revised and the final version adopted. Also during the workshop, the potential sources of information per country were discussed and agreed upon. However, it was acknowledged and agreed that the list could be adjusted during the field data collection to suit country-specific needs (e.g. Ministry of Women Affairs in country A,

could be Ministry of Gender in country B, etc.). A separate workshop was organized for the seventeen (17) Policy Institutes that were to lead the CPIA country self-assessment in their respective countries.

Period of field data collection

The field data collection was conducted from July 1st through August 15th 2011. Reporting was done on a weekly basis. At the end of the field data collection, the data collectors submitted their completed questionnaires along with their final field report.

C - COMPUTING THE INDICES

C.1. Scoring the answers to questions

Each question is assigned an associated variable indicator whose nature depends on the type of question asked. The scoring of the variable indicators is in relation with their respective natures. The scores are standardized on a scale ranging from 0-100.

Qualitative variables

A value is attributed to each expected answer. Questions with a YES or NO answer are scored 0 or 100. Questions with three possible answers are scored 0; 50; and 100. Questions with 4 answers are scored 0, 33.3, 66.7 and 100. Questions with 5 answers are scored 0; 25; 50; 75 and 100.

Some few examples:

Question No.	Question	Expected answers	Score
B1	Does the country have a National Development Strategy (Poverty Reduction Strategy Paper, National Development Plan, Vision Strategy, etc) ?	YES	100
		NO	0
B4	Is Capacity Development (CD) integrated in the country's Poverty Reduction Strategy/National Development Plan?	<i>CD is not mainstreamed in the current PRSP/National Development Plan</i>	0
		<i>CD is mainstreamed, but with no clear objectives and targets</i>	50
		<i>Clear objectives and targets set in the PRSP/National Development Plan</i>	100
B13b	How effective is the dialog mechanism with development partners?	<i>Very High</i>	100
		<i>High</i>	75
		<i>Average</i>	50
		<i>Low</i>	25
		<i>Very Low</i>	0

Numerical variables

a- The answer is a proportion

The score is the answer (assuming that moving from 0 to 100% is improving, otherwise, one may just read backwards)

b- Numerical variable in the form of ordinal scales

The values on the predetermined scale is brought to a scale ranging from 0 – 100.

Example:

C4: On the scale1 (Very weak) to 6 (Very strong), assess how support to capacity is being coordinated in the country Very weak = 1 2 3 4 5 6 = Very strong						
Answer	1	2	3	4	5	6
Score	0	20	40	60	80	100

c- **Numerical variable in the form of absolute value**

Three different options were considered.

Option 1 (Best achievement)

From the minimum and maximum values observed (among the 42 countries), define a range 0 - 100 where 0 is associated with the minimum value, and 100 with the maximum value. One disadvantage for this option is that it may not capture sufficiently the progress made by a country, as its efforts are assessed with respect to those of other countries.

Option 2 (Best progress)

A country may be assessed with respect to efforts it made the previous years with regard to the concerned variable. The indicator would measure the variation in the efforts it is making on its own. This is another way to measure investment in capacity development.

$$\frac{Y_t - Y_{t-1}}{Y_{t-1}} \text{ (in \%)}$$

Y_t = Value at current date t

Y_{t-1} = Value at previous year (t-1)

One disadvantage of the above option is that positive variations may range from 0 to infinity. Two countries shifting respectively for example from 0 to 1 and from 0 to 1000 would have the same infinite rate of increase.

Option 3 (Best relative change)

This option is the same as option 2, but with a formula that mitigates the disadvantage with the formula in option 2.

$$\frac{Y_t - Y_{t-1}}{Y_t} \text{ (in \%)}$$

Y_t = Value at current date t

Y_{t-1} = Value at previous year (t-1)

A minor disadvantage presented by this formula is that if a country experiences a drastic decrease (more than 50%), then the indicator will be less than -100%. This situation, though rare, may apply to a country facing some turmoil.

The option 1 is used so far. The other options will be tested in further years, when a time series of ACI variables is constituted.

C.2 Computation of the Indices

C.2.1 The ACI Composite Index

During the first edition of the ACI Report, the exploratory approach was used to define the components of the ACI composite index. To this end, the hierarchical cluster analysis was carried out, using the Ward's method applying squared Euclidian distance as the distance or similarity measure. From the findings of the analysis, 4 groups of factors appeared to be the most relevant. They are the following:

- i. Cluster 1: Policy environment
- ii. Cluster 2: Processes for implementation
- iii. Cluster 3: Development results
- iv. Cluster 4: Capacity development outcomes.

Four cluster indices are then calculated, each one being the arithmetic mean of its cluster variable indicators.

Cluster Index j (j = 1, 2, 3, 4) is the arithmetic mean of variable indicators within cluster j.

$$CL_j = \frac{1}{n_j} \sum_{i=1}^{i=n_j} VI_{ji}$$

VI_{ji} = Score assigned to variable i within Cluster j

n_j = Number of variable indicators within Cluster j

The ACI Composite Index is the harmonic mean of the four cluster indices. The rationale for choosing the harmonic mean formula is that capacity development is an indivisible whole of its dimensions. As such, none of the capacity development factors as given by the four clusters should be neglected. Weakness in one of the four components should be easily captured by the harmonic mean formula, which is sensitive to small values.

$$ACI = \frac{1}{\frac{1}{4} \sum_{j=1}^{j=4} \frac{1}{CL_j}}$$

C.2.2 Sub-indices

In addition to the clusters indices, a number of sub-indicators are also calculated. They are built around the component and the sections of the questionnaire (see structure of the questionnaire, Chart 2)

Component Indicators

Eleven component indices are calculated as follows:

Component Index j ($j = 1, 2, \dots, 11$) is the arithmetic mean of the variable indicators within that component.

$$CI_j = \frac{1}{n_j} \sum_{i=1}^{i=n_j} VI_{ji}$$

VI_{ji} = Score assigned to question i within Component j

n_j = Number of Variable Indicators associated with Component j

The list of the component indices is presented below.

No.	Name of the Component
1	Strategic choices for capacity development
2	Policy environment/Efficiency of instrument
3	Dialogue mechanisms for capacity development
4	Strategic policy choices for improving the capacity of statistical system
5	Financial commitment for capacity development
6	Aid effectiveness related to capacity development activities
7	Gender Equality
8	Social inclusion
9	Partnering for capacity development
10	Capacity profiling and capacity needs assessment
11	Inputs/outputs related to capacity development

Thematic Indicators

Six thematic Indices are calculated with the same formula as for the component indices.

Thematic index k ($k = 1, 2, \dots, 6$) is the arithmetic mean of Component Indexes within that thematic section.

$$SI_k = \frac{1}{m_k} \sum_{i=1}^{i=m_k} CL_{ki}$$

m_k = Number of Component indices associated with Section k .

$$m_1 = 5, m_3 = 2.$$

The list of the thematic indices is presented below.

No.	Name
1	Policy choices for capacity development
2	Aid effectiveness related to capacity development activities
3	Gender equality mainstreaming and social inclusion
4	Partnering for capacity development
5	Capacity profiling and capacity needs assessment
6	inputs/outputs related to capacity development

C.2.3 Agricultural transformation and Food Security Index

Specific sub-indices are computed for the agricultural transformation and food security, the annual theme of this report. They cover the following four themes:

- Agricultural strategy formulation and implementation
- Training, research and development/innovations in agriculture
- Role of private sector in the value chain
- Information system

Each of the four sub-indices is the arithmetic mean of the variable indicators within that theme.

The agricultural transformation and food security index is the harmonic mean of the four sub-indices above.

C.3 Ranking the countries

According to the index values, the countries are ranked into five categories as follows:

	Index value	Category	Color
1	0 to less than 20	Very Low	
2	20 to less than 40	Low	
3	40 to less than 60	Medium	
4	60 to less than 80	High	
5	80 and above	Very High	

ACI Indices

Table A1. ACI Composite Index by countries (in alphabetical order)

No.	Country	ACI 2012 composite value	Level of capacity development	Rank
1	ANGOLA	17.2	Very Low	38
2	BENIN	43.4	Medium	11
3	BOTSWANA	23.1	Low	33
4	BURKINA FASO	53.4	Medium	3
5	BURUNDI	39.5	Low	15
6	CAMEROON	37.3	Low	17
7	CAPE VERDE	40.2	Medium	14
8	CAR	28.1	Low	25
9	CHAD	20.2	Low	36
10	CONGO (DRC)	34.5	Low	20
11	CONGO, REP	34.1	Low	21
12	CÔTE D'IVOIRE	24.6	Low	30
13	DJIBOUTI	18.2	Very Low	37
14	ETHIOPIA	52.8	Medium	4
15	GABON	40.4	Medium	13
16	GAMBIA (THE)	33.9	Low	22
17	GHANA	60.2	High	1
18	GUINEA	15.7	Very Low	39
19	GUINEA BISSAU	27.0	Low	27
20	KENYA	58.1	Medium	2
21	LESOTHO	24.6	Low	31
22	LIBERIA	35.6	Low	19
23	MADAGASCAR	10.2	Very Low	42
24	MALAWI	27.7	Low	26
25	MALI	50.3	Medium	7
26	MAURITANIA	14.6	Very Low	41
27	MAURITIUS	14.8	Very Low	40
28	MOROCCO	36.2	Low	18
29	MOZAMBIQUE	33.4	Low	23
30	NAMIBIA	25.2	Low	29
31	NIGER	30.7	Low	24
32	NIGERIA	50.5	Medium	6
33	RWANDA	51.9	Medium	5
34	SENEGAL	42.7	Medium	12
35	SIERRA LEONE	23.6	Low	32
36	SOUTH AFRICA	26.0	Low	28
37	SWAZILAND	22.5	Low	34
38	TANZANIA	37.6	Low	16
39	TOGO	20.7	Low	35
40	UGANDA	45.2	Medium	10
41	ZAMBIA	49.7	Medium	8
42	ZIMBABWE	48.6	Medium	9

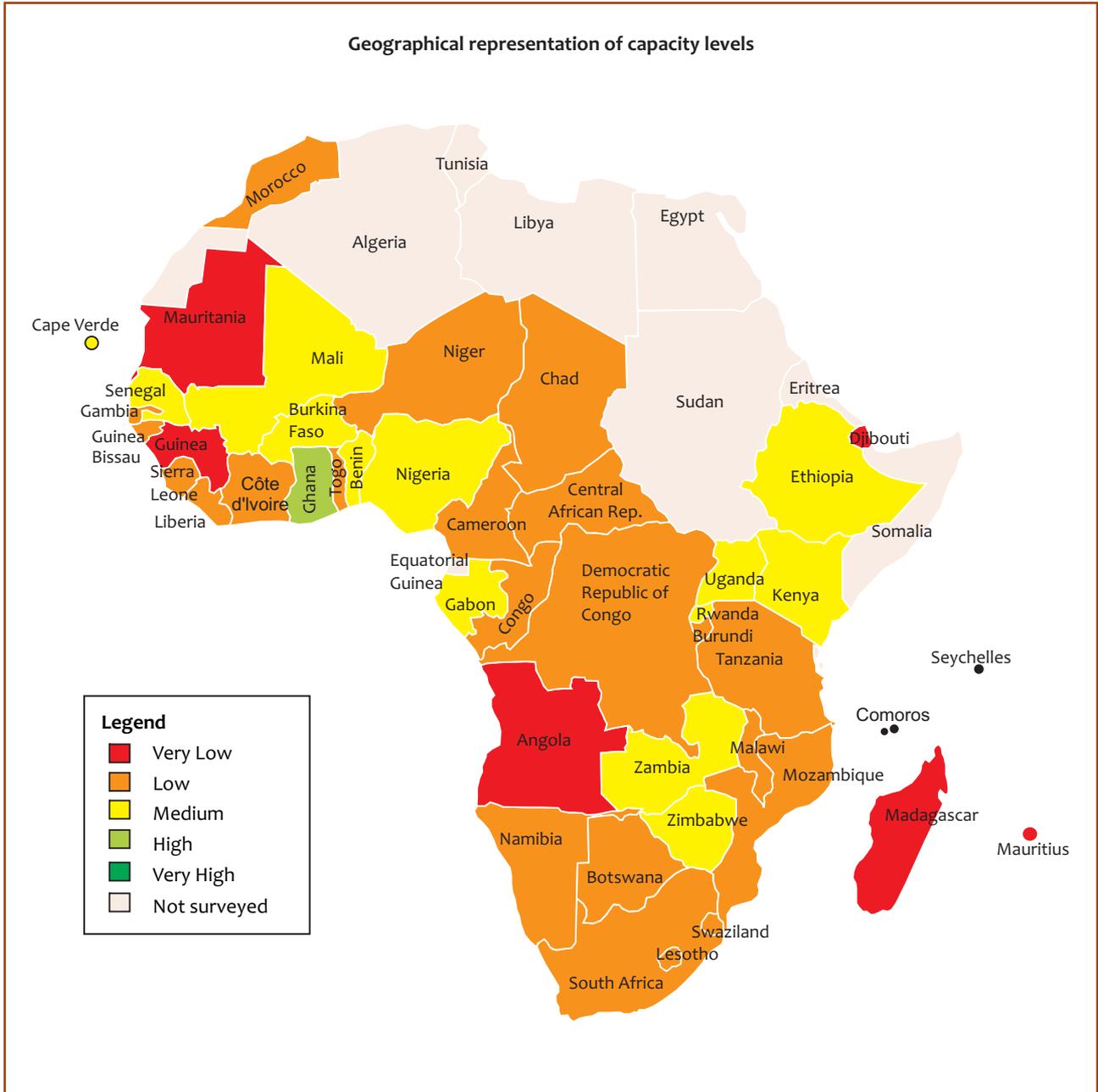


Table A2. Percentage of countries by levels of capacity development

Level	% of countries
Very Low	14.3
Low	52.4
Medium	31.0
High	2.4
Very High	0.0
TOTAL	100

Graphical representation capacity development levels

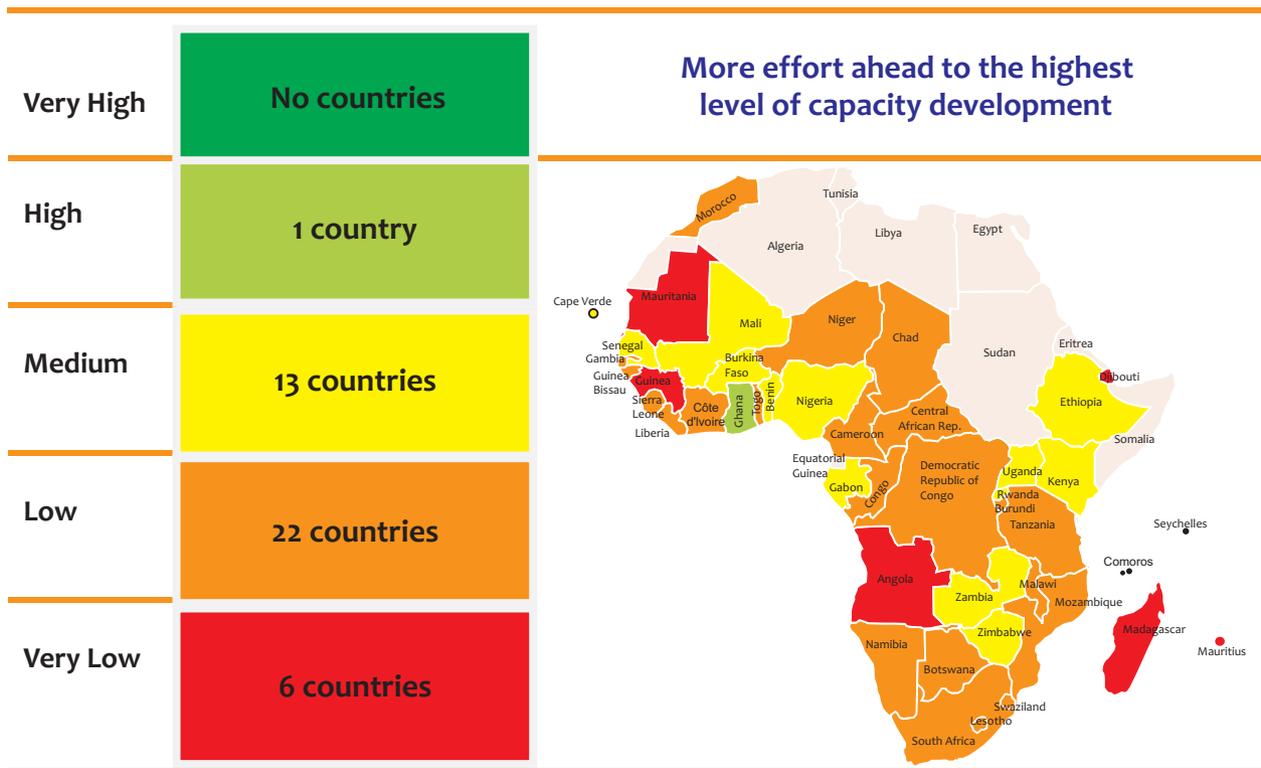


Table A3. Clusters indices values

No.	Country	Cluster 1 Policy environment	Cluster 2 Processes for implementation	Cluster 3 Development results at country level	Cluster 4 Capacity development outcome
1	ANGOLA	91.7	68.5	59.0	5.3
2	BENIN	100	85.2	43.0	21.2
3	BOTSWANA	58.3	52.8	47.0	8.6
4	BURKINA FASO	91.7	75.9	79.0	26.2
5	BURUNDI	100	75.9	44.0	18.1
6	CAMEROON	91.7	58.3	52.0	16.7
7	CAPE VERDE	91.7	75.9	64.0	16.7
8	CAR	91.7	75.0	24.0	13.1
9	CHAD	79.2	53.7	48.0	6.9
10	CONGO (DRC)	75.0	61.1	34.0	17.6
11	CONGO, REP	91.7	48.1	40.0	16.5
12	CÔTE D'IVOIRE	75.0	51.9	22.0	11.8
13	DJIBOUTI	91.7	79.6	64.0	5.5
14	ETHIOPIA	91.7	71.3	44.0	35.5
15	GABON	79.2	57.4	42.0	22.1
16	GAMBIA (THE)	95.8	72.2	46.0	13.9
17	GHANA	100	83.3	41.0	49.8
18	GUINEA	79.2	62.0	34.0	5.1
19	GUINEA BISSAU	79.2	59.3	56.0	9.9
20	KENYA	75.0	75.9	52.0	43.3
21	LESOTHO	79.2	74.1	46.0	8.7
22	LIBERIA	83.3	75.9	52.0	14.7
23	MADAGASCAR	91.7	50.0	51.0	2.9
24	MALAWI	100	87.0	59.0	9.4
25	MALI	91.7	81.5	47.0	28.5
26	MAURITANIA	91.7	59.3	26.0	4.8
27	MAURITIUS	83.3	89.8	51.0	4.4
28	MOROCCO	70.8	75.9	84.0	14.0
29	MOZAMBIQUE	100	86.1	78.0	11.7
30	NAMIBIA	87.5	57.4	49.0	9.2
31	NIGER	95.8	72.2	46.0	11.9
32	NIGERIA	83.3	66.7	40.0	36.7
33	RWANDA	95.8	85.2	66.0	25.2
34	SENEGAL	87.5	72.2	56.0	19.8
35	SIERRA LEONE	100	67.6	34.0	8.7
36	SOUTH AFRICA	87.5	52.8	48.0	9.7
37	SWAZILAND	75.0	50.9	33.0	8.7
38	TANZANIA	95.8	62.0	42.0	17.8
39	TOGO	95.8	51.9	39.0	7.3
40	UGANDA	95.8	72.2	55.0	21.7
41	ZAMBIA	95.8	50.0	54.0	31.7
42	ZIMBABWE	87.5	78.7	44.0	28.3

Table A4. Levels of capacity by cluster

No.	Country	Cluster 1 Policy environment	Cluster 2 Processes for implementation	Cluster 3 Development results at country level	Cluster 4 Capacity development outcome
1	ANGOLA	Very High	High	Medium	Very Low
2	BENIN	Very High	Very High	Medium	Low
3	BOTSWANA	Medium	Medium	Medium	Very Low
4	BURKINA FASO	Very High	High	High	Low
5	BURUNDI	Very High	High	Medium	Very Low
6	CAMEROON	Very High	Medium	Medium	Very Low
7	CAPE VERDE	Very High	High	High	Very Low
8	CAR	Very High	High	Low	Very Low
9	CHAD	High	Medium	Medium	Very Low
10	CONGO (DRC)	High	High	Low	Very Low
11	CONGO, REP	Very High	Medium	Medium	Very Low
12	CÔTE D'IVOIRE	High	Medium	Low	Very Low
13	DJIBOUTI	Very High	High	High	Very Low
14	ETHIOPIA	Very High	High	Medium	Low
15	GABON	High	Medium	Medium	Low
16	GAMBIA (THE)	Very High	High	Medium	Very Low
17	GHANA	Very High	Very High	Medium	Medium
18	GUINEA	High	High	Low	Very Low
19	GUINEA BISSAU	High	Medium	Medium	Very Low
20	KENYA	High	High	Medium	Medium
21	LESOTHO	High	High	Medium	Very Low
22	LIBERIA	Very High	High	Medium	Very Low
23	MADAGASCAR	Very High	Medium	Medium	Very Low
24	MALAWI	Very High	Very High	Medium	Very Low
25	MALI	Very High	Very High	Medium	Low
26	MAURITANIA	Very High	Medium	Low	Very Low
27	MAURITIUS	Very High	Very High	Medium	Very Low
28	MOROCCO	High	High	Very High	Very Low
29	MOZAMBIQUE	Very High	Very High	High	Very Low
30	NAMIBIA	Very High	Medium	Medium	Very Low
31	NIGER	Very High	High	Medium	Very Low
32	NIGERIA	Very High	High	Medium	Low
33	RWANDA	Very High	Very High	High	Low
34	SENEGAL	Very High	High	Medium	Very Low
35	SIERRA LEONE	Very High	High	Low	Very Low
36	SOUTH AFRICA	Very High	Medium	Medium	Very Low
37	SWAZILAND	High	Medium	Low	Very Low
38	TANZANIA	Very High	High	Medium	Very Low
39	TOGO	Very High	Medium	Low	Very Low
40	UGANDA	Very High	High	Medium	Low
41	ZAMBIA	Very High	Medium	Medium	Low
42	ZIMBABWE	Very High	High	Medium	Low

