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- contribute to policy dialogue;
- support the monitoring of the implementation of poverty related policy;
- strengthen national and international poverty research networks, and forge linkages between research(ers) and users.

It is our conviction that research provides the means for the acquisition of knowledge necessary for improving the quality of welfare in Tanzanian society.

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Special Paper 09.32

Energy, Jobs and Skills:

A rapid
assessment
of potential in
Mtwara,
Tanzania

By Waheeda Samji,
K. Nsa-Kaisi, Alana Albee

RESEARCH ON POVERTY
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1 Introduction

1.1 Background

In early 2008, the International Labour Organisation (ILO) sponsored a workshop in Tanzania to discuss the potential of formal and informal apprenticeships with the Government, workers' and employers' associations, and academic and development agencies. The debate confirmed the importance of apprenticeships in training young people, yet the knowledge about how to effectively strengthen apprenticeship systems was not fully understood. This led to an empirical study of more than 600 master crafts-persons and apprentices in the Lindi and Mtwara regions, *Understanding Informal Apprenticeship in Tanzania (2009)*¹. Six skill areas were researched: car mechanics, electricians, carpentry/joinery, local arts, plumbing and tailoring. The selection of skill areas was based on their growth and labour absorbing potential for these two regions. The findings of this study highlighted the relatively high status of electricians, the required formal certification, and the benefits of informal apprenticeships that provide the basis for eventual self-employment. However, the constraints to expanding the numbers and levels of qualified electricians were not well understood.

This study sets out to deepen the analysis of the earlier research by examining, in more detail, the growth and labour potential of the energy sector, one of the most promising labour absorbing sectors, and the demand that it is creating for young electricians in Mtwara and beyond. It does this by rapidly assessing the energy sector from macro policy level through to the micro-level in Mtwara. It begins by providing a brief contextual overview of the country and its development challenges, and links these to recent changes in the energy sector as a whole. It considers developments in recent sector policies and the new national Rural Energy Agency.

Energy development in Mtwara is a fundamental part of the overall national energy strategy which is based on the desire to move away from hydro-dependent power sources, and the opportunity to achieve this through the development of natural gas for energy development. Therefore, for the purpose of this study, energy focuses specifically on electricity and natural gas. Mtwara's abundance of natural gas for energy development for Tanzania, and the East African Region, is a national priority of the Government. This natural resource is at the root of considering Mtwara's employment potential in this sector, and for electricians in particular, as well as for many other sectors whose development has been held back by the lack of basic infrastructure, including electricity.

In this study, the potential of the energy sector is considered broadly, as well as specifically, in terms of public/private partnership challenges in Mtwara, not least because of the impact of the global financial crisis. It links this analysis with the views and challenges faced by the Tanzanian youth in becoming qualified and skilled electricians to meet the emerging market demands. Generally, the opportunity to be trained in skills which have a labour demand is the aspiration of many young people, and this is true of the youth in Mtwara. Therefore, the skills and training implications for occupations, such as those related to electricity, need to be anticipated. This report makes specific recommendations for improving electrician opportunities through escalated efforts in training and on-the-job learning.

¹ Nubler, (et al), March 2009

Africa and its partners must focus on job creation through improving competitiveness, by combating corruption, adding more and better post-primary education and skills training based on private sector demand, providing access to investment capital, better energy supply as well as basic infrastructure.

President Jakaya Kikwete, URT

Creating jobs through expansion of electricity and energy is an example of a practical way of addressing the overall need for more employment for young people. Employment is a fundamental means through which development and poverty reduction can be realised. Towards this end, Tanzania has the highest political commitment from President Kikwete to create 2 million jobs by 2010. This should be inclusive of the aspiration to ensure that some of these jobs, including in modern skill areas, are created in poorer regions such as Mtwara.

This study aims to inform planners, investors and policy makers of the potential of the energy sector to create employment for young people in one of the poorest regions in the country, and thus to contribute to the way forward in tapping into the potential that exists in Mtwara. Mtwara receives particular focus because of its status as one of the poorest regions in the country, its potential to generate jobs relating to the energy sector, and its priority status under the One UN program of assistance.

1.2 Methodology

The methodology used in this study began with research and analysis of the energy sector, and its policy changes. This included interviews with key informants at the national level, including those from Ministries and Agencies of Government, training institutions, and individuals in the private sector involved in energy development and the training of electricians.

Data and relevant pieces of research were collected and analysed from a range of sources, and early drafts of the study by ILO on *Understanding Informal Apprenticeship in Mtwara* (2009) were considered in devising guiding questions for interviews in Mtwara (see Annex 1). It should be noted that while an Integrated Labour Force Survey (ILFS) was carried out in Tanzania in 2006, disaggregated data for specific regions (such as Mtwara) are not produced².

Data sets used in the study have been disaggregated from the ILFS, by sex and age group, but regional disaggregation was not possible because of the nature of the ILFS sampling. In general, region specific data is extremely limited and has proven to be a major obstacle in presenting statistical information; this has highlighted the importance of strengthening systematic local data collection about business and labour patterns for planning purposes.

Primary data collection through interviews at a regional (Mtwara) level with Senior Government officials, training providers and the private sector also took place. The study team conducted the majority of field interviews together with the One UN Coordinator in Mtwara, and with a representative of the Regional Government Secretariat.

The above was followed by a discussion of the early draft organised by Research on Poverty Alleviation (REPOA) with the intention of gathering views of areas needing strengthening or further analysis. These were incorporated into the present version.

² The size of the sample in each region, from national Labour Force Surveys is too small to provide statistical accuracy for each region.

Tanzania's economy has grown steadily moving from averages in the 4% range during the 1990s, to 5.7% at the beginning of the decade (2001) and on to 6.7% (2004 to 2006), 7.1% (2007) and 7.4 % (2008)³. This is attributed, in most recent years, to growth in natural resource extractive sectors (e.g. mining), services and construction sectors. Agriculture has contributed modestly although, until recently it makes up the largest portion of GDP⁴. Nonetheless, the benefits of growth have not significantly or positively impacted on poverty in most parts of the country. Spans between the data points that provide poverty estimates are wide, but the trends are clear: there were an estimated 11.4 million people living below the poverty line in 2000/01, and there were 12.9 million people living in poverty in 2007⁵. Regardless of percentages, the reality is that there are more poor Tanzanians today than nearly a decade ago.