Table A5. Thematic indices values by countries

No.	Country	Policy choices for capacity development	Aid effectiveness related to capacity development activities	Gender equality mainstreaming and social inclusion	Partnering for capacity development	Capacity profiling and capacity needs assessment	Inputs/outputs related to capacity development
1	ANGOLA	51.7	67.5	83.3	100	50.0	0.0
2	BENIN	58.7	78.8	80.8	100	100	21.1
3	BOTSWANA	44.5	40.0	41.7	100	50.0	4.8
4	BURKINA FASO	57.8	61.3	89.2	100	100	25.6
5	BURUNDI	65.5	48.8	79.2	50.0	100	18.6
6	CAMEROON	50.0	65.0	76.7	25.0	0.0	17.3
7	CAPE VERDE	63.9	48.8	83.3	100	100	4.4
8	CAR	49.5	73.8	68.3	75.0	100	8.8
9	CHAD	50.6	53.8	60.8	50.0	0.0	0.3
10	CONGO (DRC)	53.4	23.8	52.5	75.0	100	18.4
11	CONGO, REP	45.1	56.3	75.8	0.0	0.0	9.9
12	CÔTE D'IVOIRE	47.2	33.8	57.5	25.0	50.0	11.9
13	DJIBOUTI	49.5	73.8	97.5	75.0	100	0.1
14	ETHIOPIA	48.7	73.8	70.0	75.0	50.0	40.5
15	GABON	41.0	58.8	68.3	75.0	0.0	21.8
16	GAMBIA (THE)	63.8	51.3	79.2	75.0	100	1.4
17	GHANA	56.8	82.5	75.8	75.0	100	56.5
18	GUINEA	53.3	55.0	60.8	50.0	50.0	0.0
19	GUINEA BISSAU	48.5	38.8	80.0	100	100	1.5
20	KENYA	70.2	33.8	79.2	25.0	50.0	47.1
21	LESOTHO	59.4	38.8	74.2	100	50.0	4.6
22	LIBERIA	75.4	52.5	54.2	100	100	5.8
23	MADAGASCAR	35.9	63.8	75.8	75.0	0.0	0.1
24	MALAWI	61.0	86.3	80.8	75.0	100	5.1
25	MALI	64.6	58.8	75.8	100	50.0	27.0
26	MAURITANIA	39.2	70.0	68.3	25.0	100	3.6
27	MAURITIUS	65.6	63.8	75.8	50.0	100	0.0
28	MOROCCO	72.6	73.8	76.7	50.0	100	2.6
29	MOZAMBIQUE	66.1	85.0	91.7	50.0	100	11.1
30	NAMIBIA	34.0	42.5	91.7	50.0	50.0	6.2
31	NIGER	57.9	57.5	76.7	75.0	100	6.4
32	NIGERIA	57.3	62.5	63.3	25.0	50.0	43.2
33	RWANDA	64.4	82.5	86.7	75.0	100	22.2
34	SENEGAL	61.1	76.3	62.5	50.0	0.0	20.9
35	SIERRA LEONE	49.5	48.8	81.7	25.0	100	2.8
36	SOUTH AFRICA	32.4	53.8	85.0	75.0	50.0	8.5
37	SWAZILAND	31.1	53.8	74.2	100	50.0	3.1
38	TANZANIA	47.1	77.5	73.3	75.0	0.0	13.9
39	TOGO	39.5	73.8	74.2	75.0	0.0	0.0
40	UGANDA	57.0	75.0	80.8	25.0	50.0	17.8
41	ZAMBIA	39.5	61.3	76.7	25.0	100	31.1
42	ZIMBABWE	57.7	36.3	84.2	50.0	100	29.7

Table A6. Capacity dimension indices values

Country	Enabling environment	Organizational level	Individual level
ANGOLA	67.5	75.0	0.0
BENIN	72.8	100.0	21.1
BOTSWANA	42.1	75.0	4.8
BURKINA FASO	69.4	100.0	25.6
BURUNDI	64.5	75.0	18.6
CAMEROON	63.9	12.5	17.3
CAPE VERDE	65.3	100.0	4.4
CAR	63.9	87.5	8.8
CHAD	55.1	25.0	0.3
CONGO (DRC)	43.2	87.5	18.4
CONGO, REP	59.0	0.0	9.9
CÔTE D'IVOIRE	46.2	37.5	11.9
DJIBOUTI	73.6	87.5	0.1
ETHIOPIA	64.2	62.5	40.5
GABON	56.0	37.5	21.8
GAMBIA (THE)	64.7	87.5	1.4
GHANA	71.7	87.5	56.5
GUINEA	56.4	50.0	0.0
GUINEA BISSAU	55.7	100.0	1.5
KENYA	61.0	37.5	47.1
LESOTHO	57.4	75.0	4.6
LIBERIA	60.7	100.0	5.8
MADAGASCAR	58.5	37.5	0.1
MALAWI	76.0	87.5	5.1
MALI	66.4	75.0	27.0
MAURITANIA	59.2	62.5	3.6
MAURITIUS	68.4	75.0	0.0
MOROCCO	74.3	75.0	2.6
MOZAMBIQUE	80.9	75.0	11.1
NAMIBIA	56.0	50.0	6.2
NIGER	64.0	87.5	6.4
NIGERIA	61.0	37.5	43.2
RWANDA	77.9	87.5	22.2
SENEGAL	66.6	25.0	20.9
SIERRA LEONE	60.0	62.5	2.8
SOUTH AFRICA	57.1	62.5	8.5
SWAZILAND	53.0	75.0	3.1
TANZANIA	66.0	37.5	13.9
TOGO	62.5	37.5	0.0
UGANDA	71.0	37.5	17.8
ZAMBIA	59.2	62.5	31.1
ZIMBABWE	59.4	75.0	29.7

Table A7. Capacity dimension indices categories

Country	Enabling environment	Organizational level	Individual level
ANGOLA	High	High	Very Low
BENIN	High	Very High	Low
BOTSWANA	Medium	High	Very Low
BURKINA FASO	High	Very High	Low
BURUNDI	High	High	Very Low
CAMEROON	High	Very Low	Very Low
CAPE VERDE	High	Very High	Very Low
CAR	High	Very High	Very Low
CHAD	Medium	Low	Very Low
CONGO (DRC)	Medium	Very High	Very Low
CONGO, REP	Medium	Very Low	Very Low
CÔTE D'IVOIRE	Medium	Low	Very Low
DJIBOUTI	High	Very High	Very Low
ETHIOPIA	High	High	Medium
GABON	Medium	Low	Low
GAMBIA (THE)	High	Very High	Very Low
GHANA	High	Very High	Medium
GUINEA	Medium	Medium	Very Low
GUINEA BISSAU	Medium	Very High	Very Low
KENYA	High	Low	Medium
LESOTHO	Medium	High	Very Low
LIBERIA	High	Very High	Very Low
MADAGASCAR	Medium	Low	Very Low
MALAWI	High	Very High	Very Low
MALI	High	High	Low
MAURITANIA	Medium	High	Very Low
MAURITIUS	High	High	Very Low
MOROCCO	High	High	Very Low
MOZAMBIQUE	Very High	High	Very Low
NAMIBIA	Medium	Medium	Very Low
NIGER	High	Very High	Very Low
NIGERIA	High	Low	Medium
RWANDA	High	Very High	Low
SENEGAL	High	Low	Low
SIERRA LEONE	Medium	High	Very Low
SOUTH AFRICA	Medium	High	Very Low
SWAZILAND	Medium	High	Very Low
TANZANIA	High	Low	Very Low
TOGO	High	Low	Very Low
UGANDA	High	Low	Very Low
ZAMBIA	Medium	High	Low
ZIMBABWE	Medium	High	Low

Table A8. Agricultural transformation and food security composite index values

No.	Country	ACI Agric	Level
1	ANGOLA	41.7	Medium
2	BENIN	56.7	Medium
3	BOTSWANA	40.5	Medium
4	BURKINA FASO	60.9	High
5	BURUNDI	34.9	Low
6	CAMEROON	57.8	Medium
7	CAPE VERDE	57.8	Medium
8	CAR	39.1	Low
9	CHAD	61.1	High
10	CONGO (DRC)	36.5	Low
11	CONGO, REP	49.9	Medium
12	CÔTE D'IVOIRE	33.2	Low
13	DJIBOUTI	45.9	Medium
14	ETHIOPIA	68.5	High
15	GABON	45.4	Medium
16	GAMBIA (THE)	67.2	High
17	GHANA	70.2	High
18	GUINEA	42.4	Medium
19	GUINEA BISSAU	59.1	Medium
20	KENYA	55.5	Medium
21	LESOTHO	53.8	Medium
22	LIBERIA	48.9	Medium
23	MADAGASCAR	57.6	Medium
24	MALAWI	61.3	High
25	MALI	68.3	High
26	MAURITANIA	37.5	Low
27	MAURITIUS	47.9	Medium
28	MOROCCO	65.2	High
29	MOZAMBIQUE	45.3	Medium
30	NAMIBIA	51.5	Medium
31	NIGER	64.8	High
32	NIGERIA	65.4	High
33	RWANDA	56.2	Medium
34	SENEGAL	61.0	High
35	SIERRA LEONE	65.3	High
36	SOUTH AFRICA	53.7	Medium
37	SWAZILAND	58.5	Medium
38	TANZANIA	56.2	Medium
39	TOGO	57.4	Medium
40	UGANDA	64.2	High
41	ZAMBIA	66.6	High
42	ZIMBABWE	56.9	Medium

Table A9. Agricultural transformation and food security component indices values

No.	Country	Agricultural strategy formulation and implementation	Training, research and development/innovations in agriculture	Role of private sector in the value chain	Information system
1	ANGOLA	54.3	21.4	73.1	58.3
2	BENIN	60.4	37.9	80.8	65.6
3	BOTSWANA	29.4	23.6	94.2	85.4
4	BURKINA FASO	59.5	40.8	75.0	90.6
5	BURUNDI	28.9	36.8	76.9	25.0
6	CAMEROON	56.1	41.0	75.0	72.9
7	CAPE VERDE	68.3	43.5	48.1	92.7
8	CAR	49.9	25.5	36.5	63.5
9	CHAD	68.6	37.8	71.2	95.8
10	CONGO (DRC)	19.3	41.7	44.2	89.6
11	CONGO, REP	47.1	40.1	53.8	64.6
12	CÔTE D'IVOIRE	23.9	22.1	75.0	50.0
13	DJIBOUTI	48.3	35.9	42.3	66.7
14	ETHIOPIA	69.8	47.1	78.8	97.9
15	GABON	51.9	32.9	53.8	50.0
16	GAMBIA (THE)	93.6	40.4	82.7	83.3
17	GHANA	67.8	53.2	82.7	88.5
18	GUINEA	49.1	22.6	53.8	88.5
19	GUINEA BISSAU	67.7	39.5	59.6	92.7
20	KENYA	70.6	33.9	73.1	67.7
21	LESOTHO	53.1	36.7	59.6	87.5
22	LIBERIA	50.2	26.6	76.9	89.6
23	MADAGASCAR	42.2	48.3	69.2	93.8
24	MALAWI	63.7	37.9	90.4	82.3
25	MALI	78.1	43.5	88.5	87.5
26	MAURITANIA	35.6	29.4	34.6	63.5
27	MAURITIUS	46.5	33.4	82.7	50.0
28	MOROCCO	65.4	48.4	73.1	85.4
29	MOZAMBIQUE	32.1	38.5	55.8	75.0
30	NAMIBIA	40.6	34.2	82.7	85.4
31	NIGER	78.4	40.4	82.7	82.3
32	NIGERIA	51.7	56.3	82.7	83.3
33	RWANDA	78.1	36.9	65.4	62.5
34	SENEGAL	53.5	40.4	90.4	90.6
35	SIERRA LEONE	74.8	40.8	82.7	88.5
36	SOUTH AFRICA	41.1	53.9	46.2	100
37	SWAZILAND	45.7	40.8	90.4	91.7
38	TANZANIA	42.2	43.7	84.6	78.1
39	TOGO	58.1	40.7	75.0	68.8
40	UGANDA	64.6	42.5	80.8	91.7
41	ZAMBIA	64.0	47.5	84.6	86.5
42	ZIMBABWE	45.6	45.9	69.2	82.3

Country Profiles

Angola

ACI Composite Index

ACI Composite Index value	17.2
Level of Capacity Development	Very Low
Rank	38

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	51.7
Aid effectiveness related to capacity development activities	67.5
Gender equality mainstreaming and social inclusion	83.3
Development agencies.....	100
Assessment of needs	50.0
Agricultural transformation and food security.....	41.7

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010)
 - Self-country assessment
- | | |
|-------|---------|
| ..... | 2.8 |
| ..... | Fragile |
| ..... | NA |

ACBF-related activities

Inputs/outputs related to capacity development	0
No. of active ACBF-supported projects in 2010	0
Total cumulative grant disbursed in 2010(US\$)	0

Benin

ACI Composite Index

ACI Composite Index value.....	43.4
Level of Capacity Development.....	Medium
Rank.....	11

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	58.7
Aid effectiveness related to capacity development activities.....	78.8
Gender equality mainstreaming and social inclusion.....	80.8
Development agencies.....	100
Assessment of needs.....	100
Agricultural transformation and food security.....	56.7

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....3.5
- State of Fragility (World Bank 2010).....Non-Fragile
- Self-country assessment.....4.0

ACBF-related activities

Inputs/outputs related to capacity development.....	21.1
No. of active ACBF-supported projects in 2010.....	2
Total cumulative grant disbursed in 2010(US\$).....	686,696

Botswana

ACI Composite Index

ACI Composite Index value.....	23.1
Level of Capacity Development.....	Low
Rank.....	33

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	44.5
Aid effectiveness related to capacity development activities.....	40.0
Gender equality mainstreaming and social inclusion.....	41.7
Development agencies.....	100
Assessment of needs.....	50.0
Agricultural transformation and food security.....	40.5

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....NA
- State of Fragility (World Bank 2010).....Non-Fragile
- Self-country assessment.....5.1

ACBF-related activities

Inputs/outputs related to capacity development.....	4.8
No. of active ACBF-supported projects in 2010.....	2
Total cumulative grant disbursed in 2010 (US\$).....	245,514

Burkina Faso

ACI Composite Index

ACI Composite Index value	53.4
Level of Capacity Development	Medium
Rank	3

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	57.8
Aid effectiveness related to capacity development activities	61.3
Gender equality mainstreaming and social inclusion	89.2
Development agencies	100
Assessment of needs	100
Agricultural transformation and food security	60.9

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010).....
 - Self-country assessment
- | | |
|-------|-------------|
| ..... | 3.8 |
| ..... | Non-Fragile |
| ..... | 4.3 |

ACBF-related activities

Inputs/outputs related to capacity development	25.6
No. of active ACBF-supported projects in 2010	6
Total cumulative grant disbursed in 2010 (US\$).....	3,747,629

Burundi

ACI Composite Index

ACI Composite Index value	39.5
Level of Capacity Development.....	Low
Rank	15

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	65.5
Aid effectiveness related to capacity development activities.....	48.8
Gender equality mainstreaming and social inclusion	79.2
Development agencies	50.0
Assessment of needs.....	100
Agricultural transformation and food security.....	34.9

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....3.1
- State of Fragility (World Bank 2010) Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development.....	18.6
No. of active ACBF-supported projects in 2010.....	2
Total cumulative grant disbursed in 2010 (US\$).....	787,624

Cameroon

ACI Composite Index

ACI Composite Index value	37.3
Level of Capacity Development.....	Low
Rank	17

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	50.0
Aid effectiveness related to capacity development activities.....	65.0
Gender equality mainstreaming and social inclusion	76.7
Development agencies.....	25.0
Assessment of needs	0
Agricultural transformation and food security.....	57.8

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010).....
 - Self-country assessment.....
- | | |
|---|-------------|
| IRAI Value(World Bank 2010) | 3.2 |
| State of Fragility (World Bank 2010)..... | Non-Fragile |
| Self-country assessment..... | 3.1 |

ACBF-related activities

Inputs/outputs related to capacity development	17.3
No. of active ACBF-supported projects in 2010	4
Total cumulative grant disbursed in 2010 (US\$).....	1,674,938

Cape Verde

ACI Composite Index

ACI Composite Index value	40.2
Level of Capacity Development	Medium
Rank	14

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	63.9
Aid effectiveness related to capacity development activities.....	48.8
Gender equality mainstreaming and social inclusion	83.3
Development agencies.....	100
Assessment of needs.....	100
Agricultural transformation and food security.....	57.8

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....4.1
- State of Fragility (World Bank 2010).....Non-Fragile
- Self-country assessment.....4.0

ACBF-related activities

Inputs/outputs related to capacity development	4.4
No. of active ACBF-supported projects in 2010	1
Total cumulative grant disbursed in 2010 (US\$).....	222,660

Central African Republic

ACI Composite Index

ACI Composite Index value.....	28.1
Level of Capacity Development.....	Low
Rank.....	25

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	49.5
Aid effectiveness related to capacity development activities	73.8
Gender equality mainstreaming and social inclusion	68.3
Development agencies.....	75.0
Assessment of needs.....	100
Agricultural transformation and food security	39.1

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....2.8
- State of Fragility (World Bank 2010).....Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	8.8
No. of active ACBF-supported projects in 2010	2
Total cumulative grant disbursed in 2010 (US\$)	734,982

Chad

ACI Composite Index

ACI Composite Index value	20.2
Level of Capacity Development.....	Low
Rank	36

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	50.6
Aid effectiveness related to capacity development activities	53.8
Gender equality mainstreaming and social inclusion.....	60.8
Development agencies	50.0
Assessment of needs	0
Agricultural transformation and food security... ..	61.1

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010).....
 - Self-country assessment
- | | |
|---|---------|
| IRAI Value(World Bank 2010) | 2.8 |
| State of Fragility (World Bank 2010)..... | Fragile |
| Self-country assessment | NA |

ACBF-related activities

Inputs/outputs related to capacity development.....	0.3
No. of active ACBF-supported projects in 2010.....	2
Total cumulative grant disbursed in 2010 (US\$).....	154,210

Congo (Dem. Rep. of)

ACI Composite Index

ACI Composite Index value	34.5
Level of Capacity Development.....	Low
Rank	20

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	53.4
Aid effectiveness related to capacity development activities	23.8
Gender equality mainstreaming and social inclusion.....	52.5
Development agencies.....	75.0
Assessment of needs.....	100
Agricultural transformation and food security.....	36.5

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010).....
 - Self-country assessment
- | | |
|---|---------|
| IRAI Value(World Bank 2010) | 2.7 |
| State of Fragility (World Bank 2010)..... | Fragile |
| Self-country assessment | NA |

ACBF-related activities

Inputs/outputs related to capacity development.....	18.4
No. of active ACBF-supported projects in 2010	2
Total cumulative grant disbursed in 2010 (US\$)	884,323

Congo

ACI Composite Index

ACI Composite Index value.....	34.1
Level of Capacity Development.....	Low
Rank.....	21

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	45.1
Aid effectiveness related to capacity development activities	56.3
Gender equality mainstreaming and social inclusion	75.8
Development agencies	0
Assessment of needs	0
Agricultural transformation and food security.....	49.9

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....
- State of Fragility (World Bank 2010).....
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	9.9
No. of active ACBF-supported projects in 2009	2
Total cumulative grant disbursed in 2009 (US\$).....	554,250

Côte d'Ivoire

ACI Composite Index

ACI Composite Index value.....	24.6
Level of Capacity Development.....	Low
Rank.....	30

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	47.2
Aid effectiveness related to capacity development activities.....	33.8
Gender equality mainstreaming and social inclusion.....	57.5
Development agencies.....	25.0
Assessment of needs.....	50.0
Agricultural transformation and food security.....	33.2

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....2.7
- State of Fragility (World Bank 2010).....Fragile
- Self-country assessment.....3.5

ACBF-related activities

Inputs/outputs related to capacity development.....	11.9
No. of active ACBF-supported projects in 2010.....	2
Total cumulative grant disbursed in 2010 (US\$).....	1,093,821

Djibouti

ACI Composite Index

ACI Composite Index value.....	18.2
Level of Capacity Development	Very Low
Rank	37

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	49.5
Aid effectiveness related to capacity development activities	73.8
Gender equality mainstreaming and social inclusion	97.5
Development agencies.....	75.0
Assessment of needs.....	100
Agricultural transformation and food security.....	45.9

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)3.2
- State of Fragility (World Bank 2010)..... Non-Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	0.1
No. of active ACBF-supported projects in 2010	0
Total cumulative grant disbursed in 2010 (US\$).....	77,288

Ethiopia

ACI Composite Index

ACI Composite Index value	52.8
Level of Capacity Development	Medium
Rank	4

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	48.7
Aid effectiveness related to capacity development activities	73.8
Gender equality mainstreaming and social inclusion	70.0
Development agencies.....	75.0
Assessment of needs	50.0
Agricultural transformation and food security.....	68.5

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010)
 - Self-country assessment
- | | |
|-------|-------------|
| ..... | 3.4 |
| ..... | Non-Fragile |
| ..... | NA |

ACBF-related activities

Inputs/outputs related to capacity development	40.5
No. of active ACBF-supported projects in 2010	3
Total cumulative grant disbursed in 2010 (US\$)	2,332,234

Gabon

ACI Composite Index

ACI Composite Index value.....	40.4
Level of Capacity Development	Medium
Rank	13

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	41.0
Aid effectiveness related to capacity development activities.....	58.8
Gender equality mainstreaming and social inclusion	68.3
Development agencies.....	75.0
Assessment of needs	0
Agricultural transformation and food security.....	45.4

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....NA
- State of Fragility (World Bank 2010)..... Non-Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	21.8
No. of active ACBF-supported projects in 2010	5
Total cumulative grant disbursed in 2010 (US\$).....	1,450,812

Gambia (The)

ACI Composite Index

ACI Composite Index value	33.9
Level of Capacity Development.....	Low
Rank	22

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	63.8
Aid effectiveness related to capacity development activities.....	51.3
Gender equality mainstreaming and social inclusion	79.2
Development agencies.....	75.0
Assessment of needs.....	100
Agricultural transformation and food security	67.2

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010).....
 - Self-country assessment
- | | |
|-------|-------------|
| ..... | 3.4 |
| ..... | Non-Fragile |
| ..... | NA |

ACBF-related activities

Inputs/outputs related to capacity development	1.4
No. of active ACBF-supported projects in 2010	1
Total cumulative grant disbursed in 2010 (US\$)	68,055

Ghana

ACI Composite Index

ACI Composite Index value	60.1
Level of Capacity Development	High
Rank	1

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	58.6
Aid effectiveness related to capacity development activities	82.5
Gender equality mainstreaming and social inclusion	75.8
Development agencies.....	75.0
Assessment of needs.....	100
Agricultural transformation and food security	70.2

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....3.9
- State of Fragility (World Bank 2010).....Non-Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development.....	56.5
No. of active ACBF-supported projects in 2010	6
Total cumulative grant disbursed in 2010 (US\$)	3,057,139

Guinea

ACI Composite Index

ACI Composite Index value.....	15.7
Level of Capacity Development	Very Low
Rank.....	39

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	53.3
Aid effectiveness related to capacity development activities	55.0
Gender equality mainstreaming and social inclusion.....	60.8
Development agencies	50.0
Assessment of needs	50.0
Agricultural transformation and food security.....	42.4

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....2.8
- State of Fragility (World Bank 2010)..... Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	0
No. of active ACBF-supported projects in 2010.....	0
Total cumulative grant disbursed in 2009 (US\$).....	0

Guinea Bissau

ACI Composite Index

ACI Composite Index value	27.0
Level of Capacity Development.....	Low
Rank	27

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	48.5
Aid effectiveness related to capacity development activities.....	38.8
Gender equality mainstreaming and social inclusion.....	80.0
Development agencies.....	100
Assessment of needs.....	100
Agricultural transformation and food security	59.1

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010).....
 - Self-country assessment
- | | |
|---|---------|
| IRAI Value(World Bank 2010) | 2.7 |
| State of Fragility (World Bank 2010)..... | Fragile |
| Self-country assessment | NA |

ACBF-related activities

Inputs/outputs related to capacity development	1.5
No. of active ACBF-supported projects in 2010	1
Total cumulative grant disbursed in 2010 (US\$).....	67,952

Kenya

ACI Composite Index

ACI Composite Index value	58.1
Level of Capacity Development	Medium
Rank	2

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	70.2
Aid effectiveness related to capacity development activities	33.8
Gender equality mainstreaming and social inclusion	79.2
Development agencies.....	25.0
Assessment of needs	50.0
Agricultural transformation and food security	55.5