The non-correlation between Tanzania's observed sustained economic growth, and lack of poverty reduction, is a central concern of many policy makers and development partners. The reasons for it are many and complex, and include the following:

- Inequality between rural areas and the capital, and within Dar-es-Salaam itself, while poverty rates have declined faster in Dar-es-Salaam than elsewhere
- Inequality estimates which remain clouded by undeclared incomes and governance issues.
- Erratic in-year inflation, especially for food, which reduces the purchasing power of households and impacts most on the poorest who purchase more frequently and in small portions.
- Low agricultural productivity growth of most staple foods and commodities, coupled with low-grade and low prices of export crops.

Estimating Poverty Impact: key lesson from the 1990s

In a small open dependent economy like Tanzania, the trajectory of the incidence of poverty cannot solely be deduced from the evolution of per capita GDP growth coupled with inequality data derived from two successive surveys, a decade apart. The reason is that changes in relative prices can deeply affect –favorably or adversely – such economies and the livelihoods of their population – particularly, of the working poor.

More specifically, poverty incidence may rise, even if per capita GDP is growing (without adverse changes in income inequality) because declining (external) terms of trade may offset the gains from increased production.

Prof. M. Wuyts, 2005 (REPOA)

Tanzania has well developed policies in most sectors, and an elaborate national growth and poverty reduction strategy which has, however, been far less effective than needed. It is framed as the MKUKUTA (2005-2010), premised on an unmanageably wide range of priorities, and inclusive of all stakeholders. It follows on the path set by the first PRS (2000-2004, undertaken to obtain much needed HIPC debt relief) and although broader than its predecessor, both strategies have failed to connect economic and social development. Fiscal stability has been maintained, and growth has been steady until 2009. However, sector push has been

³ Expectations for 2009 are considerably lower (4-6%) due to the global economic crisis.

⁴ Economic Survey, 2007

⁵ PHDR, 2002 and HBS 2007

primarily on improving basic social services (especially education, health and water) and creating an enabling environment for the private sector with limited strategic actions and finance for ensuring the matching of labour supply (and skills) with demand created by growth. This has meant that many skilled jobs in the growth sectors are not filled by Tanzanian nationals.

It is understood that economic growth, even if sustained, has no guarantee of reducing poverty if productivity does not increase and jobs are not created. Increased productivity and job creation are the means through which economic growth is translated into household benefits. Yet in Tanzania, productivity increases in recent years have been the most significant in sectors which have had relatively low job-creating potential (i.e. mining). Productivity increases have been the lowest in agriculture where most people work. With a burgeoning informal sector, it is estimated that informal employment comprises about 72% of non-agricultural employment. This sector where jobs are created by people's own sheer determination and need to survive, are mostly low quality jobs with low returns.

2.1 The Impact of the Global Financial Crisis

These general trends have been compounded in 2008 and early 2009 with the impact of the multiple food, fuel and financial crises. In a brief analysis of figures from the Bank of Tanzania (January 2009), evidence of the impact of the global food crisis began to be evident, and early hints of the impact of the global financial crisis were beginning to show on the country's economy as a whole. Private capital flows in the form of FDI had begun to slow down, with some investment projects postponed or shelved (including a USD \$3.5 billion aluminum smelting plant in Mtwara, a USD \$165 million nickel mining and extraction project in Kagera, a Japanese woodchip project in Mtwara, the revival of the Kilimanjaro Machine Tools Company, and a proposal to establish an inland cargo depot to decongest the Dar es Salaam port). However, given the focus of FDI in the natural resource sector, new projects are unlikely to be withdrawn completely given the sizeable up-front capital investment and associated losses.

Tanzania also faced an increased balance of payment deficit at the end of 2008, as the current financial crisis widened. Imports of goods and services increased by USD \$1,463 million, while exports increased by only USD \$811 million. Despite the aggregate increase of goods and services exported of just over 21% (2008), imports increased faster during the year by nearly 32%. The country is also heavily aid dependent with just over 40% of its national budget funded by Overseas Development Assistance (ODA). With the tightening of the industrialised economies, the potential reduction in aid flows cannot be ruled out.

This imbalance between productivity in export markets and imports is of even deeper concern when consumer prices are considered. During 2008, the annual percentage increases in consumer prices were concerning everyone, from policy makers to households. Wholesale prices of main staple food crops increased rapidly in 2008, as compared with 2007.

Table 1: Consumer Price Inflation: Main Staple Foods in Tz shilling/100 kg

Item	December 2007	December 2008	% change
Maize	29,974	34,694	15.7%
Rice	72,254	107,363	48.6%
Beans	87,072	106,572	22.4%
Sorghum	33,121	41,799	26.2%

Bank of Tanzania, January 2009

These figures reflect global food price increases caused by the tight supply and excessive demand that culminated in 2008. Although Tanzania has within its borders substantial potential for food self-sufficiency, agricultural policies and strategies have lacked a clear direction for nearly two decades. District shortages have emerged regularly at times of aggregate surpluses, and agricultural productivity in staple crops has not grown significantly, due mainly to the uneven supply of inputs (i.e. fertiliser which accounted for less than 3% of imports in 2008), and market dysfunctions.

The country has lost ground in export markets for traditional crops such as cashew nuts and coffee, not only because of the overall decline in global commodity prices, but also because of higher productivity in neighbouring countries and lack of added value in-country.

Table 2: Global Commodity Prices in USD

Commodity	March 2008	March 2009
Cotton per pound	0.82	0.45
Arabica Coffee per 50kg	158 (August 2008)	104 (Dec 2008)
Sisal per ton	1,000	700-850
Salted semi-processed leather per ton	1,500 (Sept 2008)	500
Unsalted leather per ton	1,100 (Sept 2008)	350

REPOA 2009

The global economic crisis and job losses in industrialised nations is likely to result in lower consumer purchasing power for some commodities, and lower trade flows to and from Tanzania. This is already evident in the tourism sector which has been the leading source of foreign exchange earnings in the country. Tour operators have indicated cash flow drops of up to 20%, with cancellations at 30-50% for the January 2009 season. This is also evident in the decline of passenger traffic, aircraft movement, international scheduled passengers, and freight and mail tonnage at the Julius Nyerere International Airport in DSM.

A small manufacturing sector exists, but requires a technically skilled workforce in order to grow significantly which the country does not possess. Gold, a non-traditional export (accounting for 23% of Tanzanian exports) is faring well as global demand continues to increase, following the loss of confidence in hard currencies such as the dollar and euro. Prices reached record highs in 2008/09 and are expected to remain there. Global fuel prices have also fallen rapidly since September 2008, which will help mitigate the impact of dropping commodity prices.

Credit, essential for expanding production, remains tight and unaffordable to many, even though there has been some improvement in recent years. Banks prefer to purchase Treasury Bonds and Bills, rather than to lend to private sector producers (with the exception of a few select large firms), and although in December 2008 there was a drastic drop in demand for Treasury Bills, the weighted average yield rose across all maturities during 2008. Money supply towards the end of 2008 decelerated, reflecting the need to tighten excess liquidity and control further potential inflationary effects caused in part by the uneven flow of budget support financing (i.e. Overseas Development Assistance). Evidence of the impact of the global economic crisis on the banking sector in Tanzania (operating primarily as independent subsidiaries and not branches of foreign banks) was minimal in early 2009, although there were some early indications of concerns about declining export guarantee funds which provide liquidity to several key banks. Overall, the limited breadth and diversification of banking services in the country has yet to create access to credit for the majority of small businesses or rural producers, and micro-finance is scattered and small-scale.

Food prices, availability of credit for production, and the Government's balance of payments in Tanzania are all important indicators of the health, productivity and direction of the economy. GDP at a national level disguises fundamental changes occurring in the structure of the real economy as a whole, and of the financial structure of the economy which continues to be heavily aid dependent, and driven significantly by the impact of Government expenditure rather than by household expenditures⁶.

2.2 Energy and the Economy

The energy sector is a fundamental ingredient for re-balancing productivity in Tanzania because it is required for competitiveness and a sound balance of payments. According to the Investment Climate Survey which gathers companies' perceptions of constraints on conducting business, 89% ranked electricity as the most severe obstacle in doing business in Tanzania in 2008, followed by access to finance at just 42%. Labour regulations ranked the lowest.

Consumer prices (fuel, power and water) have increased year-on-year by approximately 8%⁷. This represents one of the most significant constraints to manufacturing, transport and to overall production. The price of importing liquid fossil fuels for the electricity generating turbines is holding back progress on other fronts. The chart below compares oil price effects on the economies of 16 Sub-Saharan African countries in 2007. It illustrates Tanzania as the third highest consumer of oil, behind Senegal and Ethiopia, consuming an estimated USD \$481 million per annum (2007), and costing the nation 3.7% of its GDP.

It is likely that reducing dependency on imported fuel by transforming the main cities' turbines to natural gas (or other energy alternatives) could save the country significant revenue. The production and provision of natural gas from domestic resources is therefore an important avenue for controlling and reversing some of the excessively large demands for imported oil, which are both highly volatile in terms of global prices and amongst the highest on the continent.

⁶ PHDR, 2007

⁷ Bank of Tanzania, 2008

The cost of electricity in Tanzania stands in direct contrast to the country's leading role in East Africa in terms of Foreign Direct Investment. Pre-global financial crisis figures show that FDI was far larger in real terms in Tanzania, than in any of the other countries of East Africa. Despite energy as a constraining factor generally, FDI was still flowing in, most predominantly in new investments in manufacturing and tourism, both of which reported more than 120 new projects in 2006 alone⁸.

Table 3: Foreign Direct Investment (FDI) in millions of (USD \$)

Country	2001	2006
Burundi	5	290
Kenya	5	51
Rwanda	4	15
Tanzania	467	501
Uganda	150	307

This general and brief overview of the context of Tanzania raises many questions, not least of which is: Does the energy sector have the potential to improve productivity and create new jobs, especially for young people, and does the policy context encourage further efforts in this direction? These questions are examined in the next chapters of this paper

⁸ Economic Survey, 2006

Figure 1: How High Oil Prices Are Affecting African Economies

The center for American Progress takes a look at oil dependence in Africa through this comparative study of debt relief and spending on oil and human services in countries hit hardest by high world oil prices. This survey below pertains to non-petroleum producing countries in Africa that receive assistance under the Heavily Indebted Poor Countries Initiative.