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....3.8
- State of Fragility (World Bank 2010).....Non-Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	47.1
No. of active ACBF-supported projects in 2010	7
Total cumulative grant disbursed in 2010 (US\$)	2,180,753

Lesotho

ACI Composite Index

ACI Composite Index value.....	24.6
Level of Capacity Development.....	Low
Rank.....	31

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	59.4
Aid effectiveness related to capacity development activities.....	38.8
Gender equality mainstreaming and social inclusion	74.2
Development agencies.....	100
Assessment of needs	50.0
Agricultural transformation and food security.....	53.8

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....3.5
- State of Fragility (World Bank 2010)..... Non-Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	4.6
No. of active ACBF-supported projects in 2010	1
Total cumulative grant disbursed in 2010 (US\$).....	254,928

Liberia

ACI Composite Index

ACI Composite Index value	35.6
Level of Capacity Development	Low
Rank	19

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	75.4
Aid effectiveness related to capacity development activities.....	52.5
Gender equality mainstreaming and social inclusion	54.2
Development agencies.....	100
Assessment of needs.....	100
Agricultural transformation and food security.....	48.9

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010)
 - Self-country assessment
- | | |
|--|---------|
| IRAI Value(World Bank 2010) | 2.9 |
| State of Fragility (World Bank 2010) | Fragile |
| Self-country assessment | 4.0 |

ACBF-related activities

Inputs/outputs related to capacity development	5.8
No. of active ACBF-supported projects in 2010	1
Total cumulative grant disbursed in 2010 (US\$).....	184,207

Madagascar

ACI Composite Index

ACI Composite Index value.....	10.2
Level of Capacity Development	Very Low
Rank	42

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	35.9
Aid effectiveness related to capacity development activities.....	63.8
Gender equality mainstreaming and social inclusion	75.8
Development agencies.....	75.0
Assessment of needs	0
Agricultural transformation and food security.....	57.6

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....3.4
- State of Fragility (World Bank 2010).....Non-Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development.....	0.1
No. of active ACBF-supported projects in 2010	0
Total cumulative grant disbursed in 2010 (US\$).....	73,524

Malawi

ACI Composite Index

ACI Composite Index value	27.7
Level of Capacity Development.....	Low
Rank	26

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	61.0
Aid effectiveness related to capacity development activities.....	86.3
Gender equality mainstreaming and social inclusion.....	80.8
Development agencies.....	75.0
Assessment of needs.....	100
Agricultural transformation and food security	61.3

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
- State of Fragility (World Bank 2010).....
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	5.1
No. of active ACBF-supported projects in 2010.....	2
Total cumulative grant disbursed in 2010 (US\$).....	183,834

Mali

ACI Composite Index

ACI Composite Index value	50.3
Level of Capacity Development	Medium
Rank	7

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	64.6
Aid effectiveness related to capacity development activities	58.8
Gender equality mainstreaming and social inclusion	75.8
Development agencies	100
Assessment of needs	50.0
Agricultural transformation and food security	68.3

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
- State of Fragility (World Bank 2010).....
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development.....	27.0
No. of active ACBF-supported projects in 2010	4
Total cumulative grant disbursed in 2010 (US\$).....	855,166

Mauritania

ACI Composite Index

ACI Composite Index value	14.6
Level of Capacity Development	Very Low
Rank	41

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	39.2
Aid effectiveness related to capacity development activities	70.0
Gender equality mainstreaming and social inclusion	68.3
Development agencies	25.0
Assessment of needs	100
Agricultural transformation and food security	39.1

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
- State of Fragility (World Bank 2010)..... Non-Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development.....	3.6
No. of active ACBF-supported projects in 2010	1
Total cumulative grant disbursed in 2010 (US\$).....	232,361

Mauritius

ACI Composite Index

ACI Composite Index value	14.8
Level of Capacity Development	Very Low
Rank	40

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	65.6
Aid effectiveness related to capacity development activities	63.8
Gender equality mainstreaming and social inclusion	75.8
Development agencies	50.0
Assessment of needs	100
Agricultural transformation and food security	47.9

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
- State of Fragility (World Bank 2010)
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	0
No. of active ACBF-supported projects in 2010	0
Total cumulative grant disbursed in 2010 (US\$)	0

Morocco

ACI Composite Index

ACI Composite Index value	36.2
Level of Capacity Development	Low
Rank	18

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	72.6
Aid effectiveness related to capacity development activities	73.8
Gender equality mainstreaming and social inclusion	76.7
Development agencies	50.0
Assessment of needs	100
Agricultural transformation and food security	65.2

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
- State of Fragility (World Bank 2010).....
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development.....	2.6
No. of active ACBF-supported projects in 2010	1
Total cumulative grant disbursed in 2010 (US\$)	6,903

Mozambique

ACI Composite Index

ACI Composite Index value	33.4
Level of Capacity Development.....	Low
Rank	23

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	66.1
Aid effectiveness related to capacity development activities.....	85.0
Gender equality mainstreaming and social inclusion.....	91.7
Development agencies	50.0
Assessment of needs.....	100
Agricultural transformation and food security	45.3

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010).....
 - Self-country assessment
- | | |
|---|-------------|
| IRAI Value(World Bank 2010) | 3.7 |
| State of Fragility (World Bank 2010)..... | Non-Fragile |
| Self-country assessment | NA |

ACBF-related activities

Inputs/outputs related to capacity development	11.1
No. of active ACBF-supported projects in 2010.....	2
Total cumulative grant disbursed in 2010 (US\$).....	612,940

Namibia

ACI Composite Index

ACI Composite Index value	25.2
Level of Capacity Development.....	Low
Rank	29

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	34.0
Aid effectiveness related to capacity development activities	42.5
Gender equality mainstreaming and social inclusion.....	91.7
Development agencies	50.0
Assessment of needs	50.0
Agricultural transformation and food security.....	51.5

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....NA
- State of Fragility (World Bank 2010).....Non-Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development.....	6.2
No. of active ACBF-supported projects in 2010.....	2
Total cumulative grant disbursed in 2010 (US\$)	582,589

Niger

ACI Composite Index

ACI Composite Index value	30.7
Level of Capacity Development	Low
Rank	24

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	57.9
Aid effectiveness related to capacity development activities	57.5
Gender equality mainstreaming and social inclusion	76.7
Development agencies.....	75.0
Assessment of needs.....	100
Agricultural transformation and food security	64.8

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010).....
 - Self-country assessment
- | | |
|---|-------------|
| IRAI Value(World Bank 2010) | 3.4 |
| State of Fragility (World Bank 2010)..... | Non-Fragile |
| Self-country assessment | 4.3 |

ACBF-related activities

Inputs/outputs related to capacity development	6.4
No. of active ACBF-supported projects in 2010	1
Total cumulative grant disbursed in 2010 (US\$)	355,685

Nigeria

ACI Composite Index

ACI Composite Index value	50.5
Level of Capacity Development	Medium
Rank	6

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	57.3
Aid effectiveness related to capacity development activities	62.5
Gender equality mainstreaming and social inclusion	63.3
Development agencies.....	25.0
Assessment of needs	50.0
Agricultural transformation and food security.....	65.4

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010).....
 - Self-country assessment
- | | |
|-------|-------------|
| ..... | 3.4 |
| ..... | Non-Fragile |
| ..... | NA |

ACBF-related activities

Inputs/outputs related to capacity development.....	43.2
No. of active ACBF-supported projects in 2010	7
Total cumulative grant disbursed in 2010 (US\$).....	594,936

Rwanda

ACI Composite Index

ACI Composite Index value	51.9
Level of Capacity Development	Medium
Rank	5

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	64.4
Aid effectiveness related to capacity development activities	82.5
Gender equality mainstreaming and social inclusion	86.7
Development agencies.....	75.0
Assessment of needs.....	100
Agricultural transformation and food security	56.2

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....3.8
- State of Fragility (World Bank 2010)..... Non-Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	22.2
No. of active ACBF-supported projects in 2010	2
Total cumulative grant disbursed in 2010 (US\$).....	1,005,029

Senegal

ACI Composite Index

ACI Composite Index value	42.7
Level of Capacity Development	Medium
Rank	12

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	61.1
Aid effectiveness related to capacity development activities	76.3
Gender equality mainstreaming and social inclusion	62.5
Development agencies	50.0
Assessment of needs	0
Agricultural transformation and food security	61.0

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
- State of Fragility (World Bank 2010).....
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	20.9
No. of active ACBF-supported projects in 2010.....	5
Total cumulative grant disbursed in 2010 (US\$).....	1,484,362

Sierra Leone

ACI Composite Index

ACI Composite Index value	23.6
Level of Capacity Development	Low
Rank	32

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	49.5
Aid effectiveness related to capacity development activities	48.8
Gender equality mainstreaming and social inclusion	81.7
Development agencies	25.0
Assessment of needs	100
Agricultural transformation and food security	65.3

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010)
 - Self-country assessment
- | | |
|--|---------|
| IRAI Value(World Bank 2010) | 3.3 |
| State of Fragility (World Bank 2010) | Fragile |
| Self-country assessment | NA |

ACBF-related activities

Inputs/outputs related to capacity development	2.8
No. of active ACBF-supported projects in 2010	2
Total cumulative grant disbursed in 2010 (US\$)	21,387

South Africa

ACI Composite Index

ACI Composite Index value	25.8
Level of Capacity Development.....	Low
Rank	28

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	32.4
Aid effectiveness related to capacity development activities	53.8
Gender equality mainstreaming and social inclusion	85.0
Development agencies.....	75.0
Assessment of needs	50.0
Agricultural transformation and food security	53.7

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....NA
- State of Fragility (World Bank 2010).....Non-Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	8.5
No. of active ACBF-supported projects in 2010	4
Total cumulative grant disbursed in 2010 (US\$)	353,644

Swaziland

ACI Composite Index

ACI Composite Index value	22.5
Level of Capacity Development.....	Low
Rank	34

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	31.1
Aid effectiveness related to capacity development activities	53.8
Gender equality mainstreaming and social inclusion	74.2
Development agencies.....	100
Assessment of needs	50.0
Agricultural transformation and food security.....	58.5

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....NA
- State of Fragility (World Bank 2010).....Non-Fragile
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	3.1
No. of active ACBF-supported projects in 2010	1
Total cumulative grant disbursed in 2010 (US\$).....	297,416

Tanzania

ACI Composite Index

ACI Composite Index value	37.6
Level of Capacity Development.....	Low
Rank	16

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	47.1
Aid effectiveness related to capacity development activities.....	77.5
Gender equality mainstreaming and social inclusion.....	73.3
Development agencies.....	75.0
Assessment of needs	0
Agricultural transformation and food security	56.2

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....3.8
- State of Fragility (World Bank 2010)..... Non-Fragile
- Self-country assessment..... 2.7

ACBF-related activities

Inputs/outputs related to capacity development	13.9
No. of active ACBF-supported projects in 2010	3
Total cumulative grant disbursed in 2010 (US\$)	855,654

Togo

ACI Composite Index

ACI Composite Index value	20.7
Level of Capacity Development.....	Low
Rank	35

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	39.5
Aid effectiveness related to capacity development activities	73.8
Gender equality mainstreaming and social inclusion	74.2
Development agencies.....	75.0
Assessment of needs	0
Agricultural transformation and food security	57.4

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010)
 - Self-country assessment
- | | |
|--|---------|
| IRAI Value(World Bank 2010) | 2.9 |
| State of Fragility (World Bank 2010) | Fragile |
| Self-country assessment | NA |

ACBF-related activities

Inputs/outputs related to capacity development	0
No. of active ACBF-supported projects in 2010	0
Total cumulative grant disbursed in 2010 (US\$)	24,871

Uganda

ACI Composite Index

ACI Composite Index value	45.2
Level of Capacity Development	Medium
Rank	10

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	57.0
Aid effectiveness related to capacity development activities	75.0
Gender equality mainstreaming and social inclusion	80.8
Development agencies	25.0
Assessment of needs	50.0
Agricultural transformation and food security	64.2

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
- State of Fragility (World Bank 2010).....
- Self-country assessment

ACBF-related activities

Inputs/outputs related to capacity development	17.8
No. of active ACBF-supported projects in 2010	2
Total cumulative grant disbursed in 2010 (US\$)	983,594

Zambia

ACI Composite Index

ACI Composite Index value.....	49.7
Level of Capacity Development.....	Medium
Rank.....	8

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development.....	39.5
Aid effectiveness related to capacity development activities.....	61.3
Gender equality mainstreaming and social inclusion.....	76.7
Development agencies.....	25.0
Assessment of needs.....	100
Agricultural transformation and food security.....	66.6

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010).....3.4
- State of Fragility (World Bank 2010).....Non-Fragile
- Self-country assessment.....3.4

ACBF-related activities

Inputs/outputs related to capacity development.....	31.1
No. of active ACBF-supported projects in 2010.....	3
Total cumulative grant disbursed in 2010 (US\$).....	1,156,815

Zimbabwe

ACI Composite Index

ACI Composite Index value	48.6
Level of Capacity Development	Medium
Rank	9

Assessment of capacity development areas: Component Indexes values

Policy choices for capacity development	57.7
Aid effectiveness related to capacity development activities	36.3
Gender equality mainstreaming and social inclusion	84.2
Development agencies	50.0
Assessment of needs.....	100
Agricultural transformation and food security.....	56.9

Assessment of the quality of the country's policy and institutional framework

- IRAI Value(World Bank 2010)
 - State of Fragility (World Bank 2010).....
 - Self-country assessment
- | | |
|---|---------|
| IRAI Value(World Bank 2010) | 2.0 |
| State of Fragility (World Bank 2010)..... | Fragile |
| Self-country assessment | 3.9 |

ACBF-related activities

Inputs/outputs related to capacity development.....	29.7
No. of active ACBF-supported projects in 2010	5
Total cumulative grant disbursed in 2010 (US\$).....	1,438,586

Compendium of Statistics

Strategic policy choices for capacity development

No.	Country	Existence of a National Development Strategy	Year of adoption of latest version	Integration of Capacity Development in National Development Strategy/National Development Plan (NDS)	Specific National Program for CD	Level of Government Commitment to MDGs	Number of MDGs achieved
1	ANGOLA	YES	2009	CD mainstreamed, clear objectives	YES	Average	4
2	BENIN	YES	2011	CD mainstreamed, clear objectives	NO	HIGH	0
3	BOTSWANA	YES	2010	CD mainstreamed, no clear objectives	YES	HIGH	0
4	BURKINA FASO	YES	2010	CD mainstreamed, clear objectives	YES	HIGH	1
5	BURUNDI	YES	2006	CD mainstreamed, clear objectives	YES	HIGH	0
6	CAMEROON	YES	2009	CD mainstreamed, clear objectives	NO	AVERAGE	0
7	CAPE VERDE	YES	2008	CD mainstreamed, no clear objectives	YES	HIGH	5
8	CAR	YES	2007	CD mainstreamed, clear objectives	YES	LOW	0
9	CHAD	YES	2008	CD mainstreamed, clear objectives	YES	HIGH	0
10	CONGO (DRC)	YES	2006	CD mainstreamed, clear objectives	YES	LOW	0
11	CONGO, REP	YES	2008	CD mainstreamed, clear objectives	NO	HIGH	4
12	CÔTE D'IVOIRE	YES	2009	CD mainstreamed, clear objectives	NO	HIGH	0
13	DJIBOUTI	YES	2010	CD mainstreamed, clear objectives	NO	AVERAGE	2
14	ETHIOPIA	YES	2011	CD mainstreamed, clear objectives	YES	HIGH	0
15	GABON	YES	2011	CD mainstreamed, no clear objectives	NO	AVERAGE	2
16	GAMBIA (THE)	YES	2007	CD not mainstreamed	NO	HIGH	5
17	GHANA	YES	2010	CD mainstreamed, clear objectives	NO	HIGH	0
18	GUINEA	YES	2011	CD mainstreamed, clear objectives	YES	LOW	0
19	GUINEA BISSAU	YES	2004	CD mainstreamed, clear objectives	YES	AVERAGE	0
20	KENYA	YES	2008	CD mainstreamed, clear objectives	YES	HIGH	2
21	LESOTHO	YES	2009	CD mainstreamed, clear objectives	YES	HIGH	0
22	LIBERIA	YES	2008	CD mainstreamed, clear objectives	YES	HIGH	0
23	MADAGASCAR	YES	2007	CD mainstreamed, clear objectives	YES	AVERAGE	0
24	MALAWI	YES	2011	CD mainstreamed, clear objectives	NO	HIGH	0
25	MALI	YES	2006	CD mainstreamed, no clear objectives	YES	HIGH	2
26	MAURITANIA	YES	2011	CD mainstreamed, no clear objectives	NO	AVERAGE	1
27	MAURITIUS	YES	2010	CD mainstreamed, no clear objectives	YES	AVERAGE	2
28	MOROCCO	YES	2008	CD mainstreamed, no clear objectives	YES	AVERAGE	4
29	MOZAMBIQUE	YES	2011	CD mainstreamed, no clear objectives	YES	HIGH	0
30	NAMIBIA	YES	2001	CD mainstreamed, no clear objectives	NO	HIGH	3
31	NIGER	YES	2007	CD mainstreamed, clear objectives	YES	HIGH	0
32	NIGERIA	YES	2010	CD mainstreamed, clear objectives	YES	HIGH	0
33	RWANDA	YES	2007	CD mainstreamed, clear objectives	YES	HIGH	4
34	SENEGAL	YES	2011	CD mainstreamed, no clear objectives	YES	HIGH	0
35	SIERRA LEONE	YES	2009	CD mainstreamed, clear objectives	NO	HIGH	0
36	SOUTH AFRICA	YES	...	CD mainstreamed, no clear objectives	NO	AVERAGE	...
37	SWAZILAND	YES	2006	CD mainstreamed, clear objectives	NO	LOW	0
38	TANZANIA	YES	2010	CD not mainstreamed	NO	HIGH	1
39	TOGO	YES	2009	CD mainstreamed, no clear objectives	NO	AVERAGE	0
40	UGANDA	YES	2010	CD mainstreamed, clear objectives	NO	AVERAGE	3
41	ZAMBIA	YES	2011	CD mainstreamed, clear objectives	YES	HIGH	1
42	ZIMBABWE	YES	2010	CD mainstreamed, no clear objectives	NO	HIGH	1

(...) Data not available

NDS = National Development Strategy/National Development Plan

CD = Capacity Development

MDGs = Millennium Development Goals

Policy environment/Efficiency of instrument

No.	Country	Level of legitimacy of the National Development Strategy	Levels of incentives for compliance provided by the National Development Strategy	Level of flexibility of the National Development Strategy
1	ANGOLA	AVERAGE	AVERAGE	AVERAGE
2	BENIN	HIGH	HIGH	HIGH
3	BOTSWANA	HIGH	LOW	AVERAGE
4	BURKINA FASO	HIGH	AVERAGE	AVERAGE
5	BURUNDI	HIGH	HIGH	HIGH
6	CAMEROON	HIGH	AVERAGE	AVERAGE
7	CAPE VERDE	HIGH	HIGH	LOW
8	CAR	HIGH	HIGH	AVERAGE
9	CHAD	AVERAGE	HIGH	HIGH
10	CONGO (DRC)	HIGH	HIGH	HIGH
11	CONGO, REP	HIGH	HIGH	AVERAGE
12	CÔTE D'IVOIRE	HIGH	HIGH	HIGH
13	DJIBOUTI	AVERAGE	AVERAGE	HIGH
14	ETHIOPIA	HIGH	AVERAGE	LOW
15	GABON	AVERAGE	AVERAGE	AVERAGE
16	GAMBIA (THE)	HIGH	HIGH	HIGH
17	GHANA	HIGH	HIGH	AVERAGE
18	GUINEA	HIGH	AVERAGE	HIGH
19	GUINEA BISSAU	HIGH	HIGH	HIGH
20	KENYA	HIGH	HIGH	HIGH
21	LESOTHO	HIGH	HIGH	AVERAGE
22	LIBERIA	HIGH	HIGH	AVERAGE
23	MADAGASCAR	AVERAGE	AVERAGE	LOW
24	MALAWI	HIGH	AVERAGE	AVERAGE
25	MALI	HIGH	HIGH	HIGH
26	MAURITANIA	HIGH	HIGH	AVERAGE
27	MAURITIUS	HIGH	AVERAGE	AVERAGE
28	MOROCCO	AVERAGE	AVERAGE	LOW
29	MOZAMBIQUE	HIGH	AVERAGE	HIGH
30	NAMIBIA	AVERAGE	LOW	LOW
31	NIGER	HIGH	AVERAGE	HIGH
32	NIGERIA	AVERAGE	HIGH	HIGH
33	RWANDA	HIGH	HIGH	HIGH
34	SENEGAL	AVERAGE	AVERAGE	AVERAGE
35	SIERRA LEONE	HIGH	AVERAGE	AVERAGE
36	SOUTH AFRICA	AVERAGE	AVERAGE	AVERAGE
37	SWAZILAND	HIGH	LOW	HIGH
38	TANZANIA	AVERAGE	AVERAGE	AVERAGE
39	TOGO	HIGH	AVERAGE	HIGH
40	UGANDA	HIGH	HIGH	AVERAGE
41	ZAMBIA	HIGH	AVERAGE	AVERAGE
42	ZIMBABWE	HIGH	AVERAGE	AVERAGE