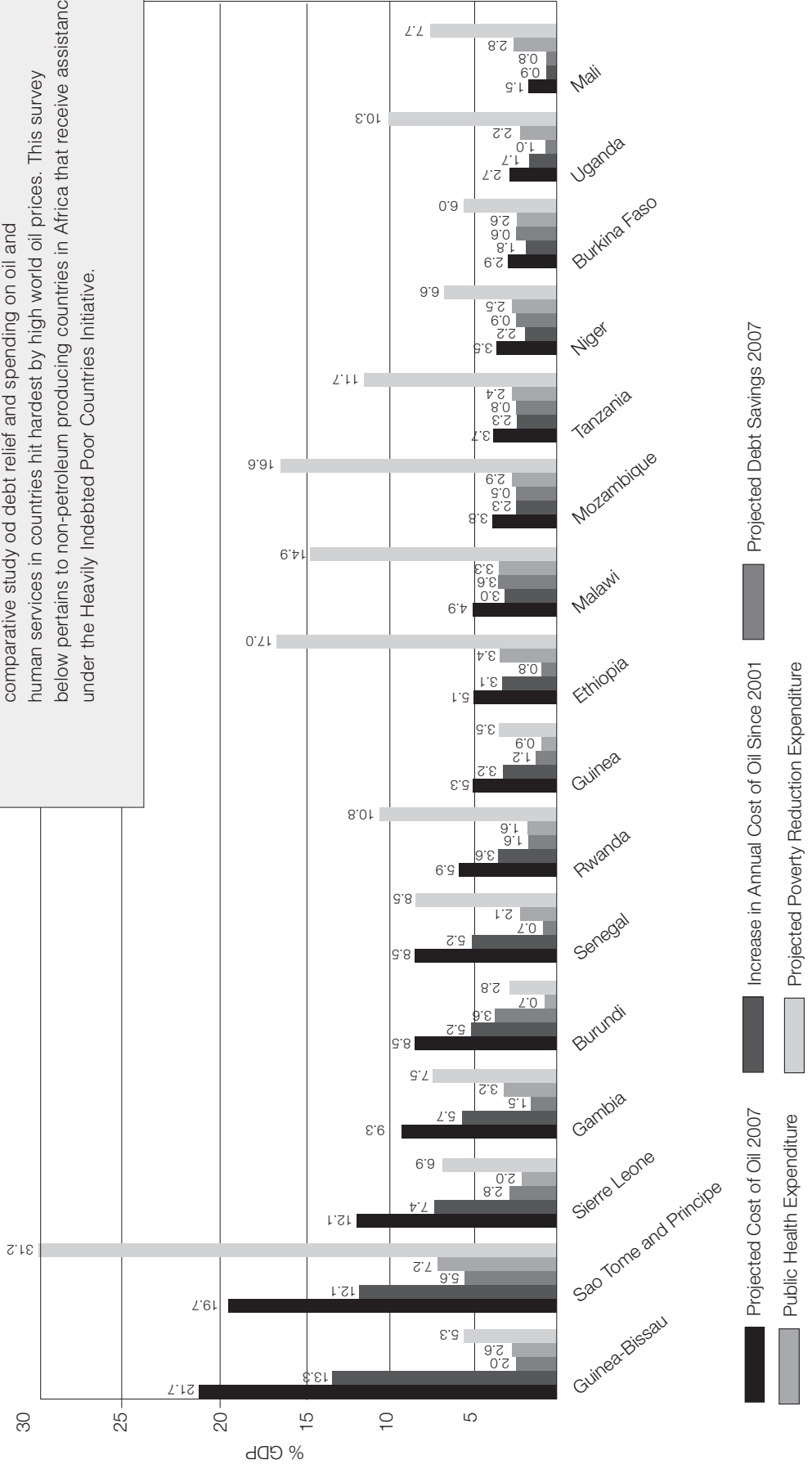


Figure 2: GDP, National Debt and Oil Prices: selected African countries

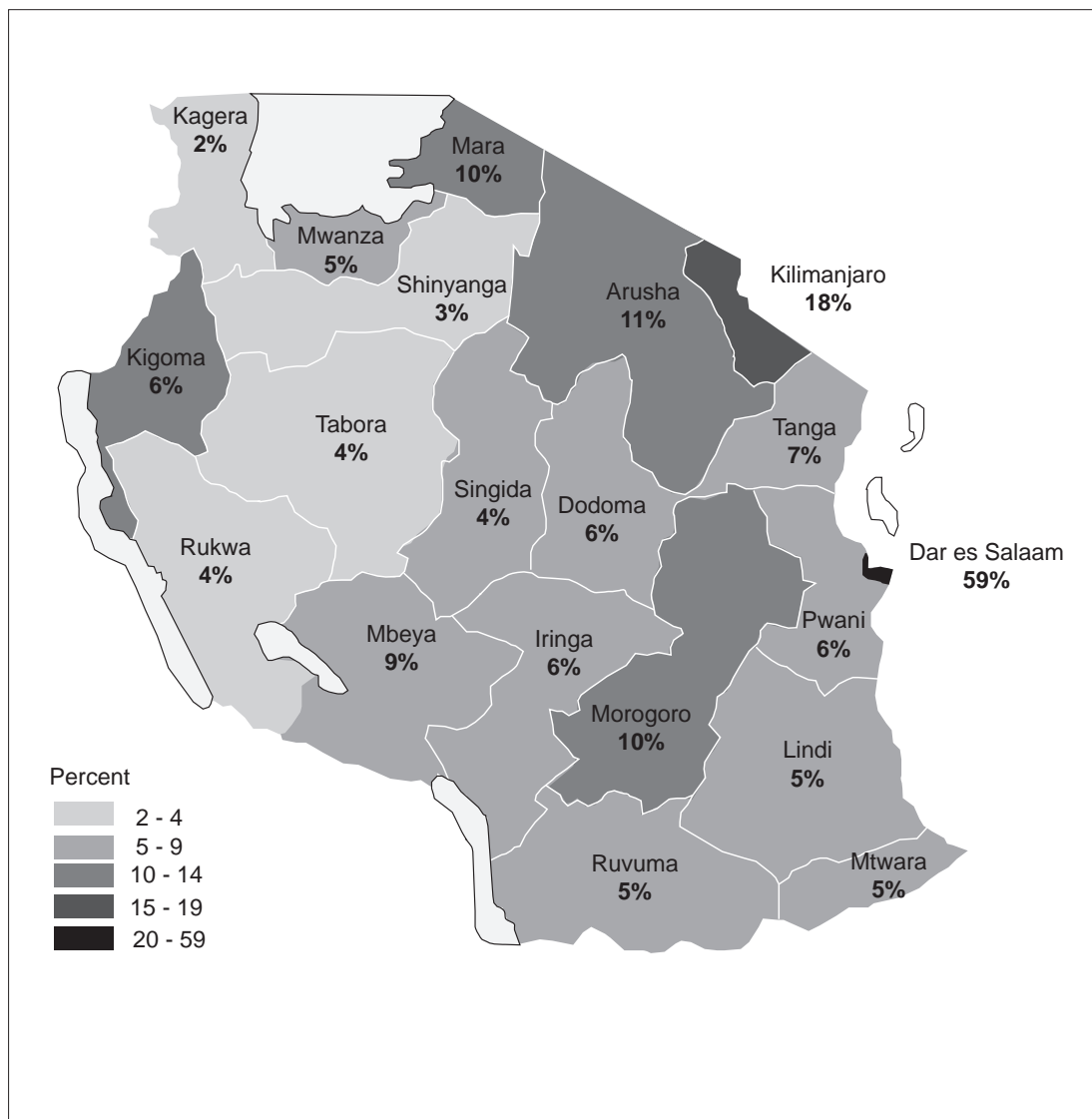
	Guinea-Bissau	Sao Tome and Principe	Sierre Leone	The Gambia	Burundi	Senegal	Rwanda	Guinea	Ethiopia	Malawi	Mozambique	Tanzania	Niger	Burkina Faso	Uganda	Mali
GDP 2006 (US\$ millions)	71	1,230	460	780	8,560	1,970	3,650	13,320	2,170	6,430	13,130	3,640	5,820	8,500	5,850	
Projected Debt Savings from HIPC and MDRI 2007 (US\$ millions)	4	34	7	28	57	32	42	108	78	33	111	32	36	86	47	
Annual Oil Consumption (Millions bbl)	1.1	2.6	0.7	1.1	12.4	5.2	3.3	11.7	1.8	4.2	8.4	2.2	2.9	4	1.5	
Estimated cost of Oil to country 2001 (US\$ millions)	6	58	17	26	282	45	75	266	42	95	191	50	66	90	33	
Projected cost of oil to country 2002 (US\$ millions)	14	149	43	66	726	115	192	683	107	246	491	128	171	233	85	
Increase in annual Cost of oil to country since 2001 (US\$ millions)	9	91	26	41	444	71	118	418	65	150	300	78	104	142	52	

The Energy Sector: Challenges and Policy Responses

3.1 National Overview

Electricity shortages in Tanzania have been a challenge for decades, and the vast majority of Tanzanians do not have access to household electricity. According to the Household Budget Survey 2007, connections to the main electricity grid have increased slightly from 10% to 12% since 2000/01. Yet the overall coverage in rural areas, and areas outside of Dar es Salaam remain much lower with only 2.5% of rural households connected in 2007, a very minor improvement from 2% in 2000/01. Nationally, 83% of households continue to use paraffin lamps for lighting, and charcoal remains by far the most common cooking fuel. Figure 3 illustrates the low coverage and regional diversity. Mtwara Region remains amongst the lowest within the national electricity coverage (5%).

Figure 3: Percent of Households connected to the grid by Region. (TANESCO Presentation 2008)



Nowhere in the world is power as costly and unreliable as in Africa. The competitiveness of SMEs is most severely affected because they do not have access to electricity that is necessary for efficient production and communications. Lack of electricity limits better health and education services, and hinders the provision of cleaner energy for households.

Africa Commission 2009

The policy response to this situation began in 2003 with the revision by the Government of the National Energy Policy, from its previous 1992 version. The 2003 policy takes into account structural changes in the economy and Government institutions. It provides the main policy from which other more specific legislation for rural energy (2005) and electrification (2008) have since been passed by Parliament. The 2003 policy's overall aim is to improve living standards for Tanzanians by '*...provid(ing) input in the development process...by establishing a reliable and efficient energy production, procurement, transportation, distribution and end-use system in an environmentally sound manner and with due regard to gender issues.*'

The main elements of the 2003 Energy Policy are to:

- Develop domestic energy resources that are shown to be the least-cost options
- Promote economic energy pricing
- Improve energy reliability and security, and enhance energy efficiency
- Encourage commercialisation and private sector participation
- Reduce forest depletion
- Develop human resources

However, the 2003 National Energy Policy has been slow to extend the national grid into rural areas, or to ensure reliable electricity in urban areas. To address this in part, the Rural Energy Agency (REA) was established under a complementary Rural Energy Act passed in 2005. The Agency is governed by the Rural Energy Board, established in 2006 and entrusted with overseeing the administration of the Rural Energy Fund, managed by a lean number of staff who began work in October 2007.

In communities with limited access to energy, the need can be met by an efficient utilisation of local and renewable energy sources. The private sector, in particular small and medium-sized enterprises, must play an important role in the provision of energy services at the local level. This potential should be utilised by stimulating and expanding the market for decentralised energy services.

Africa Commission, 2009

As the implementing arm of the new Act, the REA is tasked with a huge challenge, given the size of the country. It is however, an attempt to address national budgetary constraints by forming new partnerships with development agencies and the private sector. It is also an attempt to address the insurmountable administrative hurdles of expanding the national grid via the single urban-based power supplier (TANESCO). The REA works through establishing public/private partnerships, which aim to encourage new technologies, such as natural gas or micro-hydro, to generate sizeable rural electrification. The expectation is that these partnerships, along with the capacity building of small providers, will enable a more cost-effective means of transmission to remote rural areas than the main grid and transmission system, which to date has not reached most rural areas.

Why is the expansion of the national grid so expensive? It is in part because of the need to build high-voltage transmission lines and to 'step down' the voltage from the main grid through sub-stations, an expensive proposition for relatively few sparsely and disbursed connections, compared with urban areas. Most households in rural Africa are looking for electricity primarily for domestic consumption (lights and small appliances), so establishing sub-stations off a national grid system for low overall consumption is unrealistic in the context of Tanzania.

Therefore, innovations such as micro-hydro (which function on steeply hilled areas with rainfall from which a 20 meter or more fall can generate power for several villages) can work. This can provide basic power in areas such as tea plantations⁹ where processing is done in the day, and local households are provided with electricity at night. Most recently, the use of buried cables are replacing overhead cabling in some areas despite their comparatively high capital investment. This is creating jobs for villagers by digging trenches for cables, and because buried cables can be clustered, electrical and telecommunications can be consolidated. Maintenance, transmission and illegal tapping losses are also considerably lower with buried cable transmissions¹⁰.

TANESCO

Tanzania Electric Supply Company (TANESCO) is a Government-owned utility company responsible for production, transmission and distribution of power of the national grid since independence. Slated for privatisation in 1995 as part of structural adjustment, all new developments were put on hold and it remained in limbo for nearly a decade. Efficiency suffered as a result, with limited new recruitment from 1995-2005. The workforce is ageing, with many of the most skilled due to retire in the next 2-3 years. It has also been plagued with widely published cases of mismanagement and corruption.