Dialogue mechanisms for capacity development

No.	Country	Effective dialog mechanism (and other links as appropriate) among domestic institutions (civil society, private sector) engaged in CD	Level of effectiveness	Effective dialogue mechanism established by Government with development partners relating specifically to CD	Level of effectiveness
1	ANGOLA	Informal dialog	AVERAGE	CD discussed within broader dial	AVERAGE
2	BENIN	No institutionalized mechanism	...	No institutionalized mechanism	VERY HIGH
3	BOTSWANA	Institutionalized dialog	HIGH	Institutionalized dialog	AVERAGE
4	BURKINA FASO	Institutionalized dialog	LOW	Institutionalized dialog	LOW
5	BURUNDI	Institutionalized dialog	AVERAGE	Institutionalized dialog	AVERAGE
6	CAMEROON	Informal dialog	AVERAGE	No institutionalized mechanism	HIGH
7	CAPE VERDE	Informal dialog	LOW	CD discussed within broader dial	HIGH
8	CAR	Institutionalized dialog	AVERAGE	CD discussed within broader dial	HIGH
9	CHAD	Institutionalized dialog	AVERAGE	Institutionalized dialog	AVERAGE
10	CONGO (DRC)	Institutionalized dialog	HIGH	Institutionalized dialog	HIGH
11	CONGO, REP	Informal dialog	VERY LOW	No institutionalized mechanism	...
12	CÔTE D'IVOIRE	Institutionalized dialog	AVERAGE	No institutionalized mechanism	...
13	DJIBOUTI	Institutionalized dialog	AVERAGE	Institutionalized dialog	AVERAGE
14	ETHIOPIA	Informal dialog	LOW	CD discussed within broader dial	AVERAGE
15	GABON	Institutionalized dialog	LOW	Institutionalized dialog	LOW
16	GAMBIA (THE)	No institutionalized mechanism	...	CD discussed within broader dial	VERY HIGH
17	GHANA	Informal dialog	HIGH	CD discussed within broader dial	HIGH
18	GUINEA	Institutionalized dialog	LOW	Institutionalized dialog	AVERAGE
19	GUINEA BISSAU	No institutionalized mechanism	VERY HIGH	No institutionalized mechanism	...
20	KENYA	Institutionalized dialog	AVERAGE	Institutionalized dialog	AVERAGE
21	LESOTHO	No institutionalized mechanism	AVERAGE	Institutionalized dialog	AVERAGE
22	LIBERIA	Institutionalized dialog	HIGH	Institutionalized dialog	HIGH
23	MADAGASCAR	Informal dialog	...	CD discussed within broader dial	...
24	MALAWI	Institutionalized dialog	HIGH	No institutionalized mechanism	HIGH
25	MALI	Institutionalized dialog	VERY HIGH	Institutionalized dialog	AVERAGE
26	MAURITANIA	Informal dialog	AVERAGE	CD discussed within broader dial	AVERAGE
27	MAURITIUS	Institutionalized dialog	HIGH	Institutionalized dialog	VERY HIGH
28	MOROCCO	Institutionalized dialog	AVERAGE	Institutionalized dialog	AVERAGE
29	MOZAMBIQUE	Institutionalized dialog	VERY HIGH	CD discussed within broader dial	HIGH
30	NAMIBIA	No institutionalized mechanism	...	CD discussed within broader dial	AVERAGE
31	NIGER	Informal dialog	AVERAGE	No institutionalized mechanism	...
32	NIGERIA	No institutionalized mechanism	...	Institutionalized dialog	AVERAGE
33	RWANDA	Institutionalized dialog	HIGH	CD discussed within broader dial	HIGH
34	SENEGAL	Institutionalized dialog	AVERAGE	Institutionalized dialog	AVERAGE
35	SIERRA LEONE	Institutionalized dialog	AVERAGE	CD discussed within broader dial	HIGH
36	SOUTH AFRICA	Institutionalized dialog	AVERAGE	...	HIGH
37	SWAZILAND	Informal dialog	LOW	No institutionalized mechanism	...
38	TANZANIA	Institutionalized dialog	VERY HIGH	CD discussed within broader dial	HIGH
39	TOGO	No institutionalized mechanism	...	No institutionalized mechanism	...
40	UGANDA	Informal dialog	AVERAGE	CD discussed within broader dial	AVERAGE
41	ZAMBIA	No institutionalized mechanism	...	CD discussed within broader dial	AVERAGE
42	ZIMBABWE	Institutionalized dialog	AVERAGE	Institutionalized dialog	HIGH

(...) Data not available

Dialogue mechanisms for capacity development (Cont'd)

No.	Country	During 2009 calendar year, how frequently did the Head of State, the Head of government and/or other high officials speak publicly and favorably about capacity development efforts?	Level of civil society participation in priority setting related to capacity development agenda	Level of transparency of information to civil society about the capacity development agenda
1	ANGOLA	...	...	...
2	BENIN	At least 3 times	AVERAGE	HIGH
3	BOTSWANA	At least 3 times	AVERAGE	HIGH
4	BURKINA FASO	At least 3 times	AVERAGE	LOW
5	BURUNDI	At least 3 times	AVERAGE	HIGH
6	CAMEROON	Once or twice	HIGH	AVERAGE
7	CAPE VERDE	At least 3 times	HIGH	AVERAGE
8	CAR	At least 3 times	HIGH	HIGH
9	CHAD	At least 3 times	HIGH	AVERAGE
10	CONGO (DRC)	Once or twice	HIGH	HIGH
11	CONGO, REP	At least 3 times	LOW	LOW
12	CÔTE D'IVOIRE	Once or twice	AVERAGE	LOW
13	DJIBOUTI	Once or twice	AVERAGE	AVERAGE
14	ETHIOPIA	At least 3 times	LOW	HIGH
15	GABON	At least 3 times	AVERAGE	AVERAGE
16	GAMBIA (THE)	At least 3 times	HIGH	AVERAGE
17	GHANA	At least 3 times	HIGH	HIGH
18	GUINEA	Once or twice	AVERAGE	AVERAGE
19	GUINEA BISSAU	Once or twice	LOW	LOW
20	KENYA	At least 3 times	HIGH	HIGH
21	LESOTHO	At least 3 times	HIGH	HIGH
22	LIBERIA	At least 3 times	HIGH	HIGH
23	MADAGASCAR	No public speech	LOW	LOW
24	MALAWI	At least 3 times	HIGH	HIGH
25	MALI	At least 3 times	HIGH	AVERAGE
26	MAURITANIA	No public speech	LOW	LOW
27	MAURITIUS	At least 3 times	HIGH	HIGH
28	MOROCCO	At least 3 times	HIGH	AVERAGE
29	MOZAMBIQUE	Once or twice	AVERAGE	HIGH
30	NAMIBIA	At least 3 times	LOW	AVERAGE
31	NIGER	Once or twice	HIGH	AVERAGE
32	NIGERIA	At least 3 times	LOW	AVERAGE
33	RWANDA	At least 3 times	AVERAGE	AVERAGE
34	SENEGAL	At least 3 times	HIGH	HIGH
35	SIERRA LEONE	At least 3 times	LOW	AVERAGE
36	SOUTH AFRICA	...	...	...
37	SWAZILAND	Once or twice	LOW	LOW
38	TANZANIA	...	...	...
39	TOGO	Once or twice	LOW	AVERAGE
40	UGANDA	At least 3 times	HIGH	AVERAGE
41	ZAMBIA	...	...	...
42	ZIMBABWE	At least 3 times	HIGH	HIGH

(...) Data not available

Strategic policy choices for improving the statistical system

No.	Country	Existence of a National Strategy for the Development of Statistics (NSDS)	Year of adoption of NSDS	NSDS is fully operational	Statistics taught at any of the higher training institutions	National Statistics Office operate an in-service training center	Ratification of the African Charter on Statistics (adopted on February 3, 2009)
1	ANGOLA	YES	2011	YES	YES	YES	YES
2	BENIN	YES	2008	YES	YES	YES	NO
3	BOTSWANA	NO	NA	...	YES	NO	NO
4	BURKINA FASO	YES	2003	YES	NO	YES	YES
5	BURUNDI	YES	2011	YES	NO	NO	YES
6	CAMEROON	YES	2009	YES	YES	NO	YES
7	CAPE VERDE	YES	2006	YES	YES	NO	YES
8	CAR	NO	NA	NO	YES	NO	NO
9	CHAD	NO	NA	...	NO	NO	NO
10	CONGO (DRC)	NO	NA	NO	YES	NO	NO
11	CONGO, REP	NO	NA	NO	YES	NO	YES
12	CÔTE D'IVOIRE	NO	NA	...	YES	...	YES
13	DJIBOUTI	YES	2010	YES	YES	NO	NO
14	ETHIOPIA	YES	2009	YES	YES	NO	NO
15	GABON	YES	2010	NO	YES	NO	NO
16	GAMBIA (THE)	YES	2007	YES	YES	YES	YES
17	GHANA	YES	2008	YES	YES	NO	NO
18	GUINEA	YES	2008	YES	YES	NO	NO
19	GUINEA BISSAU	NO	NA	NO	YES	YES	NO
20	KENYA	YES	2011	YES	YES	NO	YES
21	LESOTHO	YES	2011	YES	YES	NO	NO
22	LIBERIA	YES	2008	YES	NO	YES	YES
23	MADAGASCAR	YES	2008	NO	YES	YES	NO
24	MALAWI	YES	2006	YES	YES	YES	YES
25	MALI	YES	2006	YES	NO	NO	YES
26	MAURITANIA	YES	2008	YES	NO	NO	NO
27	MAURITIUS	YES	2007	YES	YES	YES	YES
28	MOROCCO	YES	2004	YES	YES	YES	YES
29	MOZAMBIQUE	YES	2008	YES	YES	YES	YES
30	NAMIBIA	YES	2006	NO	YES	YES	NO
31	NIGER	YES	2008	YES	YES	YES	NO
32	NIGERIA	YES	2010	YES	YES	YES	NO
33	RWANDA	YES	2010	YES	YES	NO	NO
34	SENEGAL	YES	2007	YES	YES	YES	YES
35	SIERRA LEONE	YES	2008	YES	YES	NO	NO
36	SOUTH AFRICA	NO	NA	...	YES	YES	NO
37	SWAZILAND	NO	NA	...	YES	NO	NO
38	TANZANIA	YES	2010	NO	YES	NO	NO
39	TOGO	YES	2008	YES	YES	NO	NO
40	UGANDA	YES	2006	YES	YES	NO	YES
41	ZAMBIA	NO	NA	...	YES	NO	NO
42	ZIMBABWE	YES	2007	YES	YES	YES	NO

(...) Data not available

NA - Not applicable

Financial commitment for capacity development

No.	Country	Proportion of Government budget allocated to CD (%)	Official Development Assistance as % of government budget
1	ANGOLA	...	...
2	BENIN	5.25	1.54
3	BOTSWANA	...	0.72
4	BURKINA FASO	2.60	3.22
5	BURUNDI	0.08	17.29
6	CAMEROON	...	...
7	CAPE VERDE	14.50	37.78
8	CAR	0.61	3.85
9	CHAD	20.44	1.89
10	CONGO (DRC)	0.06	2.92
11	CONGO, REP	20.72	0.27
12	CÔTE D'IVOIRE	0.04	0.66
13	DJIBOUTI	2.00	0.75
14	ETHIOPIA	...	...
15	GABON	10.37	0.58
16	GAMBIA (THE)	1.04	17.95
17	GHANA	...	...
18	GUINEA	1.02	4.22
19	GUINEA BISSAU	13.59	8.13
20	KENYA	0.74	0.09
21	LESOTHO	...	4.73
22	LIBERIA	0.70	80.68
23	MADAGASCAR	0.08	3.41
24	MALAWI	...	...
25	MALI	2.87	1.99
26	MAURITANIA	2.68	0.28
27	MAURITIUS	...	...
28	MOROCCO	115.00	47.50
29	MOZAMBIQUE	...	4.72
30	NAMIBIA	...	...
31	NIGER	3.49	3.33
32	NIGERIA	...	...
33	RWANDA	...	...
34	SENEGAL	...	...
35	SIERRA LEONE	...	...
36	SOUTH AFRICA	...	...
37	SWAZILAND	22.03	0.00
38	TANZANIA	33.66	22.12
39	TOGO	0.07	0.00
40	UGANDA	...	...
41	ZAMBIA	...	...
42	ZIMBABWE	0.20	0.29

(...) Data not available

Aid effectiveness related to capacity development activities

No.	Country	Endorsement of the Paris Declaration on Aid Effectiveness	Existence of an aid coordination policy	Existence of an aid coordination mechanism	Technical cooperation disbursed to the country through coordinated programs in support of CD in 2010 Million US\$	Assessment of coordination of support to capacity in the country Scale 1 = Very weak to 6 = Very strong	No. of parallel project implementation units for CD development partners made use of in 2010
1	ANGOLA	YES	YES	YES	...	3	...
2	BENIN	YES	YES	YES	78	5	62
3	BOTSWANA	YES	NO	YES	716	2	1
4	BURKINA FASO	YES	NO	YES	56.1	3	47
5	BURUNDI	YES	YES	YES	78.4	3	98
6	CAMEROON	YES	YES	YES	87.1	2	8
7	CAPE VERDE	YES	YES	...	1.9	3	0
8	CAR	YES	YES	YES	4.9	3	13
9	CHAD	YES	NO	NO	40.1	5	40
10	CONGO (DRC)	YES	NO	NO	...	3	138
11	CONGO, REP	YES	YES	NO	0	1	0
12	CÔTE D'IVOIRE	YES	NO	NO	...	2	4
13	DJIBOUTI	YES	YES	YES	57.4	3	4
14	ETHIOPIA	YES	YES	YES	...	3	0
15	GABON	YES	NO	YES	13.5	2	1
16	GAMBIA (THE)	YES	YES	YES	34.5	4	16
17	GHANA	YES	YES	YES	125	4	3
18	GUINEA	YES	NO	YES	23.3	3	45
19	GUINEA BISSAU	YES	YES	NO	...	4	...
20	KENYA	YES	NO	NO	...	2	21
21	LESOTHO	YES	NO	YES	67.1	4	3
22	LIBERIA	YES	YES	YES	2.1	2	8
23	MADAGASCAR	YES	YES	YES	49.6	4	7
24	MALAWI	YES	YES	YES	...	3	3
25	MALI	YES	NO	YES	128.2	2	82
26	MAURITANIA	YES	YES	YES	2.7	4	39
27	MAURITIUS	YES	YES	...	...	4	0
28	MOROCCO	YES	YES	YES	1608.5	3	5
29	MOZAMBIQUE	YES	YES	YES	60	5	6
30	NAMIBIA	YES	YES	NO	...	3	...
31	NIGER	YES	YES	YES	436	4	2
32	NIGERIA	YES	YES	YES	...	1	...
33	RWANDA	YES	YES	YES	585.1	4	31
34	SENEGAL	YES	YES	YES	...	4	...
35	SIERRA LEONE	YES	YES	YES	8.1	3	3
36	SOUTH AFRICA	YES	YES	YES	6913.9	5	26
37	SWAZILAND	YES	YES	...	38	5	4
38	TANZANIA	YES	YES	YES	...	2	...
39	TOGO	YES	YES	YES	12.6	3	4
40	UGANDA	YES	YES	YES	...	1	...
41	ZAMBIA	YES	YES	YES	...	3	...
42	ZIMBABWE	NO	YES	YES	6.5	3	0

(...) Data not available

Aid effectiveness related to capacity development activities (Cont'd)

No.	Country	Trend of the number of parallel units the development partners are making use of in CD since 2010	Proportion of ODA for CD scheduled in 2009 and disbursed within 2010 (%)	Percent of bilateral aid for capacity that was untied in calendar year 2010 (%)	Trend of proportion of bilateral aid for CD, with respect to 2009
1	ANGOLA	Remained stable	...	...	Increased
2	BENIN	Remained stable	18	97	Increased
3	BOTSWANA	Increased	84	95	Remained stable
4	BURKINA FASO	Decreased	75	56	Remained stable
5	BURUNDI	Increased	133	92	Increased
6	CAMEROON	Decreased	100	...	Increased
7	CAPE VERDE	Decreased	45	25	Increased
8	CAR	Decreased	77.8	30.2	Increased
9	CHAD	Decreased	84	80	Decreased
10	CONGO (DRC)	Increased	33	93	Increased
11	CONGO, REP	Increased	1.4	0	Decreased
12	CÔTE D'IVOIRE	Increased	...	...	...
13	DJIBOUTI	Remained stable	40	15	Remained stable
14	ETHIOPIA	Decreased	...	...	Increased
15	GABON	Decreased	56.4	100	Decreased
16	GAMBIA (THE)	Increased	70	95	Increased
17	GHANA	Decreased	...	...	Remained stable
18	GUINEA	Decreased	32.4	58	Decreased
19	GUINEA BISSAU	Increased	52	...	Increased
20	KENYA	Decreased	58	78	Increased
21	LESOTHO	Increased	121	64	Increased
22	LIBERIA	Decreased	15.6	85	Increased
23	MADAGASCAR	Increased	58.9	92	Remained stable
24	MALAWI	Decreased	60	20	Remained stable
25	MALI	Increased	39.9	25	Remained stable
26	MAURITANIA	Increased	70.8	55	Decreased
27	MAURITIUS	Remained stable	...	30	Increased
28	MOROCCO	Decreased	25	35	Increased
29	MOZAMBIQUE	Decreased	12.6	88	Increased
30	NAMIBIA	Increased	...	...	Remained stable
31	NIGER	Increased	46	84	Increased
32	NIGERIA	Decreased	...	...	...
33	RWANDA	Decreased	73	78	Increased
34	SENEGAL	Decreased	...	...	...
35	SIERRA LEONE	Increased	6	...	Increased
36	SOUTH AFRICA	Increased	...	70	...
37	SWAZILAND	Increased	...	...	Remained stable
38	TANZANIA	Decreased	...	...	...
39	TOGO	Decreased	58	0	Remained stable
40	UGANDA	Decreased	70	...	Remained stable
41	ZAMBIA	Decreased	...	...	...
42	ZIMBABWE	Increased	0	0	Increased

(...) Data not available

Aid effectiveness related to capacity development activities (Cont'd)

No.	Country	% of joint donors' missions conducted to the field 2010	% of joint donors' analytic works undertaken in calendar year 2010	Existence of transparent and monitorable performance assessment frameworks to assess progress against the national development strategy and sector program	Mutual assessment of progress in implementing agreed commitments between the government and the community of donors conducted
1	ANGOLA	...	...	M&E tools, but not adequate	YES
2	BENIN	20.0	63.2	Adequate M&E underway	YES
3	BOTSWANA	5.3	61.5	M&E tools, but not adequate	NO
4	BURKINA FASO	80.0	100.0	Adequate M&E underway	NO
5	BURUNDI	20.9	43.9	M&E tools, but not adequate	NO
6	CAMEROON	100.0	100.0	Adequate M&E underway	NO
7	CAPE VERDE	50.0	50.0	M&E tools, but not adequate	NO
8	CAR	...	...	M&E tools, but not adequate	YES
9	CHAD	12.2	41.9	M&E tools, but not adequate	NO
10	CONGO (DRC)	33.9	45.0	M&E tools, but not adequate	NO
11	CONGO, REP	0.0	100.0	M&E tools, but not adequate	YES
12	CÔTE D'IVOIRE	0.0	NA	M&E tools, but not adequate	YES
13	DJIBOUTI	100.0	50.0	M&E tools, but not adequate	YES
14	ETHIOPIA	100.0	100.0	M&E tools, but not adequate	YES
15	GABON	20.0	57.1	M&E tools, but not adequate	NO
16	GAMBIA (THE)	100.0	100.0	M&E tools, but not adequate	NO
17	GHANA	15.6	41.9	M&E tools, but not adequate	YES
18	GUINEA	37.5	100.0	No M&E mechanism in place	NO
19	GUINEA BISSAU	NA	NA	M&E tools, but not adequate	NO
20	KENYA	...	...	M&E tools, but not adequate	NO
21	LESOTHO	18.3	71.8	M&E tools, but not adequate	NO
22	LIBERIA	22.2	48.8	No M&E mechanism in place	NO
23	MADAGASCAR	NA	NA	Adequate M&E underway	NO
24	MALAWI	NA	100.0	Adequate M&E underway	YES
25	MALI	14.9	36.4	Adequate M&E underway	YES
26	MAURITANIA	100.0	...	Adequate M&E underway	NO
27	MAURITIUS	100.0	100.0	Adequate M&E underway	YES
28	MOROCCO	50.0	66.7	M&E tools, but not adequate	YES
29	MOZAMBIQUE	11.3	35.4	Adequate M&E underway	YES
30	NAMIBIA	43.3	58.8	M&E tools, but not adequate	NO
31	NIGER	55.7	32.4	Adequate M&E underway	NO
32	NIGERIA	...	...	Adequate M&E underway	NO
33	RWANDA	20.6	25.6	Adequate M&E underway	YES
34	SENEGAL	...	...	M&E tools, but not adequate	YES
35	SIERRA LEONE	NA	33.9	M&E tools, but not adequate	NO
36	SOUTH AFRICA	79.5	52.0	M&E tools, but not adequate	NO
37	SWAZILAND	NA	NA	Adequate M&E underway	NO
38	TANZANIA	...	...	Adequate M&E underway	YES
39	TOGO	100.0	100.0	Adequate M&E underway	NO
40	UGANDA	NA	NA	M&E tools, but not adequate	YES
41	ZAMBIA	...	...	M&E tools, but not adequate	NO
42	ZIMBABWE	100.0	NA	M&E tools, but not adequate	NO

(...) Data not available

NA - Not applicable

Gender equality mainstreaming

No.	Country	Ratification of CEDAW	Year of ratification	Report to the Committee	Institutional mechanisms to implement the CEDAW
1	ANGOLA	CEDAW ratified without reservation	...	Reporting is up to date	Focal point at appropriate level
2	BENIN	CEDAW ratified without reservation	1992	Reporting is up to date	Focal point at appropriate level
3	BOTSWANA	CEDAW ratified with reservations	1996	No reporting	Focal point at appropriate level
4	BURKINA FASO	CEDAW ratified without reservation	1984	Reporting is up to date	Focal point at appropriate level
5	BURUNDI	CEDAW ratified without reservation	1991	Reporting is up to date	Focal point at appropriate level
6	CAMEROON	CEDAW ratified without reservation	1994	Reporting is up to date	Focal person without special mandate
7	CAPE VERDE	CEDAW ratified without reservation	1979	Reporting is up to date	Focal point at appropriate level
8	CAR	CEDAW ratified without reservation	1991	Some reporting done	Focal point at appropriate level
9	CHAD	CEDAW ratified without reservation	1995	Reporting is up to date	Focal person without special mandate
10	CONGO (DRC)	CEDAW ratified without reservation	1986	Some reporting done	Focal person without special mandate
11	CONGO, REP	CEDAW ratified without reservation	1982	Some reporting done	Focal point at appropriate level
12	CÔTE D'IVOIRE	CEDAW ratified without reservation	1995	Some reporting done	Focal point at appropriate level
13	DJIBOUTI	CEDAW ratified without reservation	1998	Some reporting done	Focal point at appropriate level
14	ETHIOPIA	CEDAW ratified without reservation	1981	Reporting is up to date	Focal point at appropriate level
15	GABON	CEDAW ratified without reservation	1979	Reporting is up to date	Focal person without special mandate
16	GAMBIA (THE)	CEDAW ratified without reservation	1992	Reporting is up to date	Focal person without special mandate
17	GHANA	CEDAW ratified without reservation	1986	Reporting is up to date	Focal point at appropriate level
18	GUINEA	CEDAW ratified without reservation	1982	Some reporting done	Focal person without special mandate
19	GUINEA BISSAU	CEDAW ratified without reservation	2008	Reporting is up to date	Focal person without special mandate
20	KENYA	CEDAW ratified with reservations	1984	Reporting is up to date	Focal point at appropriate level
21	LESOTHO	CEDAW ratified with reservations	1995	Reporting is up to date	Focal person without special mandate
22	LIBERIA	CEDAW ratified without reservation	2009	Reporting is up to date	Focal person without special mandate
23	MADAGASCAR	CEDAW ratified without reservation	1998	Reporting is up to date	Focal point at appropriate level
24	MALAWI	CEDAW ratified without reservation	1987	Reporting is up to date	Focal point at appropriate level
25	MALI	CEDAW ratified without reservation	1985	Reporting is up to date	Focal point at appropriate level
26	MAURITANIA	CEDAW ratified without reservation	2000	Some reporting done	Focal point at appropriate level
27	MAURITIUS	CEDAW ratified without reservation	1984	Reporting is up to date	Focal point at appropriate level
28	MOROCCO	CEDAW ratified without reservation	1993	Some reporting done	Focal point at appropriate level
29	MOZAMBIQUE	CEDAW ratified without reservation	1993	Reporting is up to date	Focal point at appropriate level
30	NAMIBIA	CEDAW ratified without reservation	1992	Reporting is up to date	Focal point at appropriate level
31	NIGER	CEDAW ratified with reservations	...	Some reporting done	Focal point at appropriate level
32	NIGERIA	CEDAW ratified without reservation	1985	Reporting is up to date	Focal point at appropriate level
33	RWANDA	CEDAW ratified without reservation	1981	Reporting is up to date	Focal person without special mandate
34	SENEGAL	CEDAW ratified without reservation	1985	Some reporting done	Focal person without special mandate
35	SIERRA LEONE	CEDAW ratified without reservation	1988	Some reporting done	Focal point at appropriate level
36	SOUTH AFRICA	CEDAW ratified without reservation	1996	Reporting is up to date	Focal point at appropriate level
37	SWAZILAND	CEDAW ratified without reservation	2004	Some reporting done	Focal person without special mandate
38	TANZANIA	CEDAW ratified without reservation	1986	Reporting is up to date	Focal point at appropriate level
39	TOGO	CEDAW ratified without reservation	1983	Some reporting done	Focal point at appropriate level
40	UGANDA	CEDAW ratified without reservation	1985	Reporting is up to date	Focal point at appropriate level
41	ZAMBIA	CEDAW ratified without reservation	1985	Reporting is up to date	...
42	ZIMBABWE	CEDAW ratified with reservations	1991	Reporting is up to date	Focal point at appropriate level