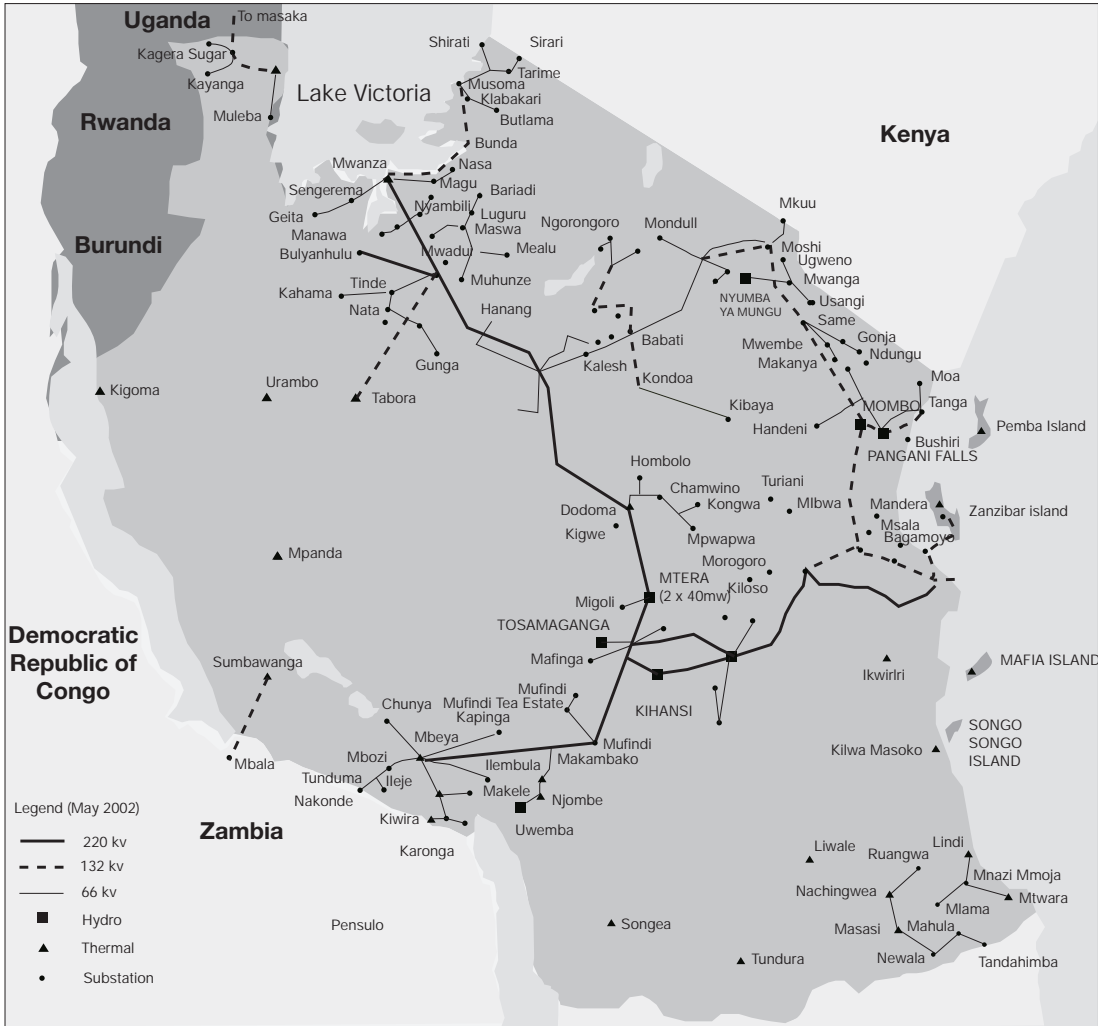
Support from the Rural Energy Agency enables innovations, such as those described above, through support from its Rural Energy Fund which assists with capital costs of rural energy projects, and technical assistance, research, training and capacity building for the planning and preparation of project ideas. Grants are available only for power generation projects, and are not available for debt servicing, operating costs or supply chain projects.

The Board decision-makers of the REA include the Minister of Energy and Minerals, and representatives from the Ministry of Finance, development partners, civil society, the private sector and other co-opted members, as deemed appropriate. The Fund is capitalised by development partners, and from levies from funds received from electricity suppliers (maximum 5%). Criteria for the application and the procedures are issued every year at the beginning of the financial year (1 July). The Board then reviews and approves the applications on a quarterly basis.

⁹ Tea estates have been particularly successful also because of the concentration of housing (i.e. settlements in line houses).

¹⁰ Mufindi Tea Estate is perhaps the most well known.

Figure 4: Existing TANESCO Grid System



Source: Tanesco 2008

The need for the innovative REA is evident simply by considering the limited electricity access provided through TANESCO and the national grid (see Figure 4). Given the vast land area of Tanzania, combined with the concentration of population along main road arteries, there is huge potential for increasing the coverage through the promotion of public/private partnerships under the REA.

Despite the two earlier Acts of Parliament, and the implementation of a new Rural Energy Agency, contention remained, however, over the issuing of licenses to new electricity suppliers and their relationship to the national grid and TANESCO. In response to this, the Parliament endorsed the latest in the series of legislation, the Electricity Act 2008. This new Act gives authority to the Minister of Energy and Minerals to restructure and re-organise the industry with a view to attracting private sector partners. Beyond issuing licenses (or revoking them), this Act stipulates Government responsibilities in providing oversight to generation, transmission, trade (including export¹¹ and import), finance and installation. For any new providers of any more than 1 megawatt of power, compliance must follow the codes set out in the Grid Code, the Distribution Code and the Rural Electrification Plan and Strategy. Despite this seemingly innovative approach, rules are tight and TANESCO retains the right of first refusal to supply electricity to all consumers. Importantly, the Act standardises Small Power Purchase Agreements, governing the selling to the national grid of electricity between 1-100MW.

Have the various Parliamentary Acts made a difference to electricity provision? Since 2007, investments have been made by the Government to improve the capacity of hydroelectric power generation and the installation of gas-fired generators. This has resulted insignificant improvements in electricity generation in Dar es Salaam of about 10.9%, compared with a negative growth of 1.9% in 2006. The contribution to GDP of electricity and gas sub-activities was 1.6% in 2007, as compared with 1.5% in 2006¹².

Generating Capacity

Electricity generation in Tanzania for the national grid is mainly based on hydro resources and partly thermal power from diesel engines. Installed generation capacity on the transmission grid amounted to 524MW, with non-grid generating capacity amounting to 28.7MW. Of the total installed capacity of 552.7MW, approximately 68% (377MW) is supplied by hydro.

Official Power System Master Plan 2006

Still, electricity continues to be limited, expensive and unreliable, and therefore has a negative impact on industrial and household . Intermittent massive load shedding in 1992-97, 2004-2007, and again in 2009, has crippled many companies, especially in Dar es Salaam. Overall, investments have been negatively impacted by the need to operate with private diesel generators.

There are indications for some optimism, as illustrated in the data below on the overall generating capacity, but a huge gap exists between the generating capacity and the actual generation of power, with no more than 40% of the generating capacity being utilised from 2000-2006¹³. In 2006, actual power generation stood at 26% of the generating capacity.

¹¹ Tanzania is a member of the Southern African Power Pool, which aims at stabilising power supply and facilitating export between neighboring countries

¹² Economic Survey, 2007

¹³ PHDR, 2007

Table 4: Electricity Generation Options in Tanzania at present

Source	Capacity MW
Hydro	560
MicroHydro	4
Diesel/HFO	211
Natural Gas	190
Coal	2
Biomass	2.25
Solar PV	1.5
Wind	0.006

TANESCO, 2008

The improved policy environment is slowly impacting on the energy sector, as outlined above, and this is having an impact on the overall provision of electricity nationally, and in Dar es Salaam. There is a significant lead-time from policy endorsement to implementation. Nonetheless, new policies do set the context in which new operators must function.

The national policies also directly affect regional administrations and local Government, as well as the private sector. This is generally the case, and certainly so in the energy sector which has become by some accounts increasingly regulated and centralised through the development of new legislative instruments as described above. The case can be made, however, that without regulatory bodies and their rules, exploitation with limited general benefits may result. This was the main rationale for the formation of the Energy and Water Utilities Regulatory Authority (EWURA). These policies, agencies and regulators are the structure within which the potential of natural gas to generate energy, and electricity, must operate.

The use of natural gas for industrial production and electricity generation began in the midst of these policies taking shape, when natural gas reserves were discovered in Southern Tanzania, in the Ruvuma Delta Basin. Private companies, such as the Artumas Group (described further below) were granted concessions to the gas reserves along the coast by the Governments of Tanzania and Mozambique.

Following exploration, the Songo Songo Pipeline and Gas Project was commissioned in 2004 first from Kilwa in the Lindi Region, and then off the coast of Mtwara to Dar es Salaam (with funding primarily from a World Bank loan). Four industries in Dar es Salaam began to use natural gas as an alternative fuel source in their industrial processes, namely the Wazo Hill Cement factory, Tanzania Breweries Ltd, Kioo Ltd and Aluminum Africa (ALAF) Ltd. These were followed by three additional factories in 2005 which converted their plants to natural gas, namely Bora Shoes Ltd, NIDA Textile Mills Ltd and URAFIKI (Tanzania China Friendship Textile Ltd). A 45MW natural gas-to electricity plant in Tegeta is expected to be operational by October 2009¹⁴.

¹⁴ The Guardian, June 2009

3.2 Regional Implications for Mtwara

For the Mtwara Region, on the southern coast of Tanzania, the discovery of natural gas should bring benefits to its nearly 1.3 million people who depend mainly on subsistence agriculture, cashew nut production and livestock.

Table 5: Mtwara Population Snapshot

	2002	2008
Total	1,124,481	1,271,911
Rural	895,942	979,379
Urban	228,539	292,532
Male	47% ¹⁵	47.9%
Female	53% ¹⁶	52.1%
Completed Grade 7	52%	97.0%
Completed Form 4	59% ¹⁷	92.0%
15-35 yrs	401,603	439,963
Unemployed (15-35)	-	14.1% ¹⁸

The lack of electricity has constrained development, and was until recent years compounded by poor roads, high illiteracy (61%) and the effects of 1 million refugees from Mozambique during their ten years of war (1965-75). In 2003, 77% of the students who passed primary school were unable to go to secondary schools because there were none in the region. All this is gradually changing.

One key factor in this change is the natural gas exploration. The Artumas Group is one of the largest investors in Mtwara, and the largest in terms of natural gas exploration and electricity generation. It is a corporate entity licensed to undertake oil and gas exploration and production, with headquarters in Calgary, Canada and listed on the Oslo Stock Exchange. Its main operations are in Tanzania and Mozambique. The Artumas Group Tanzania was granted a concession on gas reserves in Mnazi Bay as the main partner (87% shareholder), with the Tanzania Petroleum Development Company (TPDC) and the Netherlands Development Financial Institution (FMO) both holding minority shares for rural electrification in the regions of Southern Tanzania. The agreement, known as the Mtwara Energy Project (MEP) is a public/private partnership governed under an interim agreement which expired in March 2009. The final agreement is expected to enable full cost recovery for Artumas investments, and secure a 20% return on the 20 year term of the (not yet ratified) agreement¹⁹. Government subsidies on electricity tariffs are expected during the initial phase.

The Artumas Group is also exploring options to construct a large scale 300+MW power generation facility (known as TanGen) and a high-voltage transmission line which will link the power plant to the national grid (see Figure 5 below). The addition of this generating capacity to the national grid was included in the 2008 national Power Development Master