(...) Data not available

Gender equality mainstreaming (Cont'd)

No.	Country	Ratification of the Optional Protocol	Embodiment of the principle of equality of men and women in national constitution or other appropriate legislation	Consistency of family laws with the principles of equality between the sexes as under provision of Article 16 of the CEDAW	The country has put in place (enacted) a gender policy
1	ANGOLA	YES	Law approved by Parliament	Law approved by Parliament	YES
2	BENIN	YES	Law approved by Parliament	Law approved by Parliament	YES
3	BOTSWANA	YES	Draft law in place	Draft law in place	YES
4	BURKINA FASO	YES	Law approved by Parliament	Law approved by Parliament	YES
5	BURUNDI	NO	Law approved by Parliament	Law approved by Parliament	YES
6	CAMEROON	YES	Law approved by Parliament	Draft law in place	YES
7	CAPE VERDE	YES	Law approved by Parliament	Law approved by Parliament	YES
8	CAR	NO	Law approved by Parliament	Draft law in place	YES
9	CHAD	NO	Law approved by Parliament	Draft law in place	NO
10	CONGO (DRC)	NO	Law approved by Parliament	No law or legal measure	YES
11	CONGO, REP	YES	Law approved by Parliament	Law approved by Parliament	YES
12	CÔTE D'IVOIRE	NO	Law approved by Parliament	Draft law in place	YES
13	DJIBOUTI	YES	Law approved by Parliament	Law approved by Parliament	YES
14	ETHIOPIA	NO	Law approved by Parliament	Law approved by Parliament	YES
15	GABON	YES	Law approved by Parliament	Draft law in place	YES
16	GAMBIA (THE)	NO	Law approved by Parliament	Law approved by Parliament	YES
17	GHANA	YES	Law approved by Parliament	Law approved by Parliament	YES
18	GUINEA	NO	Law approved by Parliament	Draft law in place	YES
19	GUINEA BISSAU	YES	Law approved by Parliament	Law approved by Parliament	NO
20	KENYA	NO	Law approved by Parliament	Law approved by Parliament	YES
21	LESOTHO	NO	Draft law in place	Draft law in place	YES
22	LIBERIA	YES	No law or legal measure	Draft law in place	YES
23	MADAGASCAR	YES	Law approved by Parliament	Law approved by Parliament	YES
24	MALAWI	YES	Law approved by Parliament	Draft law in place	YES
25	MALI	YES	Law approved by Parliament	Law approved by Parliament	YES
26	MAURITANIA	NO	Law approved by Parliament	Law approved by Parliament	YES
27	MAURITIUS	YES	Law approved by Parliament	Law approved by Parliament	YES
28	MOROCCO	YES	Draft law in place	Draft law in place	YES
29	MOZAMBIQUE	YES	Law approved by Parliament	Law approved by Parliament	YES
30	NAMIBIA	YES	Law approved by Parliament	Law approved by Parliament	YES
31	NIGER	YES	Law approved by Parliament	Draft law in place	YES
32	NIGERIA	YES	No law or legal measure	No law or legal measure	YES
33	RWANDA	YES	Law approved by Parliament	Law approved by Parliament	YES
34	SENEGAL	YES	Law approved by Parliament	Law approved by Parliament	YES
35	SIERRA LEONE	NO	Law approved by Parliament	Law approved by Parliament	YES
36	SOUTH AFRICA	YES	Law approved by Parliament	...	YES
37	SWAZILAND	NO	Law approved by Parliament	Draft law in place	YES
38	TANZANIA	YES	Law approved by Parliament	No law or legal measure	YES
39	TOGO	NO	Law approved by Parliament	Law approved by Parliament	YES
40	UGANDA	YES	Law approved by Parliament	Draft law in place	YES
41	ZAMBIA	NO	Draft law in place	Draft law in place	YES
42	ZIMBABWE	NO	Law approved by Parliament	Law approved by Parliament	YES

(...) Data not available

Gender equality mainstreaming (Cont'd)

No.	Country	Gender equality policy is integrated in the country's Poverty Reduction Strategy	Government allocated financial resources to gender related activities	Mainstreaming gender in statistics
1	ANGOLA	Clear objectives and targets set	Sufficient budget allocated	Clear guide
2	BENIN	Clear objectives and targets set	Unclear kind of budget allocated	Clear guide
3	BOTSWANA	Gender not mainstreamed	Unclear kind of budget allocated	No clear guide
4	BURKINA FASO	Clear objectives and targets set	Unclear kind of budget allocated	Clear guide
5	BURUNDI	Clear objectives and targets set	Unclear kind of budget allocated	No clear guide
6	CAMEROON	Gender mainstreamed, no clear objectives	Unclear kind of budget allocated	No clear guide
7	CAPE VERDE	Clear objectives and targets set	Sufficient budget allocated	Clear guide
8	CAR	Clear objectives and targets set	Sufficient budget allocated	No clear guide
9	CHAD	Clear objectives and targets set	Unclear kind of budget allocated	No clear guide
10	CONGO (DRC)	Clear objectives and targets set	Unclear kind of budget allocated	No clear guide
11	CONGO, REP	Clear objectives and targets set	Sufficient budget allocated	No clear guide
12	CÔTE D'IVOIRE	Clear objectives and targets set	Unclear kind of budget allocated	No clear guide
13	DJIBOUTI	Clear objectives and targets set	Sufficient budget allocated	Clear guide
14	ETHIOPIA	Clear objectives and targets set	Sufficient budget allocated	Clear guide
15	GABON	Gender mainstreamed, no clear objectives	Unclear kind of budget allocated	No clear guide
16	GAMBIA (THE)	Gender mainstreamed, no clear objectives	Unclear kind of budget allocated	Clear guide
17	GHANA	Clear objectives and targets set	Unclear kind of budget allocated	No clear guide
18	GUINEA	Gender mainstreamed, no clear objectives	Unclear kind of budget allocated	No clear guide
19	GUINEA BISSAU	Gender not mainstreamed	Unclear kind of budget allocated	No clear guide
20	KENYA	Gender mainstreamed, no clear objectives	Unclear kind of budget allocated	Clear guide
21	LESOTHO	Gender mainstreamed, no clear objectives	Sufficient budget allocated	Clear guide
22	LIBERIA	Clear objectives and targets set	Unclear kind of budget allocated	Clear guide
23	MADAGASCAR	Clear objectives and targets set	Unclear kind of budget allocated	No clear guide
24	MALAWI	Clear objectives and targets set	Sufficient budget allocated	Clear guide
25	MALI	Clear objectives and targets set	Unclear kind of budget allocated	No clear guide
26	MAURITANIA	Clear objectives and targets set	Sufficient budget allocated	No clear guide
27	MAURITIUS	Gender mainstreamed, no clear objectives	Sufficient budget allocated	No clear guide
28	MOROCCO	Gender mainstreamed, no clear objectives	Unclear kind of budget allocated	Clear guide
29	MOZAMBIQUE	Clear objectives and targets set	Sufficient budget allocated	Clear guide
30	NAMIBIA	Clear objectives and targets set	Sufficient budget allocated	Clear guide
31	NIGER	Clear objectives and targets set	Unclear kind of budget allocated	No clear guide
32	NIGERIA	Gender mainstreamed, no clear objectives	Unclear kind of budget allocated	No clear guide
33	RWANDA	Clear objectives and targets set	Sufficient budget allocated	Clear guide
34	SENEGAL	Clear objectives and targets set	Unclear kind of budget allocated	No clear guide
35	SIERRA LEONE	Clear objectives and targets set	Unclear kind of budget allocated	Clear guide
36	SOUTH AFRICA	Gender mainstreamed, no clear objectives	Unclear kind of budget allocated	...
37	SWAZILAND	Clear objectives and targets set	Sufficient budget allocated	No clear guide
38	TANZANIA	Clear objectives and targets set	Sufficient budget allocated	No clear guide
39	TOGO	Clear objectives and targets set	No budget line allocated	No clear guide
40	UGANDA	Clear objectives and targets set	Sufficient budget allocated	Clear guide
41	ZAMBIA	Clear objectives and targets set	Sufficient budget allocated	Clear guide
42	ZIMBABWE	Clear objectives and targets set	Sufficient budget allocated	Clear guide

(...) Data not available

Social Inclusion

No.	Country	Provisions in the country's Constitution allowing the President / Head of State to appoint some representatives to Parliament in addition to the elected representatives	Instances where some nationals in the country require special permission / qualification to enjoy certain privileges	Social services accessible to nationals in the country on equal terms	Equal employment opportunities for all nationals	Policy or law that provides equal opportunity for all	Policy or law that protects the vulnerable in the society
1	ANGOLA	NO	YES	YES	...	YES	YES
2	BENIN	NO	NO	YES	YES	YES	YES
3	BOTSWANA	YES	YES	NO	NO	NO	NO
4	BURKINA FASO	NO	YES	YES	YES	YES	YES
5	BURUNDI	NO	YES	YES	YES	YES	YES
6	CAMEROON	NO	YES	YES	YES	YES	YES
7	CAPE VERDE	NO	NO	YES	YES	YES	YES
8	CAR	NO	NO	YES	YES	YES	YES
9	CHAD	NO	NO	YES	YES	YES	YES
10	CONGO (DRC)	YES	NO	NO	NO	YES	YES
11	CONGO, REP	NO	NO	YES	YES	YES	YES
12	CÔTE D'IVOIRE	NO	YES	YES	NO	NO	YES
13	DJIBOUTI	YES	YES	YES	YES	YES	YES
14	ETHIOPIA	NO	NO	YES	YES	YES	...
15	GABON	NO	NO	YES	YES	YES	YES
16	GAMBIA (THE)	YES	NO	YES	YES	YES	YES
17	GHANA	NO	NO	YES	YES	YES	YES
18	GUINEA	NO	NO	YES	YES	YES	YES
19	GUINEA BISSAU	YES	YES	YES	YES	YES	YES
20	KENYA	YES	NO	YES	YES	YES	YES
21	LESOTHO	YES	NO	YES	YES	YES	YES
22	LIBERIA	NO	NO	NO	YES	YES	NO
23	MADAGASCAR	YES	NO	YES	NO	YES	YES
24	MALAWI	NO	NO	YES	YES	YES	YES
25	MALI	NO	NO	YES	YES	YES	YES
26	MAURITANIA	NO	NO	YES	YES	YES	YES
27	MAURITIUS	NO	NO	YES	YES	YES	YES
28	MOROCCO	YES	YES	YES	YES	NO	YES
29	MOZAMBIQUE	NO	YES	YES	YES	YES	YES
30	NAMIBIA	YES	NO	YES	YES	YES	YES
31	NIGER	NO	YES	YES	YES	YES	YES
32	NIGERIA	NO	NO	YES	YES	YES	YES
33	RWANDA	YES	NO	YES	YES	YES	YES
34	SENEGAL	NO	NO	YES	YES	...	YES
35	SIERRA LEONE	YES	NO	YES	YES	YES	YES
36	SOUTH AFRICA	YES	YES	YES	YES	YES	YES
37	SWAZILAND	YES	NO	YES	YES	YES	YES
38	TANZANIA	YES	NO	YES	NO	YES	YES
39	TOGO	YES	NO	YES	YES	YES	YES
40	UGANDA	NO	NO	YES	YES	YES	YES
41	ZAMBIA	YES	NO	YES	YES	YES	YES
42	ZIMBABWE	YES	YES	NO	YES	YES	YES

(...) Data not available

Partnering for capacity development

No.	Country	Establishment of a National Assistance Coordinating Unit for CD by the Government	Main partners from multi-lateral cooperation have developed a country assistance strategy/program relating to the country
1	ANGOLA	Clear Unit established	All
2	BENIN	Clear Unit established	All
3	BOTSWANA	Clear Unit established	All
4	BURKINA FASO	Clear Unit established	All
5	BURUNDI	Coordination, not formal	Not all
6	CAMEROON	No institutional Unit	Not all
7	CAPE VERDE	Clear Unit established	All
8	CAR	Clear Unit established	Not all
9	CHAD	No institutional Unit	All
10	CONGO (DRC)	Clear Unit established	Not all
11	CONGO, REP	No institutional Unit	None
12	CÔTE D'IVOIRE	No institutional Unit	Not all
13	DJIBOUTI	Clear Unit established	Not all
14	ETHIOPIA	Clear Unit established	Not all
15	GABON	Clear Unit established	Not all
16	GAMBIA (THE)	Clear Unit established	Not all
17	GHANA	Coordination, not formal	All
18	GUINEA	Clear Unit established	None
19	GUINEA BISSAU	Clear Unit established	All
20	KENYA	Coordination, not formal	...
21	LESOTHO	Clear Unit established	All
22	LIBERIA	Clear Unit established	All
23	MADAGASCAR	Clear Unit established	Not all
24	MALAWI	Coordination, not formal	All
25	MALI	Clear Unit established	All
26	MAURITANIA	No institutional Unit	Not all
27	MAURITIUS	No institutional Unit	All
28	MOROCCO	Coordination, not formal	Not all
29	MOZAMBIQUE	Coordination, not formal	Not all
30	NAMIBIA	Coordination, not formal	Not all
31	NIGER	Clear Unit established	Not all
32	NIGERIA	No institutional Unit	Not all
33	RWANDA	Coordination, not formal	All
34	SENEGAL	Clear Unit established	...
35	SIERRA LEONE	No institutional Unit	Not all
36	SOUTH AFRICA	Coordination, not formal	All
37	SWAZILAND	Clear Unit established	All
38	TANZANIA	Coordination, not formal	All
39	TOGO	Clear Unit established	Not all
40	UGANDA	No institutional Unit	Not all
41	ZAMBIA	No institutional Unit	Not all
42	ZIMBABWE	Coordination, not formal	Not all

(...) Data not available

Development partners areas of intervention in capacity development (Year 2010)

No.	Country	Economic Management			Structural Policies		
		Macroeconomic Management	Fiscal Policy	Debt Policy	Trade	Financial Sector	Business Regulatory Environment
1	ANGOLA						
2	BENIN	✓	✓	✓	✓	✓	✓
3	BOTSWANA	✓	✓	✓	✓		✓
4	BURKINA FASO	✓	✓	✓	✓		✓
5	BURUNDI	✓	✓	✓	✓	✓	✓
6	CAMEROON	✓	✓	✓	✓	✓	✓
7	CAPE VERDE	✓	✓	✓	✓	✓	✓
8	CAR	✓	✓	✓	✓	✓	✓
9	CHAD	✓	✓	✓	✓	✓	✓
10	CONGO (DRC)	✓	✓	✓			
11	CONGO, REP				✓	✓	
12	CÔTE D'IVOIRE	✓	✓	✓		✓	✓
13	DJIBOUTI	✓	✓	✓	✓	✓	
14	ETHIOPIA	✓	✓	✓		✓	✓
15	GABON	✓	✓	✓	✓	✓	✓
16	GAMBIA (THE)	✓	✓	✓	✓	✓	✓
17	GHANA	✓			✓		
18	GUINEA	✓	✓		✓	✓	
19	GUINEA BISSAU	✓	✓	✓	✓	✓	✓
20	KENYA	✓	✓	✓		✓	✓
21	LESOTHO	✓	✓		✓	✓	
22	LIBERIA	✓	✓	✓	✓	✓	✓
23	MADAGASCAR		✓		✓	✓	
24	MALAWI	✓	✓	✓	✓	✓	✓
25	MALI	✓	✓	✓	✓	✓	✓
26	MAURITANIA						
27	MAURITIUS	✓		✓		✓	
28	MOROCCO	✓	✓				
29	MOZAMBIQUE	✓	✓			✓	✓
30	NAMIBIA	✓	✓	✓	✓	✓	✓
31	NIGER	✓	✓	✓	✓	✓	✓
32	NIGERIA	✓			✓	✓	
33	RWANDA	✓	✓	✓	✓	✓	✓
34	SENEGAL	✓	✓				✓
35	SIERRA LEONE	✓	✓	✓	✓	✓	✓
36	SOUTH AFRICA						
37	SWAZILAND				✓		
38	TANZANIA	✓	✓	✓			✓
39	TOGO	✓	✓	✓			
40	UGANDA	✓	✓	✓	✓		
41	ZAMBIA	✓	✓		✓		✓
42	ZIMBABWE	✓	✓	✓	✓	✓	✓

Development partners areas of intervention in capacity development (Year 2010)

No.	Country	Policies for Social Inclusion/Equity				
		Gender Equality	Equity of Public Resource Use	Building Human Resources	Social Protection and Labor	Policies and Institutions for Environmental Sustainability
1	ANGOLA	✓				
2	BENIN	✓		✓	✓	
3	BOTSWANA	✓			✓	✓
4	BURKINA FASO	✓	✓	✓		✓
5	BURUNDI	✓	✓	✓	✓	✓
6	CAMEROON	✓	✓	✓	✓	✓
7	CAPE VERDE	✓	✓	✓	✓	✓
8	CAR	✓		✓	✓	✓
9	CHAD			✓		✓
10	CONGO (DRC)			✓	✓	✓
11	CONGO, REP	✓		✓	✓	
12	CÔTE D'IVOIRE	✓		✓	✓	
13	DJIBOUTI	✓	✓	✓		
14	ETHIOPIA		✓	✓	✓	✓
15	GABON	✓		✓		✓
16	GAMBIA (THE)	✓	✓	✓	✓	✓
17	GHANA			✓		✓
18	GUINEA	✓		✓	✓	✓
19	GUINEA BISSAU	✓	✓	✓	✓	✓
20	KENYA	✓	✓	✓	✓	✓
21	LESOTHO	✓			✓	✓
22	LIBERIA	✓		✓	✓	
23	MADAGASCAR		✓	✓	✓	
24	MALAWI	✓		✓	✓	✓
25	MALI	✓	✓	✓	✓	✓
26	MAURITANIA	✓		✓		
27	MAURITIUS					
28	MOROCCO	✓		✓		✓
29	MOZAMBIQUE	✓	✓	✓	✓	✓
30	NAMIBIA	✓				
31	NIGER	✓	✓	✓	✓	✓
32	NIGERIA	✓			✓	
33	RWANDA	✓	✓	✓	✓	✓
34	SENEGAL			✓		✓
35	SIERRA LEONE	✓		✓	✓	✓
36	SOUTH AFRICA			✓	✓	
37	SWAZILAND			✓	✓	✓
38	TANZANIA				✓	
39	TOGO	✓	✓	✓	✓	✓
40	UGANDA				✓	
41	ZAMBIA	✓		✓	✓	✓
42	ZIMBABWE	✓	✓	✓	✓	✓

Development partners areas of intervention in capacity development (Year 2010)

No.	Country	Public Sector Management and Institutions					Agriculture
		Property Rights and Rule-based Governance	Quality of Budgetary and Financial Management	Efficiency of Revenue Mobilization	Quality of Public Administration	Transparency, Accountability, and Corruption in the Public Sector	
1	ANGOLA						
2	BENIN	✓	✓	✓	✓	✓	✓
3	BOTSWANA		✓	✓			
4	BURKINA FASO		✓	✓	✓	✓	✓
5	BURUNDI	✓	✓	✓	✓	✓	
6	CAMEROON	✓	✓	✓	✓	✓	✓
7	CAPE VERDE	✓	✓	✓	✓	✓	
8	CAR	✓	✓	✓	✓	✓	✓
9	CHAD		✓	✓		✓	
10	CONGO (DRC)		✓	✓	✓	✓	
11	CONGO, REP			✓			✓
12	CÔTE D'IVOIRE		✓	✓	✓	✓	
13	DJIBOUTI	✓		✓	✓	✓	✓
14	ETHIOPIA	✓	✓	✓	✓	✓	✓
15	GABON		✓	✓		✓	✓
16	GAMBIA (THE)		✓	✓	✓		✓
17	GHANA						
18	GUINEA	✓				✓	✓
19	GUINEA BISSAU	✓	✓	✓	✓	✓	✓
20	KENYA		✓	✓	✓	✓	
21	LESOTHO	✓	✓		✓	✓	✓
22	LIBERIA		✓	✓	✓	✓	✓
23	MADAGASCAR		✓				✓
24	MALAWI		✓	✓	✓	✓	✓
25	MALI	✓	✓	✓	✓	✓	✓
26	MAURITANIA				✓		
27	MAURITIUS		✓	✓			
28	MOROCCO		✓		✓		✓
29	MOZAMBIQUE	✓	✓	✓			
30	NAMIBIA		✓	✓		✓	
31	NIGER	✓	✓	✓	✓	✓	✓
32	NIGERIA			✓		✓	
33	RWANDA	✓	✓	✓	✓	✓	✓
34	SENEGAL				✓		✓
35	SIERRA LEONE		✓	✓	✓	✓	
36	SOUTH AFRICA						
37	SWAZILAND	✓		✓		✓	✓
38	TANZANIA		✓				
39	TOGO	✓	✓	✓	✓	✓	
40	UGANDA	✓	✓		✓	✓	✓
41	ZAMBIA				✓		✓
42	ZIMBABWE	✓	✓	✓	✓	✓	✓

Capacity profiling and assessments of needs

No.	Country	Capacity profile conducted in the country since 2006	Date last capacity profile conducted	Who commissioned the capacity profiling	Capacity needs assessment conducted in the country since 2006	Who commissioned the capacity needs assessment
1	ANGOLA	YES	2010	Government Body	...	...
2	BENIN	YES	2009	Government Body	YES	Development partner
3	BOTSWANA	YES	2008	Gvnt & Dev. Partner	NO	...
4	BURKINA FASO	YES	2008	Government Body	YES	Government Body
5	BURUNDI	YES	2007	Government Body	YES	Development partner
6	CAMEROON	Don't know	...	...	Don't know	Gvnt & Dev. Partner
7	CAPE VERDE	YES	2010	Government Body	YES	Government Body
8	CAR	YES	2008	Government Body	YES	Development partner
9	CHAD	NO	...	...	NO	...
10	CONGO (DRC)	YES	2008	Government Body	YES	Government Body
11	CONGO, REP	NO	...	...	NO	...
12	CÔTE D'IVOIRE	NO	...	...	YES	Development partner
13	DJIBOUTI	YES	2007	Government Body	YES	Government Body
14	ETHIOPIA	Don't know	...	...	YES	Gvnt & Dev. Partner
15	GABON	Don't know	...	...	Don't know	...
16	GAMBIA (THE)	YES	2009	Government Body	YES	Government Body
17	GHANA	YES	2010	Development partner	YES	Development partner
18	GUINEA	NO	...	...	YES	Gvnt & Dev. Partner
19	GUINEA BISSAU	YES	2007	Government Body	YES	Government Body
20	KENYA	YES	2011	Government Body	NO	...
21	LESOTHO	NO	...	Government Body	YES	...
22	LIBERIA	YES	2008	Gvnt & Dev. Partner	YES	Gvnt & Dev. Partner
23	MADAGASCAR	NO	...	...	NO	...
24	MALAWI	YES	2009	Government Body	YES	Government Body
25	MALI	NO	...	...	YES	Government Body
26	MAURITANIA	YES	...	Gvnt & Dev. Partner	YES	Gvnt & Dev. Partner
27	MAURITIUS	YES	2010	Government Body	YES	Government Body
28	MOROCCO	YES	2009	Development partner	YES	...
29	MOZAMBIQUE	YES	2007	Development partner	YES	Development partner
30	NAMIBIA	NO	...	...	YES	Development partner
31	NIGER	YES	2009	Government Body	YES	Government Body
32	NIGERIA	NO	...	...	YES	Gvnt & Dev. Partner
33	RWANDA	YES	2009	Government Body	YES	Government Body
34	SENEGAL	Don't know	...	...	Don't know	...
35	SIERRA LEONE	YES	2010	Government Body	YES	Government Body
36	SOUTH AFRICA	...	...	Government Body	YES	Government Body
37	SWAZILAND	NO	...	...	YES	Government Body
38	TANZANIA	NO	...	...	NO	...
39	TOGO	NO	...	...	NO	...
40	UGANDA	NO	...	...	YES	Development partner
41	ZAMBIA	YES	2009	Government Body	YES	Government Body
42	ZIMBABWE	YES	2009	Gvnt & Dev. Partner	YES	Gvnt & Dev. Partner

(...) Data not available

Areas where needs assessments were conducted

No.	Country	Economic Management			Structural Policies		
		Macroeconomic Management	Fiscal Policy	Debt Policy	Trade	Financial Sector	Business Regulatory Environment
1	ANGOLA						
2	BENIN	✓	✓	✓		✓	✓
3	BOTSWANA						
4	BURKINA FASO		✓	✓		✓	✓
5	BURUNDI						
6	CAMEROON		✓		✓		✓
7	CAPE VERDE	✓	✓	✓	✓	✓	✓
8	CAR	✓	✓	✓	✓	✓	✓
9	CHAD						
10	CONGO (DRC)	✓	✓	✓		✓	
11	CONGO, REP						
12	CÔTE D'IVOIRE	✓	✓	✓		✓	✓
13	DJIBOUTI	✓	✓			✓	✓
14	ETHIOPIA		✓				
15	GABON						
16	GAMBIA (THE)	✓	✓	✓	✓	✓	
17	GHANA	✓				✓	✓
18	GUINEA	✓	✓	✓		✓	✓
19	GUINEA BISSAU	✓	✓	✓	✓	✓	✓
20	KENYA						
21	LESOTHO						
22	LIBERIA	✓	✓	✓			✓
23	MADAGASCAR						
24	MALAWI						
25	MALI	✓	✓	✓	✓	✓	✓
26	MAURITANIA						
27	MAURITIUS				✓	✓	
28	MOROCCO	✓	✓			✓	
29	MOZAMBIQUE						
30	NAMIBIA					✓	
31	NIGER						
32	NIGERIA						
33	RWANDA	✓	✓	✓	✓		
34	SENEGAL						
35	SIERRA LEONE				✓		
36	SOUTH AFRICA						
37	SWAZILAND	✓	✓	✓	✓	✓	
38	TANZANIA						
39	TOGO						
40	UGANDA						
41	ZAMBIA	✓	✓	✓		✓	
42	ZIMBABWE	✓	✓		✓		

Areas where needs assessments were conducted

No.	Country	Policies for Social Inclusion/Equity				
		Gender Equality	Equity of Public Resource Use	Building Human Resources	Social Protection and Labor	Policies and Institutions for Environmental Sustainability
1	ANGOLA					
2	BENIN	✓		✓	✓	
3	BOTSWANA					
4	BURKINA FASO	✓	✓	✓	✓	
5	BURUNDI	✓				
6	CAMEROON	✓	✓	✓	✓	✓
7	CAPE VERDE	✓	✓	✓	✓	✓
8	CAR	✓		✓	✓	✓
9	CHAD					
10	CONGO (DRC)		✓	✓		
11	CONGO, REP					
12	CÔTE D'IVOIRE		✓	✓		
13	DJIBOUTI	✓		✓	✓	✓
14	ETHIOPIA			✓		
15	GABON					
16	GAMBIA (THE)	✓		✓	✓	✓
17	GHANA	✓	✓	✓		✓
18	GUINEA			✓		✓
19	GUINEA BISSAU	✓		✓	✓	
20	KENYA					
21	LESOTHO					
22	LIBERIA	✓	✓	✓	✓	✓
23	MADAGASCAR					
24	MALAWI					
25	MALI	✓	✓	✓	✓	✓
26	MAURITANIA					
27	MAURITIUS			✓		
28	MOROCCO			✓		
29	MOZAMBIQUE			✓		
30	NAMIBIA			✓		✓
31	NIGER			✓		
32	NIGERIA	✓		✓		
33	RWANDA	✓	✓	✓	✓	✓
34	SENEGAL					
35	SIERRA LEONE	✓		✓		
36	SOUTH AFRICA			✓	✓	
37	SWAZILAND	✓		✓		✓
38	TANZANIA					
39	TOGO					
40	UGANDA		✓	✓		
41	ZAMBIA			✓		
42	ZIMBABWE			✓		

Areas where needs assessments were conducted

No.	Country	Public Sector Management and Institutions					Agriculture
		Property Rights and Rule-based Governance	Quality of Budgetary and Financial Management	Efficiency of Revenue Mobilization	Quality of Public Administration	Transparency, Accountability, and Corruption in the Public Sector	
1	ANGOLA						
2	BENIN		✓	✓	✓	✓	✓
3	BOTSWANA						
4	BURKINA FASO		✓	✓	✓	✓	
5	BURUNDI	✓			✓	✓	
6	CAMEROON	✓	✓	✓	✓	✓	
7	CAPE VERDE	✓	✓	✓	✓	✓	
8	CAR	✓	✓	✓	✓	✓	✓
9	CHAD						
10	CONGO (DRC)		✓	✓	✓		
11	CONGO, REP						
12	CÔTE D'IVOIRE		✓	✓	✓	✓	
13	DJIBOUTI		✓		✓	✓	✓
14	ETHIOPIA			✓			✓
15	GABON						
16	GAMBIA (THE)		✓	✓	✓	✓	✓
17	GHANA		✓		✓	✓	✓
18	GUINEA		✓	✓	✓	✓	
19	GUINEA BISSAU		✓		✓		
20	KENYA						
21	LESOTHO	✓			✓		✓
22	LIBERIA	✓	✓	✓	✓	✓	✓
23	MADAGASCAR						
24	MALAWI						
25	MALI	✓	✓	✓	✓	✓	✓
26	MAURITANIA						
27	MAURITIUS						✓
28	MOROCCO		✓	✓	✓		
29	MOZAMBIQUE		✓		✓	✓	
30	NAMIBIA		✓		✓	✓	
31	NIGER			✓	✓		
32	NIGERIA		✓		✓		
33	RWANDA				✓		✓
34	SENEGAL						
35	SIERRA LEONE				✓		
36	SOUTH AFRICA						
37	SWAZILAND		✓		✓	✓	✓
38	TANZANIA						
39	TOGO						
40	UGANDA		✓		✓		
41	ZAMBIA		✓		✓		
42	ZIMBABWE		✓	✓	✓		

Assessment of the quality of the country's policy and institutional framework

No.	Country	Economic Management				Structural Policies			
		Macroeconomic Management	Fiscal Policy	Debt Policy	Average	Trade	Financial Sector	Business Regulatory Environment	Average
1	ANGOLA	3.0	3.0	3.0	3.0	4.0	2.5	2.0	2.8
2	BENIN	4.0	3.0	3.5	3.5	4.0	3.5	3.5	3.7
3	BOTSWANA	NA	NA	NA	NA	NA	NA	NA	NA
4	BURKINA FASO	4.5	4.5	4.0	4.3	4.0	3.0	3.5	3.5
5	BURUNDI	3.5	3.5	3.0	3.3	4.0	2.5	2.5	3.0
6	CAMEROON	4.0	3.5	3.0	3.5	3.5	3.0	3.0	3.2
7	CAPE VERDE	4.5	4.5	4.0	4.3	4.0	4.0	3.5	3.8
8	CAR	3.5	3.5	3.0	3.3	3.5	2.5	2.0	2.7
9	CHAD	2.5	2.5	2.5	2.5	3.0	2.5	2.0	2.5
10	CONGO (DRC)	3.5	3.5	3.0	3.3	3.0	2.0	2.0	2.3
11	CONGO, REP	3.5	3.0	3.0	3.2	3.5	3.0	2.5	3.0
12	CÔTE D'IVOIRE	3.5	2.5	2.0	2.7	4.0	3.0	3.0	3.3
13	DJIBOUTI	3.5	3.0	2.5	3.0	4.0	3.0	3.5	3.5
14	ETHIOPIA	3.5	4.0	3.5	3.7	3.0	3.0	3.5	3.2
15	GABON	NA	NA	NA	NA	NA	NA	NA	NA
16	GAMBIA (THE)	4.0	3.5	3.0	3.5	3.5	3.5	3.5	3.5
17	GHANA	3.5	3.5	4.0	3.7	4.0	4.0	4.5	4.2
18	GUINEA	2.5	2.5	2.0	2.3	4.0	3.0	2.5	3.2
19	GUINEA BISSAU	3.0	2.5	2.0	2.5	4.0	2.5	2.5	3.0
20	KENYA	4.5	4.0	4.0	4.2	4.0	4.0	4.0	4.0
21	LESOTHO	4.0	3.5	4.0	3.8	3.5	3.0	3.0	3.2
22	LIBERIA	3.5	3.5	3.0	3.3	3.0	2.5	3.0	2.8
23	MADAGASCAR	3.5	3.0	4.0	3.5	4.0	3.0	3.0	3.3
24	MALAWI	3.0	3.5	3.0	3.2	3.5	3.0	3.0	3.2
25	MALI	4.5	4.0	4.0	4.2	4.0	3.0	3.5	3.5
26	MAURITANIA	3.5	3.0	3.5	3.3	4.0	2.5	3.0	3.2
27	MAURITIUS	NA	NA	NA	NA	NA	NA	NA	NA
28	MOROCCO	NA	NA	NA	NA	NA	NA	NA	NA
29	MOZAMBIQUE	4.5	4.5	4.5	4.5	4.5	3.5	3.0	3.7
30	NAMIBIA	NA	NA	NA	NA	NA	NA	NA	NA
31	NIGER	4.0	3.5	4.0	3.8	4.0	3.0	3.0	3.3
32	NIGERIA	4.0	4.0	4.5	4.2	3.5	3.5	3.5	3.5
33	RWANDA	4.0	4.0	3.5	3.8	4.0	3.5	4.0	3.8
34	SENEGAL	4.0	4.0	4.0	4.0	4.0	3.5	4.0	3.8
35	SIERRA LEONE	4.0	3.5	3.5	3.7	3.5	3.0	3.0	3.2
36	SOUTH AFRICA	NA	NA	NA	NA	NA	NA	NA	NA
37	SWAZILAND	NA	NA	NA	NA	NA	NA	NA	NA
38	TANZANIA	4.5	4.0	4.0	4.2	4.0	4.0	3.5	3.8
39	TOGO	3.0	3.0	3.0	3.0	4.0	2.5	3.0	3.2
40	UGANDA	4.5	4.0	4.5	4.3	4.0	3.5	4.0	3.8
41	ZAMBIA	4.0	3.0	3.5	3.5	4.0	3.5	3.5	3.7
42	ZIMBABWE	2.0	2.0	1.0	1.7	3.0	2.0	2.0	2.3

Source: World Bank IRAI 2010 Table.

(NA) Not applicable

Assessment of the quality of the country's policy and institutional framework (Cont'd)

No.	Country	Policies for Social Inclusion/Equity					Average
		Gender Equality	Equity of Public Resource Use	Building Human Resources	Social Protection and Labor	Policies and Institutions for Environmental Sustainability	
1	ANGOLA	3.5	2.5	2.5	2.5	3.0	2.8
2	BENIN	3.5	3.5	3.5	3.0	3.5	3.4
3	BOTSWANA	NA	NA	NA	NA	NA	NA
4	BURKINA FASO	3.5	4.0	3.5	3.5	3.5	3.6
5	BURUNDI	4.0	3.5	3.5	3.0	3.0	3.4
6	CAMEROON	3.0	3.0	3.5	3.0	3.0	3.1
7	CAPE VERDE	4.5	4.5	4.5	4.5	3.5	4.3
8	CAR	2.5	2.5	2.5	2.0	3.0	2.5
9	CHAD	2.5	2.0	2.5	2.5	2.0	2.3
10	CONGO (DRC)	2.5	3.0	3.5	2.5	2.5	2.8
11	CONGO, REP	3.0	2.5	3.5	2.5	2.5	2.8
12	CÔTE D'IVOIRE	2.5	2.0	2.5	2.5	2.5	2.4
13	DJIBOUTI	3.0	3.0	3.5	3.5	3.5	3.3
14	ETHIOPIA	3.0	4.5	4.0	3.5	3.0	3.6
15	GABON	NA	NA	NA	NA	NA	NA
16	GAMBIA (THE)	3.5	4.0	3.5	2.5	3.5	3.4
17	GHANA	4.0	4.0	4.5	4.0	3.5	4.0
18	GUINEA	3.5	3.0	3.0	3.0	2.5	3.0
19	GUINEA BISSAU	2.5	3.0	2.5	2.5	3.0	2.7
20	KENYA	3.5	4.0	4.0	3.5	3.5	3.7
21	LESOTHO	4.0	3.0	3.5	3.0	3.0	3.3
22	LIBERIA	2.5	3.5	2.5	2.5	2.5	2.7
23	MADAGASCAR	3.5	4.0	3.5	3.5	3.5	3.6
24	MALAWI	3.5	3.5	3.5	3.5	3.5	3.5
25	MALI	3.5	4.0	3.5	3.5	3.0	3.5
26	MAURITANIA	4.0	3.5	3.0	2.5	3.0	3.2
27	MAURITIUS	NA	NA	NA	NA	NA	NA
28	MOROCCO	NA	NA	NA	NA	NA	NA
29	MOZAMBIQUE	3.5	3.5	3.5	3.0	3.5	3.4
30	NAMIBIA	NA	NA	NA	NA	NA	NA
31	NIGER	2.5	3.5	3.5	3.0	3.5	3.2
32	NIGERIA	3.0	3.5	3.0	3.5	3.0	3.2
33	RWANDA	4.0	4.5	4.5	3.5	3.5	4.0
34	SENEGAL	3.5	3.5	3.5	3.0	3.5	3.4
35	SIERRA LEONE	3.0	3.5	3.5	3.5	2.5	3.2
36	SOUTH AFRICA	NA	NA	NA	NA	NA	NA
37	SWAZILAND	NA	NA	NA	NA	NA	NA
38	TANZANIA	3.5	4.0	3.5	4.0	3.5	3.7
39	TOGO	3.0	2.5	3.0	3.0	2.5	2.8
40	UGANDA	3.5	4.0	3.5	3.5	4.0	3.7
41	ZAMBIA	3.5	3.5	4.0	3.0	3.5	3.5
42	ZIMBABWE	2.5	2.0	1.5	1.0	2.0	1.8

Source: World Bank IRAI 2010 Table.

(NA) Not applicable

Assessment of the quality of the country's policy and institutional framework (Cont'd)

No.	Country	Public Sector Management and Institutions					Average	IDA Resource Allocation Index (IRAI)
		Property Rights and Rule-based Governance	Quality of Budgetary and Financial Management	Efficiency of Revenue Mobilization	Quality of Public Administration	Transparency, Accountability, and Corruption in the Public Sector		
1	ANGOLA	2.0	2.5	2.5	2.5	2.5	2.4	2.8
2	BENIN	3.0	3.5	3.5	3.0	3.5	3.3	3.5
3	BOTSWANA	NA	NA	NA	NA	NA	NA	NA
4	BURKINA FASO	3.5	4.5	3.5	3.5	3.5	3.7	3.8
5	BURUNDI	2.5	3.0	3.0	2.5	2.0	2.6	3.1
6	CAMEROON	2.5	3.0	3.5	3.0	2.5	2.9	3.2
7	CAPE VERDE	4.0	4.0	3.5	4.0	4.5	4.0	4.1
8	CAR	2.0	3.0	2.5	2.5	2.5	2.5	2.8
9	CHAD	2.0	2.0	2.5	2.5	2.0	2.2	2.4
10	CONGO (DRC)	2.0	2.5	2.5	2.0	2.0	2.2	2.7
11	CONGO, REP	2.5	2.5	3.0	2.5	2.5	2.6	2.9
12	CÔTE D'IVOIRE	2.0	2.5	3.5	2.0	2.0	2.4	2.7
13	DJIBOUTI	2.5	3.0	3.5	2.5	2.5	2.8	3.2
14	ETHIOPIA	3.0	3.5	3.5	3.5	2.5	3.2	3.4
15	GABON	NA	NA	NA	NA	NA	NA	NA
16	GAMBIA (THE)	3.0	3.5	3.5	3.0	2.0	3.0	3.4
17	GHANA	3.5	3.5	4.0	3.5	4.0	3.7	3.9
18	GUINEA	2.0	3.0	3.0	3.0	2.0	2.6	2.8
19	GUINEA BISSAU	2.5	2.5	3.0	2.5	2.5	2.6	2.7
20	KENYA	2.5	3.5	4.0	3.5	3.0	3.3	3.8
21	LESOTHO	3.5	3.5	4.0	3.0	3.5	3.5	3.5
22	LIBERIA	2.5	2.5	3.5	2.5	3.0	2.8	2.9
23	MADAGASCAR	3.0	2.5	3.5	3.5	2.5	3.0	3.4
24	MALAWI	3.5	3.0	4.0	3.5	3.0	3.4	3.3
25	MALI	3.5	3.5	3.5	3.0	3.5	3.4	3.6
26	MAURITANIA	3.0	3.0	3.5	3.0	2.5	3.0	3.2
27	MAURITIUS	NA	NA	NA	NA	NA	NA	NA
28	MOROCCO	NA	NA	NA	NA	NA	NA	NA
29	MOZAMBIQUE	3.0	4.0	4.0	3.0	3.0	3.4	3.7
30	NAMIBIA	NA	NA	NA	NA	NA	NA	NA
31	NIGER	3.0	3.5	3.5	3.0	3.0	3.2	3.4
32	NIGERIA	2.5	3.0	3.0	3.0	3.0	2.9	3.4
33	RWANDA	3.5	4.0	3.5	4.0	3.5	3.7	3.8
34	SENEGAL	3.5	3.5	4.0	3.5	3.0	3.5	3.7
35	SIERRA LEONE	2.5	3.5	3.0	3.0	3.0	3.0	3.3
36	SOUTH AFRICA	NA	NA	NA	NA	NA	NA	NA
37	SWAZILAND	NA	NA	NA	NA	NA	NA	NA
38	TANZANIA	3.5	3.5	4.0	3.0	2.5	3.3	3.8
39	TOGO	2.5	3.0	3.0	2.0	2.5	2.6	2.9
40	UGANDA	3.5	3.5	3.5	3.0	2.5	3.2	3.8
41	ZAMBIA	3.0	3.5	3.5	3.0	2.5	3.1	3.4
42	ZIMBABWE	1.5	2.0	3.5	2.0	1.5	2.1	2.0

Source: World Bank IRAI 2010 Table.

(NA) Not applicable

INPUTS: ACBF-supported projects/programs population in 2010

No.	Country	Number of active ACBF-supported projects/programs in 2010	Total grant disbursed by ACBF to the country in 2010 (US\$)	Total number of staff	Proportion female (%)	Total number of professional staff	Proportion female (%)
1	ANGOLA	0	0	NA	NA	NA	NA
2	BENIN	2	686,696	25	28.0	10	10.0
3	BOTSWANA	2	245,514	3	66.7	4	50.0
4	BURKINA FASO	6	3,747,629	47	31.9	23	21.7
5	BURUNDI	2	787,624	24	25.0	15	20.0
6	CAMEROON	4	1,674,938	26	38.5	10	60.0
7	CAPE VERDE	1	222,660	7	28.6	5	40.0
8	CAR	2	734,982	9	22.2	3	0.0
9	CHAD	0	154,210	0	NA	0	NA
10	CONGO (DRC)	2	884,323	38	34.2	23	39.1
11	CONGO, REP	2	554,250	12	41.7	5	0.0
12	CÔTE D'IVOIRE	2	1,093,821	21	33.3	9	11.1
13	DJIBOUTI	0	77,288	NA	NA	NA	NA
14	ETHIOPIA	3	2,332,234	122	32.8	76	31.6
15	GABON	5	1,450,812	47	34.0	13	30.8
16	GAMBIA (THE)	1	68,055	5	40.0	3	33.3
17	GHANA	6	3,057,139	77	27.3	58	29.3
18	GUINEA	0	0	NA	NA	NA	NA
19	GUINEA BISSAU	1	67,952	6	33.3	3	0.0
20	KENYA	7	2,180,753	28	50.0	26	50.0
21	LESOTHO	1	254,928	13	30.8	11	27.3
22	LIBERIA	1	184,207	7	14.3	3	0.0
23	MADAGASCAR	0	73,524	NA	NA	NA	NA
24	MALAWI	2	183,834	11	27.3	8	25.0
25	MALI	4	855,166	22	27.3	9	22.2
26	MAURITANIA	1	232,361	24	20.8	8	25.0
27	MAURITIUS	0	0	NA	NA	NA	NA
28	MOROCCO	1	6,903	3	0.0	2	0.0
29	MOZAMBIQUE	2	612,940	26	38.5	7	57.1
30	NAMIBIA	2	582,589	3	33.3	3	33.3
31	NIGER	1	355,685	12	25.0	6	16.7
32	NIGERIA	7	594,936	17	35.3	17	35.3
33	RWANDA	2	1,005,029	27	37.0	20	45.0
34	SENEGAL	5	1,484,362	34	26.5	16	18.8
35	SIERRA LEONE	2	21,387	5	20.0	4	0.0
36	SOUTH AFRICA	4	353,644	10	60.0	8	62.5
37	SWAZILAND	1	297,416	8	75.0	32	59.4
38	TANZANIA	3	855,654	11	63.6	10	70.0
39	TOGO	0	24,871	NA	NA	NA	NA
40	UGANDA	2	983,594	24	37.5	22	40.9
41	ZAMBIA	3	1,156,815	40	45.0	18	33.3
42	ZIMBABWE	5	1,438,586	58	34.5	36	19.4

(NA) Not applicable

INPUTS: ACBF-supported projects/programs population in 2010 (continued)

No.	Country	Qualification of ACBF-supported projects/programs professional staff					
		Number of PhD or equivalent	Proportion female %	Number of Master's Degree or equivalent	Proportion female %	Number of 1st Degree of equivalent	Proportion female %
No.	Country	NA	NA	NA	NA	NA	NA
1	ANGOLA	4	0	7	0	1	100
2	BENIN	2	0	0	NA	2	100
3	BOTSWANA	7	14.3	13	15.4	7	71.4
4	BURKINA FASO	2	0	3	0.0	8	37.5
5	BURUNDI	4	50	6	50.0	2	50.0
6	CAMEROON	5	40	2	0.0	3	66.7
7	CAPE VERDE	1	0	0	NA	2	0.0
8	CAR	NA	NA	NA	NA	NA	NA
9	CHAD	2	0	0	NA	18	50.0
10	CONGO (DRC)	1	0	4	0.0	1	0.0
11	CONGO, REP	10	10.0	0	NA	0	NA
12	CÔTE D'IVOIRE	NA	NA	NA	NA	NA	NA
13	DJIBOUTI	8	0.0	32	21.9	17	35.3
14	ETHIOPIA	1	0.0	6	66.7	6	0.0
15	GABON	0	NA	1	0.0	2	50.0
16	GAMBIA (THE)	27	11.1	24	45.8	7	57.1
17	GHANA	NA	NA	NA	NA	NA	NA
18	GUINEA	0	NA	0	NA	2	0.0
19	GUINEA BISSAU	10	0.0	6	83.3	13	69.2
20	KENYA	0	NA	4	50.0	5	20.0
21	LESOTHO	0	NA	3	0.0	0	NA
22	LIBERIA	NA	NA	NA	NA	NA	NA
23	MADAGASCAR	1	0.0	4	25.0	3	33.3
24	MALAWI	1	100.0	1	100.0	4	0.0
25	MALI	3	0.0	3	0.0	1	100.0
26	MAURITANIA	NA	NA	NA	NA	0	NA
27	MAURITIUS	2	0.0	1	0.0	0	NA
28	MOROCCO	5	20.0	5	20.0	1	100.0
29	MOZAMBIQUE	0	NA	1	0.0	2	50.0
30	NAMIBIA	2	0.0	4	25.0	0	NA
31	NIGER	9	33.3	7	28.6	1	100.0
32	NIGERIA	0	NA	13	38.5	11	36.4
33	RWANDA	2	0.0	13	23.1	11	9.1
34	SENEGAL	0	NA	1	0.0	1	0.0
35	SIERRA LEONE	6	50.0	7	42.9	0	NA
36	SOUTH AFRICA	0	NA	4	75.0	12	83.3
37	SWAZILAND	2	50.0	5	80.0	3	66.7
38	TANZANIA	NA	NA	NA	NA	0	NA
39	TOGO	9	44.4	8	37.5	3	66.7
40	UGANDA	2	0.0	5	40.0	11	27.3
41	ZAMBIA	3	0.0	34	17.6	21	23.8

(NA) Not applicable

OUTPUTS DELIVERED BY ACBF-SUPPORTED PROJECTS/PROGRAMS IN 2010: Leadership

No.	Country	Number of institutions strengthened	Number of technical assistance to government agencies	Number of leaders trained
1	ANGOLA	NA	NA	NA
2	BENIN	52	31	123
3	BOTSWANA	0	0	0
4	BURKINA FASO	23	4	54
5	BURUNDI	7	2	105
6	CAMEROON	14	3	10
7	CAPE VERDE	6	3	3
8	CAR	37	6	0
9	CHAD	0	0	0
10	CONGO (DRC)	9	6	309
11	CONGO, REP	20	3	85
12	CÔTE D'IVOIRE	16	2	69
13	DJIBOUTI	NA	NA	NA
14	ETHIOPIA	24	2	49
15	GABON	35	0	30
16	GAMBIA (THE)	0	0	0
17	GHANA	206	56	278
18	GUINEA	NA	NA	NA
19	GUINEA BISSAU	0	0	0
20	KENYA	170	0	
21	LESOTHO	20	0	9
22	LIBERIA	6	3	72
23	MADAGASCAR	NA	NA	NA
24	MALAWI	8	3	2
25	MALI	47	20	43
26	MAURITANIA	0	0	0
27	MAURITIUS	NA	NA	NA
28	MOROCCO	0	0	0
29	MOZAMBIQUE	4	3	100
30	NAMIBIA	0	0	30
31	NIGER	16	1	142
32	NIGERIA	65	5	853
33	RWANDA	61	1	5
34	SENEGAL	16	10	6
35	SIERRA LEONE	3	0	6
36	SOUTH AFRICA	10	8	40
37	SWAZILAND	0	0	0
38	TANZANIA	1	0	0
39	TOGO	NA	NA	NA
40	UGANDA	10	0	0
41	ZAMBIA	65	0	33
42	ZIMBABWE	17	16	53

(NA) Not applicable

OUTPUTS DELIVERED BY ACBF-SUPPORTED PROJECTS/PROGRAMS IN 2010: Knowledge and learning

No.	Country	Number of policy studies, research			Number of publications disseminated
		Completed	Commissioned by Government	Commissioned by others	
1	ANGOLA	NA	NA	NA	NA
2	BENIN	30	14	9	20
3	BOTSWANA	16	4	7	8
4	BURKINA FASO	17	7	2	13
5	BURUNDI	44	16	6	3
6	CAMEROON	8	6	2	4
7	CAPE VERDE	3	2	1	3
8	CAR	3	3	0	1
9	CHAD	0	0	0	0
10	CONGO (DRC)	2	1	1	2
11	CONGO, REP	0	0	0	1
12	CÔTE D'IVOIRE	17	4	4	9
13	DJIBOUTI	NA	NA	NA	NA
14	ETHIOPIA	25	18	10	-
15	GABON	8	0	8	6
16	GAMBIA (THE)	0	0	0	0
17	GHANA	93	2	84	57
18	GUINEA	NA	NA	NA	NA
19	GUINEA BISSAU	0	0	0	0
20	KENYA	10	3	3	300
21	LESOTHO	0	0	1	2
22	LIBERIA	2	1	0	1
23	MADAGASCAR	NA	NA	NA	NA
24	MALAWI	3	0	0	2
25	MALI	9	9	0	8
26	MAURITANIA	10	5	5	3
27	MAURITIUS	NA	NA	NA	NA
28	MOROCCO	0	0	0	0
29	MOZAMBIQUE	32	2	0	0
30	NAMIBIA	0	0	0	6
31	NIGER	6	5	1	2
32	NIGERIA	10	0	0	9
33	RWANDA	4	1	3	2
34	SENEGAL	24	22	1	9
35	SIERRA LEONE	0	0	0	0
36	SOUTH AFRICA	1	0	0	0
37	SWAZILAND	0	0	0	0
38	TANZANIA	13	6	7	0
39	TOGO	NA	NA	NA	NA
40	UGANDA	0	0	0	0
41	ZAMBIA	42	0	35	6
42	ZIMBABWE	13	3	2	14

(NA) Not applicable

OUTPUTS DELIVERED BY ACBF-SUPPORTED PROJECTS/PROGRAMS IN 2010: Short term training program

No.	Country	No. of short courses organized	No. of workshops organized/seminars	No. of beneficiaries of short courses	% of female beneficiaries of short courses	No. of beneficiaries of workshops and seminars	% of female beneficiaries of workshops and seminars
1	ANGOLA	NA	NA	NA	NA	NA	NA
2	BENIN	11	13	174	35.6	559	25.2
3	BOTSWANA	0	6	0	NA	80	62.5
4	BURKINA FASO	6	14	183	23.0	307	22.5
5	BURUNDI	9	5	90	18.9	932	21.7
6	CAMEROON	8	18	96	26.0	320	65.9
7	CAPE VERDE	2	2	36	33.3	36	33.3
8	CAR	0	8	0	NA	323	10.8
9	CHAD	0	0	0	NA	NA	NA
10	CONGO (DRC)	9	10	658	41.5	280	45.0
11	CONGO, REP	6	11	100	55.0	230	49.6
12	CÔTE D'IVOIRE	7	1	201	17.9	10	0.0
13	DJIBOUTI	NA	NA	NA	NA	NA	NA
14	ETHIOPIA	12	34	502	11.4	1427	15.8
15	GABON	12	14	231	78.4	615	28.9
16	GAMBIA (THE)	0	0	0	NA	0	NA
17	GHANA	0	47	0	NA	1599	40.7
18	GUINEA	NA	NA	NA	NA	NA	NA
19	GUINEA BISSAU	0	0	0	NA	0	NA
20	KENYA	29	11	1168	39.1	1431	36.5
21	LESOTHO	0	11	0	NA	175	0.0
22	LIBERIA	1	2	65	9.2	65	4.6
23	MADAGASCAR	NA	NA	NA	NA	NA	NA
24	MALAWI	2	3	4	0.0	75	38.7
25	MALI	23	24	514	59.5	603	69.0
26	MAURITANIA	0	0	0	NA	0	NA
27	MAURITIUS	NA	NA	NA	NA	NA	NA
28	MOROCCO	3	2	14	50.0	84	17.9
29	MOZAMBIQUE	0	9	0	NA	300	45.0
30	NAMIBIA	0	12	0	NA	300	41.7
31	NIGER	2	4	38	23.7	142	14.8
32	NIGERIA	29	99	366	13.1	1484	17.9
33	RWANDA	6	12	282	38.3	520	32.1
34	SENEGAL	9	19	162	73.5	445	45.8
35	SIERRA LEONE	1	0	6	0.0	0	NA
36	SOUTH AFRICA	1	1	0	NA	230	32.6
37	SWAZILAND	3	2	29	79.3	0	NA
38	TANZANIA	15	14	124	41.9	450	43.8
39	TOGO	NA	NA	NA	NA	NA	NA
40	UGANDA	12	17	244	35.2	1298	0.8
41	ZAMBIA	16	30	357	44.8	517	54.2
42	ZIMBABWE	2	3	101	31.7	1010	38.4

(NA) Not applicable

OUTPUTS DELIVERED BY ACBF-SUPPORTED PROJECTS/PROGRAMS IN 2010: Beneficiaries of tertiary training

No.	Country	No. of PhD or equiv.	% of female	No. of Master's Degree or equiv	% of female	No. of Certificates or equiv.	% of female
1	ANGOLA	NA	NA	NA	NA	NA	NA
2	BENIN	0	NA	0	NA	0	NA
3	BOTSWANA	5	60.0	2	100	0	NA
4	BURKINA FASO	3	0.0	80	20.0	0	NA
5	BURUNDI	3	0.0	0	NA	0	NA
6	CAMEROON	0	NA	47	19.1	43	20.9
7	CAPE VERDE	0	NA	0	NA	36	33.3
8	CAR	0	NA	12	25.0	16	12.5
9	CHAD	0	NA	0	NA	0	NA
10	CONGO (DRC)	1	0.0	19	15.8	0	NA
11	CONGO, REP	0	NA	0	NA	20	50.0
12	CÔTE D'IVOIRE	40	20.0	0	NA	0	NA
13	DJIBOUTI	NA	NA	NA	NA	NA	NA
14	ETHIOPIA	12	25.0	8	50.0	2	100
15	GABON	30	16.7	0	NA	25	100
16	GAMBIA (THE)	0	NA	0	NA	0	NA
17	GHANA	0	NA	108	32.4	60	33.3
18	GUINEA	NA	NA	NA	NA	NA	NA
19	GUINEA BISSAU	0	NA	0	NA	0	NA
20	KENYA	38	28.9	138	28.3	0	NA
21	LESOTHO	0	NA	0	NA	0	NA
22	LIBERIA	1	0.0	0	NA	65	9.2
23	MADAGASCAR	NA	NA	0	NA	NA	NA
24	MALAWI	0	NA	0	NA	4	25.0
25	MALI	0	NA	0	NA	0	NA
26	MAURITANIA	0	NA	0	NA	0	NA
27	MAURITIUS	NA	NA	0	NA	NA	NA
28	MOROCCO	0	NA	0	NA	0	NA
29	MOZAMBIQUE	0	NA	0	NA	30	30.0
30	NAMIBIA	0	NA	1	0.0	0	NA
31	NIGER	0	NA	0	NA	0	NA
32	NIGERIA	0	NA	0	NA	0	NA
33	RWANDA	0	NA	18	33.3	278	36.3
34	SENEGAL	0	NA	38	18.4	0	NA
35	SIERRA LEONE	0	NA	0	NA	0	NA
36	SOUTH AFRICA	0	NA	0	NA	0	NA
37	SWAZILAND	0	NA	0	NA	0	NA
38	TANZANIA	0	NA	2	0.0	3	100
39	TOGO	NA	NA	NA	NA	NA	NA
40	UGANDA	0	NA	34	32.4	3	33.3
41	ZAMBIA	0	NA	33	24.2	357	44.8
42	ZIMBABWE	3	66.7	32	62.5	40	30.0

(NA) Not applicable

OUTPUTS DELIVERED BY ACBF-SUPPORTED PROJECTS/PROGRAMS IN 2010: Introducing or adapting curricula

No.	Country	No. of curricula adapted	No. of new curricula introduced
1	ANGOLA	NA	0
2	BENIN	0	0
3	BOTSWANA	0	0
4	BURKINA FASO	0	0
5	BURUNDI	4	0
6	CAMEROON	0	0
7	CAPE VERDE	0	0
8	CAR	0	0
9	CHAD	0	0
10	CONGO (DRC)	0	0
11	CONGO, REP	0	0
12	CÔTE D'IVOIRE	0	0
13	DJIBOUTI	NA	NA
14	ETHIOPIA	0	0
15	GABON	0	0
16	GAMBIA (THE)	0	0
17	GHANA	4	3
18	GUINEA	NA	NA
19	GUINEA BISSAU	0	0
20	KENYA	0	7
21	LESOTHO	0	0
22	LIBERIA	0	1
23	MADAGASCAR	NA	NA
24	MALAWI	0	0
25	MALI	3	1
26	MAURITANIA	0	0
27	MAURITIUS	NA	NA
28	MOROCCO	0	0
29	MOZAMBIQUE	0	0
30	NAMIBIA	0	1
31	NIGER	0	0
32	NIGERIA	0	0
33	RWANDA	4	2
34	SENEGAL	0	0
35	SIERRA LEONE	0	0
36	SOUTH AFRICA	0	0
37	SWAZILAND	0	0
38	TANZANIA	0	0
39	TOGO	NA	NA
40	UGANDA	0	0
41	ZAMBIA	0	0
42	ZIMBABWE	16	3

(NA) Not applicable

Agricultural strategy formulation and implementation

No.	Country	Existence of strategy in use for the agricultural sector	CD integrated in that Strategy	Level of integration
1	ANGOLA	YES	CD mainstreamed, clear objective	National/Federal
2	BENIN	YES	CD mainstreamed, no clear object	National & Local
3	BOTSWANA	YES	CD mainstreamed, no clear object	National/Federal
4	BURKINA FASO	YES	CD mainstreamed, no clear object	National & Regional
5	BURUNDI	YES	CD mainstreamed, no clear object	Local
6	CAMEROON	YES	CD mainstreamed, clear objective	National, Regional & Local
7	CAPE VERDE	YES	CD mainstreamed, no clear object	Regional & Local
8	CAR	YES	CD mainstreamed, clear objective	National/Federal
9	CHAD	YES	CD mainstreamed, clear objective	National/Federal
10	CONGO (DRC)	YES	CD mainstreamed, clear objective	National/Federal
11	CONGO, REP	YES	CD mainstreamed, clear objective	National/Federal
12	CÔTE D'IVOIRE	YES	CD mainstreamed, clear objective	National, Regional & Local
13	DJIBOUTI	YES	CD mainstreamed, clear objective	National, Regional & Local
14	ETHIOPIA	YES	CD mainstreamed, clear objective	National, Regional & Local
15	GABON	YES	CD mainstreamed, no clear object	National & Regional
16	GAMBIA (THE)	YES	CD mainstreamed, clear objective	Region/Province/State
17	GHANA	YES	CD mainstreamed, clear objective	Region/Province/State
18	GUINEA	YES	CD mainstreamed, clear objective	National/Federal
19	GUINEA BISSAU	YES	CD mainstreamed, clear objective	National & Regional
20	KENYA	YES	CD mainstreamed, no clear object	National, Regional & Local
21	LESOTHO	YES	CD mainstreamed, clear objective	National & Local
22	LIBERIA	YES	CD not mainstreamed	National/Federal
23	MADAGASCAR	YES	CD mainstreamed, clear objective	National, Regional & Local
24	MALAWI	YES	CD mainstreamed, no clear object	National/Federal
25	MALI	YES	CD mainstreamed, clear objective	National, Regional & Local
26	MAURITANIA	YES	CD mainstreamed, no clear object	National/Federal
27	MAURITIUS	YES	CD not mainstreamed	National/Federal
28	MOROCCO	YES	CD mainstreamed, clear objective	National, Regional & Local
29	MOZAMBIQUE	YES	CD mainstreamed, clear objective	National/Federal
30	NAMIBIA	YES	CD mainstreamed, no clear object	National, Regional & Local
31	NIGER	YES	CD mainstreamed, clear objective	National & Regional
32	NIGERIA	YES	CD not mainstreamed	National & Regional
33	RWANDA	YES	CD mainstreamed, clear objective	National, Regional & Local
34	SENEGAL	YES	CD mainstreamed, clear objective	National/Federal
35	SIERRA LEONE	YES	CD mainstreamed, clear objective	National, Regional & Local
36	SOUTH AFRICA	YES	CD mainstreamed, clear objective	National, Regional & Local
37	SWAZILAND	NO	...	...
38	TANZANIA	YES	CD mainstreamed, clear objective	National/Federal
39	TOGO	YES	CD mainstreamed, clear objective	National, Regional & Local
40	UGANDA	YES	CD mainstreamed, clear objective	National/Federal
41	ZAMBIA	YES	CD mainstreamed, no clear object	National & Regional
42	ZIMBABWE	YES	CD mainstreamed, clear objective	Local

(...) Data not available

Agricultural strategy formulation and implementation (Cont'd)

No.	Country	Country has completed the CAADP Investment Plan	Country performance in the CAADP four pillars				Completion of CAADP donors roundtable
			Pillar 1	Pillar 2	Pillar 3	Pillar 4	
1	ANGOLA	YES	High	High	Very High	High	YES
2	BENIN	YES	Average	Average	Average	Average	NO
3	BOTSWANA	NO	...	...	...	...	...
4	BURKINA FASO	YES	Average	Average	Low	Average	YES
5	BURUNDI	YES	Very Low	Very Low	Very Low	Very Low	NO
6	CAMEROON	YES	Low	Average	High	Average	
7	CAPE VERDE	YES	Average	High	Very High	High	NO
8	CAR	YES	Low	Low	Low	Very Low	NO
9	CHAD	YES	Average	Average	High	Average	YES
10	CONGO (DRC)	NO	...	...	...	...	...
11	CONGO, REP	YES	Low	Average	Average	High	...
12	CÔTE D'IVOIRE	YES	...	...	...	...	...
13	DJIBOUTI	YES	Average	Average	Average	Average	NO
14	ETHIOPIA	YES	High	Low	High	Low	YES
15	GABON	YES	Low	Low	Average	Low	NO
16	GAMBIA (THE)	YES	Very High	Very High	Very High	Very High	YES
17	GHANA	YES	Average	Average	High	Average	YES
18	GUINEA	YES	Low	Low	Low	Low	...
19	GUINEA BISSAU	YES	Very High	Very High	Very High	Very High	...
20	KENYA	YES	Average	Very High	Average	High	YES
21	LESOTHO	YES	Average	Low	High	Average	NO
22	LIBERIA	YES	Average	Average	Average	Average	YES
23	MADAGASCAR	YES	Low	Average	Low	Low	...
24	MALAWI	YES	High	High	Very High	High	...
25	MALI	YES	High	Average	High	High	YES
26	MAURITANIA	NO	Very Low	Very Low	Low	Very Low	NO
27	MAURITIUS	NO	High	High	High	Average	NO
28	MOROCCO	YES	Average	Average	Average	Average	NO
29	MOZAMBIQUE	NO	Low	Low	Average	Low	YES
30	NAMIBIA	NO	High	Average	High	Average	...
31	NIGER	YES	High	High	High	High	YES
32	NIGERIA	YES	Average	Average	Average	Average	YES
33	RWANDA	YES	High	Average	High	Average	YES
34	SENEGAL	YES	Average	Low	High	Average	NO
35	SIERRA LEONE	YES	Low	High	High	High	YES
36	SOUTH AFRICA	NO	...	...	...	...	NO
37	SWAZILAND	YES	Average	Average	Average	Average	NO
38	TANZANIA	NO	Average	Average	Average	Average	YES
39	TOGO	YES	Average	Average	Average	Low	NO
40	UGANDA	YES	Average	Average	High	Very High	YES
41	ZAMBIA	YES	Average	Average	Average	Average	YES
42	ZIMBABWE	NO	Average	Average	Average	Average	...

(...) Data not available

Assessment of the level of the implementation of the Strategy for agriculture

No.	Country	In agricultural productivity	In training	In R&D	In rural infrastructure & marketing	In water management	In land management	Level of organization for implementation of CAADP	Overall quality of current agricultural Strategy
1	ANGOLA	Very High	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
2	BENIN	Medium	Medium	Medium	Medium	Medium	Medium	High	Medium
3	BOTSWANA	Low	Medium	Medium	Low	Low	Low	Low	Medium
4	BURKINA FASO	High	Medium	Medium	Medium	Medium	Medium	High	Medium
5	BURUNDI	Low	Low	Low	Very Low	Low	Low	Medium	Very Low
6	CAMEROON	Medium	Medium	Low	Low	Low	Low	Very High	Low
7	CAPE VERDE	Medium	Medium	Medium	High	Medium	Medium	High	Medium
8	CAR	Low	Low	Low	Low	Low	Low	High	Medium
9	CHAD	Medium	Medium	High	High	Medium	Medium	High	Medium
10	CONGO (DRC)	Medium	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
11	CONGO, REP	Low	Medium	Low	Low	Low	Medium	Low	Low
12	COTE D'IVOIRE	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
13	DJIBOUTI	Low	Low	Low	Low	Low	Low	Low	Low
14	ETHIOPIA	High	Medium	High	High	High	Medium	Medium	Medium
15	GABON	Low	Medium	Low	Medium	High	Low	Very High	Medium
16	GAMBIA (THE)	Very High	Very High	Very High	High	High	Very High	Very High	Very High
17	GHANA	High	Medium	Medium	Medium	Low	Medium	Medium	High
18	GUINEA	Medium	Medium	Medium	Medium	Medium	Low	Medium	Medium
19	GUINEA BISSAU	Low	Low	Low	Low	Low	Medium	High	High
20	KENYA	High	Medium	High	High	Medium	Medium	High	High
21	LESOTHO	Low	Medium	Low	Low	Low	Medium	High	Medium
22	LIBERIA	Low	Low	Low	Low	Low	Low	High	Medium
23	MADAGASCAR	Low	Very Low	Low	Low	Low	Very Low	Low	Low
24	MALAWI	High	High	High	Medium	Low	Medium	Low	Medium
25	MALI	Very High	High	Very High	High	High	Medium	High	Medium
26	MAURITANIA	High	High	Medium	Low	High	Medium	High	Low
27	MAURITIUS	Medium	Medium	Medium	Medium	Low	Low	Medium	Low
28	MOROCCO	High	High	Medium	High	Very High	High	High	Medium
29	MOZAMBIQUE	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
30	NAMIBIA	Low	Low	Low	Very Low	Low	Low	Medium	Low
31	NIGER	High	High	High	High	High	High	Medium	Medium
32	NIGERIA	Low	Medium	Low	Low	Low	Low	Medium	Medium
33	RWANDA	Very High	High	Very High	High	High	High	Medium	High
34	SENEGAL	High	Medium	Medium	Low	High	High	Very Low	Very Low
35	SIERRA LEONE	Very High	Very High	High	Very High	Low	Medium	High	Medium
36	SOUTH AFRICA	Low	Low	Low	Low	Low	Low	Very Low	Very Low
37	SWAZILAND	Medium	Medium	Low	Low	Medium	Low	Medium	Low
38	TANZANIA	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
39	TOGO	High	Medium	Low	Medium	Medium	Medium	High	High
40	UGANDA	Low	Low	Medium	Low	Low	Low	Medium	Medium
41	ZAMBIA	Medium	High	High	High	Medium	Medium	High	Medium
42	ZIMBABWE	Low	Medium	Low	Low	Medium	Low	Medium	Low

Agriculture and job creation

No.	Country	Incentives for youth jobs creation	Domain concerned
1	ANGOLA	YES	Marketing
2	BENIN	YES	Production, Transformation & Marketing
3	BOTSWANA	NO	...
4	BURKINA FASO	YES	Production & Transformation
5	BURUNDI	YES	Production
6	CAMEROON	YES	Production, Transformation & Marketing
7	CAPE VERDE	YES	Production & Transformation
8	CAR	YES	Production
9	CHAD	NO	...
10	CONGO (DRC)	...	...
11	CONGO, REP	YES	Production
12	CÔTE D'IVOIRE	...	...
13	DJIBOUTI	YES	Production, Transformation & Marketing
14	ETHIOPIA	YES	Production & Transformation
15	GABON	NO	...
16	GAMBIA (THE)	YES	Production, Transformation & Marketing
17	GHANA	YES	Production
18	GUINEA	NO	...
19	GUINEA BISSAU	YES	Production
20	KENYA	YES	Production, Transformation & Marketing
21	LESOTHO	YES	Production & Marketing
22	LIBERIA	YES	Production, Transformation & Marketing
23	MADAGASCAR	YES	Production
24	MALAWI	YES	Production, Transformation & Marketing
25	MALI	YES	Production, Transformation & Marketing
26	MAURITANIA	YES	Production
27	MAURITIUS	YES	Production, Transformation & Marketing
28	MOROCCO	YES	Production, Transformation & Marketing
29	MOZAMBIQUE	YES	Production & Marketing
30	NAMIBIA	YES	Production & Marketing
31	NIGER	YES	Production, Transformation & Marketing
32	NIGERIA	YES	Production, Transformation & Marketing
33	RWANDA	YES	Production & Transformation
34	SENEGAL	YES	Production, Transformation & Marketing
35	SIERRA LEONE	YES	Production, Transformation & Marketing
36	SOUTH AFRICA	...	...
37	SWAZILAND	...	...
38	TANZANIA	YES	Production
39	TOGO	YES	Production, Transformation & Marketing
40	UGANDA	YES	Production, Transformation & Marketing
41	ZAMBIA	NO	...
42	ZIMBABWE	NO	...

(...) Data not available

Training, Research and Development / Innovations in agriculture

No.	Country	No. of tertiary academic institutions delivering training in agriculture	No. of tertiary academic institutions delivering training in agricultural economics	No. of professional institutions delivering training in agriculture	Level of involvement of NGOs in agricultural sector	Existence of institution/research center dedicated to agriculture	Notable innovations in agric. Over the last five years
1	ANGOLA	...	...	...	Average	YES	...
2	BENIN	4	2	2	Average	YES	YES
3	BOTSWANA	3	1	2	Average	YES	NO
4	BURKINA FASO	2	3	1	High	YES	YES
5	BURUNDI	3	1	0	Average	YES	YES
6	CAMEROON	1	1	40	Average	YES	YES
7	CAPE VERDE	1	1	1	Very High	YES	YES
8	CAR	1	0	2	High	YES	NO
9	CHAD	3	2	2	Average	YES	YES
10	CONGO (DRC)	6	2	2	High	YES	YES
11	CONGO, REP	1	1	2	High	YES	YES
12	CÔTE D'IVOIRE	1	1	1	Average	YES	NO
13	DJIBOUTI	0	0	0	Average	YES	YES
14	ETHIOPIA	17	13	25	Average	YES	YES
15	GABON	1	1	2	Low	YES	YES
16	GAMBIA (THE)	1	1	4	High	YES	YES
17	GHANA	7	5	14	High	YES	YES
18	GUINEA	2	1	3	Average	YES	NO
19	GUINEA BISSAU	0	0	1	High	YES	YES
20	KENYA	11	3	1	High	YES	...
21	LESOTHO	2	1	1	Average	YES	YES
22	LIBERIA	4	0	4	High	YES	NO
23	MADAGASCAR	6	1	120	Low	YES	YES
24	MALAWI	4	3	2	Average	YES	YES
25	MALI	4	4	9	High	YES	YES
26	MAURITANIA	1	1	2	Very Low	YES	YES
27	MAURITIUS	1	1	6	Low	YES	YES
28	MOROCCO	3	2	11	High	YES	YES
29	MOZAMBIQUE	5	1	10	Average	YES	YES
30	NAMIBIA	3	3	3	Low	YES	YES
31	NIGER	2	1	1	High	YES	YES
32	NIGERIA	53	48	53	Average	...	YES
33	RWANDA	3	1	1	Average	YES	YES
34	SENEGAL	2	1	2	High	YES	YES
35	SIERRA LEONE	2	3	1	High	YES	YES
36	SOUTH AFRICA	9	5	...	Average	YES	YES
37	SWAZILAND	4	1	1	High	YES	YES
38	TANZANIA	16	0	1	High	YES	YES
39	TOGO	1	2	3	High	YES	YES
40	UGANDA	5	5	3	High	YES	YES
41	ZAMBIA	13	2	2	Very High	YES	YES
42	ZIMBABWE	10	10	8	High	YES	YES

(...) Data not available

Role of private sector in the value chain

No.	Country	Intervention of the private sector in the value chain			
		Production and marketing of agricultural inputs	Production of agricultural commodities for local consumption	Production of agricultural commodities for export	Production and processing of agricultural commodities for local consumption
1	ANGOLA	YES	NO	YES	YES
2	BENIN	YES	YES	YES	YES
3	BOTSWANA	YES	YES	YES	YES
4	BURKINA FASO	YES	YES	YES	YES
5	BURUNDI	YES	YES	YES	YES
6	CAMEROON	YES	YES	YES	YES
7	CAPE VERDE	YES	YES	NO	YES
8	CAR	NO	YES	NO	YES
9	CHAD	NO	YES	YES	YES
10	CONGO (DRC)	NO	YES	YES	YES
11	CONGO, REP	YES	YES	NO	YES
12	CÔTE D'IVOIRE	YES	YES	YES	YES
13	DJIBOUTI	NO	YES	YES	YES
14	ETHIOPIA	YES	YES	YES	YES
15	GABON	YES	NO	YES	YES
16	GAMBIA (THE)	YES	YES	YES	YES
17	GHANA	YES	YES	YES	YES
18	GUINEA	YES	YES	YES	YES
19	GUINEA BISSAU	YES	YES	YES	YES
20	KENYA	YES	YES	YES	YES
21	LESOTHO	NO	YES	YES	YES
22	LIBERIA	YES	YES	YES	YES
23	MADAGASCAR	YES	YES	YES	YES
24	MALAWI	YES	YES	YES	YES
25	MALI	YES	YES	YES	YES
26	MAURITANIA	NO	YES	NO	YES
27	MAURITIUS	YES	YES	YES	YES
28	MOROCCO	YES	YES	YES	NO
29	MOZAMBIQUE	YES	NO	YES	NO
30	NAMIBIA	YES	YES	YES	YES
31	NIGER	YES	YES	YES	YES
32	NIGERIA	YES	YES	YES	YES
33	RWANDA	NO	YES	YES	YES
34	SENEGAL	YES	YES	YES	YES
35	SIERRA LEONE	YES	YES	YES	YES
36	SOUTH AFRICA	NO	NO	NO	YES
37	SWAZILAND	YES	YES	YES	YES
38	TANZANIA	YES	YES	YES	YES
39	TOGO	YES	YES	YES	YES
40	UGANDA	YES	YES	YES	YES
41	ZAMBIA	YES	YES	YES	YES
42	ZIMBABWE	YES	YES	NO	YES

Role of private sector in the value chain (Cont'd)

No.	Country	Intervention of the private sector in the value chain				
		Production and processing of agricultural commodities for export	Processing of agricultural products intended for local consumption	Processing of agricultural commodities for export	Marketing of agricultural commodities intended for local consumption	Marketing of agricultural commodities intended for export
1	ANGOLA	YES	NO	NO	YES	YES
2	BENIN	YES	YES	YES	YES	YES
3	BOTSWANA	YES	YES	YES	YES	YES
4	BURKINA FASO	YES	YES	YES	YES	YES
5	BURUNDI	YES	YES	YES	YES	YES
6	CAMEROON	YES	YES	YES	YES	YES
7	CAPE VERDE	NO	YES	NO	YES	NO
8	CAR	NO	YES	NO	YES	NO
9	CHAD	YES	YES	YES	YES	YES
10	CONGO (DRC)	NO	YES	NO	YES	NO
11	CONGO, REP	NO	YES	NO	YES	NO
12	CÔTE D'IVOIRE	YES	YES	YES	YES	YES
13	DJIBOUTI	NO	NO	NO	YES	NO
14	ETHIOPIA	YES	YES	YES	YES	YES
15	GABON	YES	YES	YES	NO	NO
16	GAMBIA (THE)	YES	YES	YES	YES	YES
17	GHANA	YES	YES	YES	YES	YES
18	GUINEA	NO	YES	NO	YES	NO
19	GUINEA BISSAU	NO	YES	NO	YES	YES
20	KENYA	YES	NO	NO	YES	YES
21	LESOTHO	NO	YES	YES	YES	YES
22	LIBERIA	YES	YES	NO	YES	YES
23	MADAGASCAR	YES	YES	YES	YES	YES
24	MALAWI	YES	YES	YES	YES	YES
25	MALI	YES	YES	YES	YES	YES
26	MAURITANIA	NO	YES	NO	YES	NO
27	MAURITIUS	YES	YES	YES	YES	YES
28	MOROCCO	YES	NO	YES	YES	YES
29	MOZAMBIQUE	YES	NO	YES	NO	YES
30	NAMIBIA	YES	YES	YES	YES	NO
31	NIGER	YES	YES	YES	YES	YES
32	NIGERIA	YES	YES	YES	YES	YES
33	RWANDA	YES	NO	NO	YES	YES
34	SENEGAL	YES	YES	YES	YES	YES
35	SIERRA LEONE	YES	YES	YES	YES	YES
36	SOUTH AFRICA	YES	YES	YES	NO	NO
37	SWAZILAND	YES	YES	YES	YES	YES
38	TANZANIA	YES	YES	YES	YES	YES
39	TOGO	YES	YES	YES	YES	YES
40	UGANDA	YES	YES	YES	YES	YES
41	ZAMBIA	YES	YES	YES	YES	YES
42	ZIMBABWE	YES	YES	YES	NO	NO

Role of private sector in the value chain (Cont'd)

No.	Country	State involvement in procurement and distribution of major agricultural commodities	Level of processing of key agricultural products		Existence of a financial institution dedicated to agriculture	Level of access to market by small farmers
			Major staple agricultural commodity	Major livestock commodity		
1	ANGOLA	YES	Very High	High	YES	High
2	BENIN	NO	Medium	Medium	NO	Medium
3	BOTSWANA	YES	Medium	Very High	YES	High
4	BURKINA FASO	YES	Low	Low	NO	Low
5	BURUNDI	NO	Low	Low	NO	Medium
6	CAMEROON	NO	Low	Low	NO	Low
7	CAPE VERDE	NO	Very Low	Very Low	YES	Low
8	CAR	NO	Low	Low	NO	Low
9	CHAD	YES	Low	Medium	NO	Medium
10	CONGO (DRC)	NO	Very Low	Low	NO	Medium
11	CONGO, REP	NO	Low	Low	YES	Medium
12	CÔTE D'IVOIRE	NO	Low	Low	NO	Low
13	DJIBOUTI	YES	Very Low	Very Low	YES	Medium
14	ETHIOPIA	YES	Very Low	Very Low	YES	Low
15	GABON	NO	Low	Low	NO	Medium
16	GAMBIA (THE)	NO	Low	Low	YES	Low
17	GHANA	NO	Low	Low	YES	Low
18	GUINEA	NO	Medium	Low	...	Low
19	GUINEA BISSAU	NO	Medium	Low	NO	Very Low
20	KENYA	YES	Medium	Medium	YES	Medium
21	LESOTHO	YES	Low	Low	NO	Low
22	LIBERIA	NO	Medium	Low	YES	Low
23	MADAGASCAR	NO	Very Low	Very Low	NO	Very Low
24	MALAWI	...	Very High	High	NO	Very High
25	MALI	YES	Low	Low	YES	Very High
26	MAURITANIA	NO	Very Low	Medium	...	Very Low
27	MAURITIUS	YES	Very Low	Very Low	YES	High
28	MOROCCO	YES	Medium	Medium	YES	Medium
29	MOZAMBIQUE	NO	Medium	Medium	YES	Low
30	NAMIBIA	YES	Medium	High	YES	Medium
31	NIGER	YES	Low	Low	YES	Low
32	NIGERIA	YES	Low	Low	YES	Low
33	RWANDA	NO	Low	High	YES	Medium
34	SENEGAL	NO	High	Medium	YES	Medium
35	SIERRA LEONE	NO	Low	Low	YES	Low
36	SOUTH AFRICA	YES	Medium	Medium	YES	
37	SWAZILAND	YES	Very High	Medium	YES	Low
38	TANZANIA	NO	Medium	Very Low	YES	Medium
39	TOGO	YES	Low	Low	NO	Low
40	UGANDA	NO	Very Low	Very Low	YES	Medium
41	ZAMBIA	YES	High	High	NO	Medium
42	ZIMBABWE	YES	High	High	YES	Medium

(...) Data not available

Food security

No.	Country	Country received food aid over the last 5 years	Existence of a food security & Early warning system	Operated by	The country has put in place a security policy	The country has put in place a security program
1	ANGOLA	YES	YES	Gov. & Dev. Partner	YES	YES
2	BENIN	YES	YES	Government	YES	YES
3	BOTSWANA	NO	YES	Government	YES	YES
4	BURKINA FASO	YES	YES	Government	YES	YES
5	BURUNDI	YES	YES	NGO	YES	YES
6	CAMEROON	YES	YES	Government	YES	YES
7	CAPE VERDE	YES	YES	Government	YES	YES
8	CAR	YES	YES	Gov. & Dev. Partner	YES	YES
9	CHAD	YES	YES	Government	YES	YES
10	CONGO (DRC)	YES	YES	Gov. & Dev. Partner	YES	YES
11	CONGO, REP	YES	YES	Government	YES	YES
12	CÔTE D'IVOIRE	YES	YES	Government	YES	YES
13	DJIBOUTI	...	YES	Gov. & Dev. Partner	YES	YES
14	ETHIOPIA	YES	YES	Government	YES	YES
15	GABON	NO	NO	...	YES	YES
16	GAMBIA (THE)	YES	YES	Government	YES	YES
17	GHANA	YES	YES	Government	YES	YES
18	GUINEA	NO	YES	Government	YES	YES
19	GUINEA BISSAU	YES	YES	Government	YES	YES
20	KENYA	YES	YES	Government	YES	YES
21	LESOTHO	YES	YES	Government	YES	YES
22	LIBERIA	YES	YES	Gov. & Dev. Partner	YES	YES
23	MADAGASCAR	YES	YES	Government	NO	YES
24	MALAWI	NO	YES	Government	YES	YES
25	MALI	YES	YES	Government	NO	YES
26	MAURITANIA	YES	YES	Government	NO	YES
27	MAURITIUS	NO	NO	...	...	YES
28	MOROCCO	YES	YES	Government	YES	YES
29	MOZAMBIQUE	YES	YES	Government	NO	NO
30	NAMIBIA	YES	YES	Government	YES	YES
31	NIGER	YES	YES	Gov. & Dev. Partner	YES	YES
32	NIGERIA	NO	YES	Gov. & Dev. Partner	YES	YES
33	RWANDA	NO	YES	Government	NO	YES
34	SENEGAL	YES	YES	Government	YES	YES
35	SIERRA LEONE	YES	YES	Government	YES	YES
36	SOUTH AFRICA	NO	YES	Government	YES	YES
37	SWAZILAND	YES	YES	Government	YES	YES
38	TANZANIA	YES	YES	Government	NO	YES
39	TOGO	NO	YES	Government	NO	YES
40	UGANDA	NO	YES	Gov. & Dev. Partner	YES	YES
41	ZAMBIA	YES	YES	Government	YES	YES
42	ZIMBABWE	YES	YES	Government	YES	YES

(...) Data not available

Information system: Agricultural statistics

No.	Country	Agricultural census conducted	Agricultural survey conducted during the last 5 years	Frequency of agricultural surveys	Rating of the current agricultural statistics
1	ANGOLA	YES	YES	3-5 Years	High
2	BENIN	NO	YES	3-5 Years	Low
3	BOTSWANA	YES	YES	1-2 Years	Medium
4	BURKINA FASO	YES	YES	3-5 Years	Low
5	BURUNDI	NO	...	...	...
6	CAMEROON	YES	NO	...	Very Low
7	CAPE VERDE	YES	YES	6 Years and above	Low
8	CAR	YES	YES	1-2 Years	Medium
9	CHAD	YES	YES	1-2 Years	Very Low
10	CONGO (DRC)	YES	YES	3-5 Years	Medium
11	CONGO, REP	YES	NO	...	Medium
12	CÔTE D'IVOIRE	YES	NO	...	...
13	DJIBOUTI	YES	...	6 Years and above	Low
14	ETHIOPIA	YES	YES	1-2 Years	Very Low
15	GABON	NO	NO	...	Very Low
16	GAMBIA	YES	YES	1-2 Years	High
17	GHANA	YES	YES	1-2 Years	Medium
18	GUINEA	YES	YES	3-5 Years	Medium
19	GUINEA BISSAU	YES	YES	1-2 Years	Low
20	KENYA	NO	YES	6 Years and above	Low
21	LESOTHO	YES	YES	1-2 Years	Medium
22	LIBERIA	YES	YES	1-2 Years	Medium
23	MADAGASCAR	YES	YES	3-5 Years	Low
24	MALAWI	YES	YES	1-2 Years	High
25	MALI	YES	YES	1-2 Years	Medium
26	MAURITANIA	YES	NO	...	Medium
27	MAURITIUS	NO	YES	3-5 Years	...
28	MOROCCO	YES	YES	1-2 Years	Medium
29	MOZAMBIQUE	YES	YES	1-2 Years	...
30	NAMIBIA	YES	YES	3-5 Years	Medium
31	NIGER	YES	YES	1-2 Years	High
32	NIGERIA	YES	YES	1-2 Years	High
33	RWANDA	NO	YES	1-2 Years	Medium
34	SENEGAL	YES	YES	1-2 Years	Low
35	SIERRA LEONE	YES	YES	1-2 Years	Medium
36	SOUTH AFRICA	YES	YES	1-2 Years	...
37	SWAZILAND	YES	YES	1-2 Years	Low
38	TANZANIA	YES	YES	3-5 Years	Very High
39	TOGO	YES	NO	...	Low
40	UGANDA	YES	YES	3-5 Years	Low
41	ZAMBIA	YES	YES	1-2 Years	Medium
42	ZIMBABWE	YES	YES	3-5 Years	High

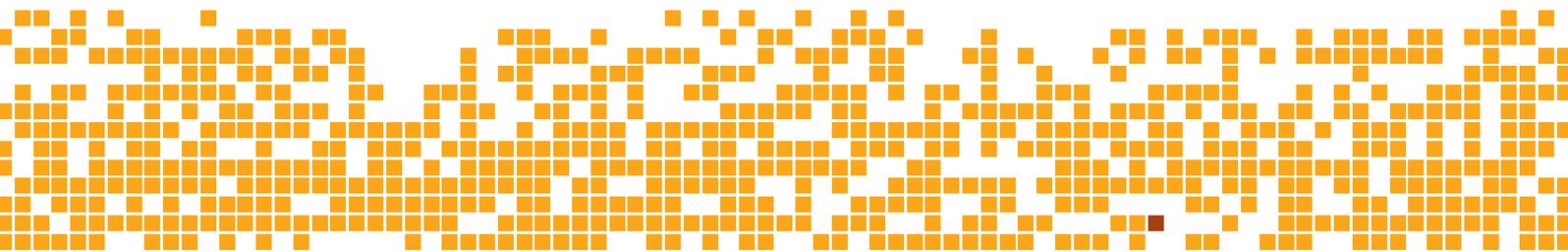
Information system: Market information

No.	Country	Existence of an agricultural market information system	Coverage		
			National	Local	Regional
1	ANGOLA	...	...	...	...
2	BENIN	YES	YES	YES	YES
3	BOTSWANA	YES	YES	YES	
4	BURKINA FASO	YES	YES	YES	YES
5	BURUNDI	YES	NO	NO	YES
6	CAMEROON	YES	NO	YES	YES
7	CAPE VERDE	YES	YES	YES	YES
8	CAR	NO	...	...	...
9	CHAD	YES	YES	YES	NO
10	CONGO (DRC)	YES	NO	YES	NO
11	CONGO, REP	YES	YES	YES	NO
12	CÔTE D'IVOIRE	YES	YES	YES	YES
13	DJIBOUTI	YES	YES	YES	NO
14	ETHIOPIA	YES	YES	YES	YES
15	GABON	YES	NO	YES	NO
16	GAMBIA (THE)	YES	YES	YES	YES
17	GHANA	YES	YES	YES	YES
18	GUINEA	YES	YES	YES	NO
19	GUINEA BISSAU	YES	YES	YES	YES
20	KENYA	YES	YES	YES	NO
21	LESOTHO	YES	YES	YES	NO
22	LIBERIA	YES	YES	YES	NO
23	MADAGASCAR	YES	YES	YES	YES
24	MALAWI	YES	YES	YES	YES
25	MALI	YES	YES	YES	NO
26	MAURITANIA	YES	YES	YES	YES
27	MAURITIUS	YES	YES	YES	NO
28	MOROCCO	YES	YES	YES	YES
29	MOZAMBIQUE	YES	YES	YES	YES
30	NAMIBIA	YES	YES	YES	YES
31	NIGER	YES	YES	YES	NO
32	NIGERIA	YES	YES	YES	YES
33	RWANDA	YES	YES	YES	NO
34	SENEGAL	YES	YES	YES	NO
35	SIERRA LEONE	YES	YES	...	...
36	SOUTH AFRICA	YES	...	...	...
37	SWAZILAND	YES	YES	...	...
38	TANZANIA	YES	YES	...	...
39	TOGO	YES	YES	YES	NO
40	UGANDA	YES	YES	YES	NO
41	ZAMBIA	YES	YES	YES	YES
42	ZIMBABWE	YES	YES	...	...

(...) Data not available



9 781779 370341



THE AFRICAN CAPACITY BUILDING FOUNDATION | FONDATION POUR LE RENFORCEMENT DES CAPACITES EN AFRIQUE

The African Capacity Building Foundation
7th Floor, ZB Life Towers
Cnr. Jason Moyo Avenue/Sam Nujoma Street
P.O. Box 1562
Harare, ZIMBABWE
Tel: (+263 4) 702931/2, 790398/9, 700210/11
Fax: (+263 4) 702915, 700215, 792894
Email: root@acbf-pact.org
Web site: www.acbf-pact.org

ISBN: 978-1-77937-025-9

EAN: 9781779370259