¹⁵ ibid

¹⁶ ibid

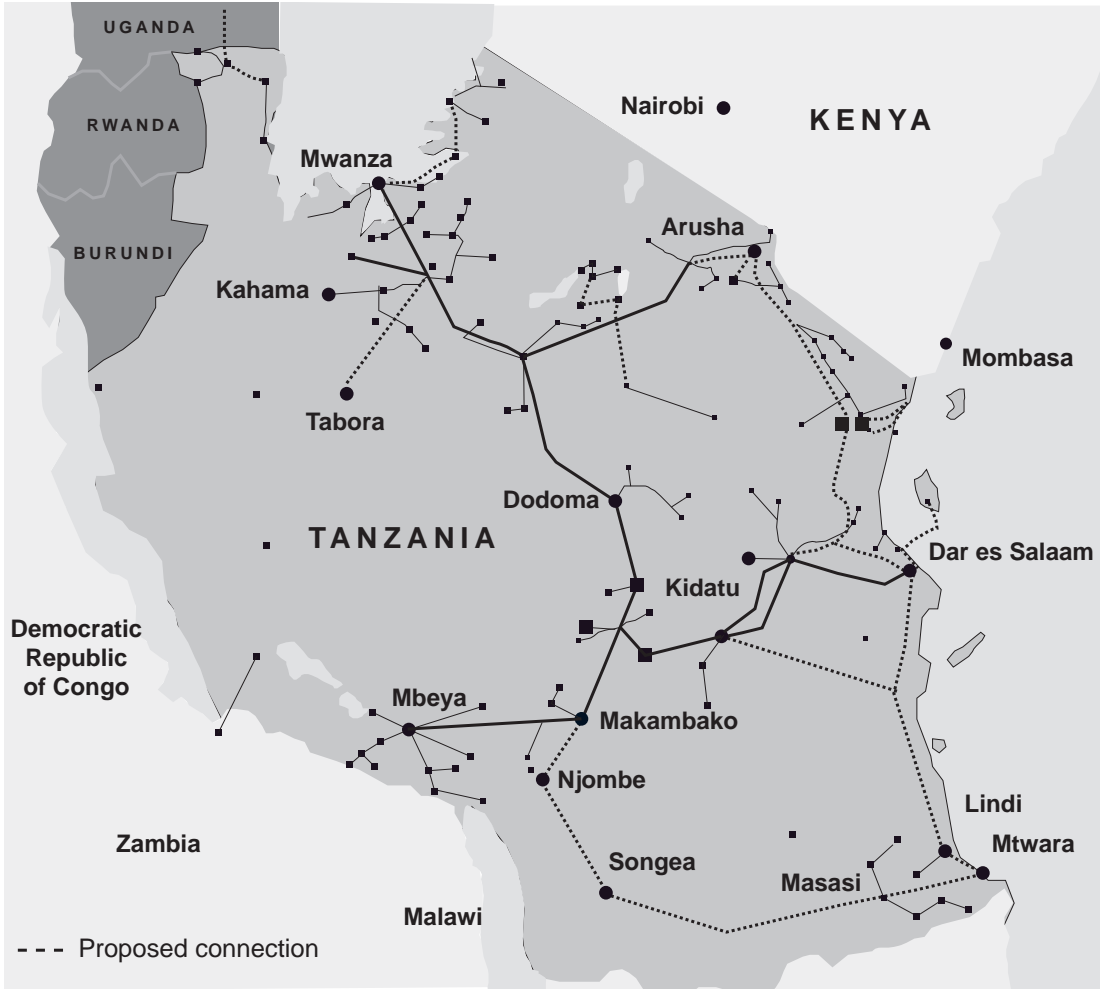
¹⁷ URT, Mtwara Region, 2007

¹⁸ ILFS, 2006

¹⁹ Artumas

Plan, and was fast-tracked from its original 2023, to go on line in 2012 after Government approval was received in July 2008²⁰.

Figure 5: Proposed TanGen connection to National Grid



The Artumas Group has sub-contracted Manitoba Hydro International to manage the transmission and distribution of electricity within the Mtwara Energy Project, while it focuses on its core competence – exploration, appraisal and development of oil and gas resources. The continued exploration and assessment of Mnazi Bay reveal that oil and other hydrocarbons may be present, and the company plans to follow these leads with further exploratory studies and drilling.

²⁰ Artumas 2009

Public/private partnerships are not without their challenges however, not least during the current global financial crisis. The Artumas Group has been severely affected by the global recession that began in 2008, with the value of their stocks plummeting from USD \$10.8 in April 2008 to USD \$0.12 in March 2009²¹. The company's asset valuation dropped by USD \$68 million in December 2008, and Barrick International²² has since pulled out of the TanGen project, leaving it short of nearly USD \$400 million required for completion. The Artumas Group has requested consideration of a Tanzanian Government bailout of USD \$7 million²³ in operational funding, and has advised the Government that the Mtwara Energy Project is in financial distress.

Artumas is not the only energy company in Tanzania to have been affected by the global financial crisis. The Kiwira Coal Project (a USD \$200 million project, expected to generate some 200MW) has also stalled, as has a USD \$250 million Swedish bio-fuel project.

There have also been significant management challenges within Artumas, with its global founding president being forced to retire in March 2009, and the termination of their Tanzania Managing Director in March 2009. It is believed that in spite of the global financial crisis, Artumas Group's operations in Tanzania had been diverted from the establishment of TanGen (expected to generate quick returns) to the export of compressed natural gas from Mtwara to Kenya²⁴. However the latter project has since been shelved as the Kenyans have opted out.

Experience globally²⁵ indicates that to improve such public-private arrangements in the provision of services to all segments of communities (including the poor) with utility access such as electricity, a legal *framework* is required that acknowledges the right to the service, ensuring that access is the primary objective. This has been more often the case in water supply than in electricity access (e.g. South Africa's Bill of Rights 1996 and Water Services Act of 1997). The International Centre for the Settlement of Investment Disputes (ICSID) arbitrates on many cases, including a caseload of 11 pending disputes in the electricity sector, 5 in the gas sector, and 8 in the water sector. In order to prevent breaches of contract, or other disputes from arising, transparency and open participation are crucial. Legitimacy begins with the underlying legal framework, and it would seem that for Mtwara, and natural gas resources, this still needs to be put firmly in place.

²¹ The East African April 2009

²² The East African March 2009

²³ Ibid, a Canadian based Gold Mining Company who had planned to be a major investor in the new electricity supply from TanGen.

²⁴ A 2007 feasibility study revealed that this would involve commissioning compression and loading facilities from Mtwara Harbour. Although it received government approval in Sept 2008 it required major capital investment.

²⁵ International Poverty Centre, 2008

Employment challenges in Tanzania

What is the labour and employment situation in Tanzania, and how prepared is the labour market for the growth in sectors such as energy? This section provides a brief overview at national level, followed by chapters on demand and supply in the energy sector in Mtwara.

Tanzania's development strategy (MKUKUTA) includes the target of reducing unemployment from 12.9% (2000/01) to 6.9% by 2010, and President Kikwete has committed the Government to employment targets of 2 million jobs during his first term in office (2005-2010).

Defining Unemployment:

Unemployment includes those who do not have a job, would be available for work and have been actively searching for work.

How much progress is being made in Tanzania, and how does it compare with its neighbours? In the African context, more broadly, it is deeply appreciated that even though unemployment exists, it is not the only concern. Underemployment and the growing number of the working poor²⁶ are reflected in the predominance of the informal economy, increasingly referred to as "the survival economy". People must work to survive: systems of social security are not available, and traditional systems of family and friend support are severely overstretched. Therefore, the concept of being employed and earning a monthly wage is a distant reality that most people simply cannot afford to think about. So they work, primarily in agriculture and in informal unregistered businesses as part of the 'informal economy' which engages over 2.2 million citizens (2006, ILFS). This is a significant increase from six years earlier when 1.5 million people earned their livelihoods in the informal sector (2000/01).

Nearly 90% of Tanzanians aged between 15-64 work, in one way or another, and this represents the highest employment to population ratio in East Africa. The following table provides details and shows that this rate has held steady with only a 1% decline between years. This confirms that few people are fully "unemployed" as defined above.

Table 6: Employment to Population Ratio in EAC Countries

Employment to population ratio (Age 15+, total %)	1995	2000	2006	2006 Labour Force Participation (15-64)
Burundi	83	83	84	93
Kenya	64	63	63	81
Rwanda	82	77	73	83
Tanzania	86	85	84	90
Uganda	74	73	71	84

World Bank, 2008

Youth unemployment, and underemployment, are two of the most prominent challenges. Yet, do the Tanzanian youth face greater challenges than their peers in neighbouring countries?

²⁶ The Working Poor is a new Employment MDG (2008) which considers the percentage of persons working but living in households below the poverty line.

Defining Youth:

For this analysis the United Nations international definition of youth is used which is 15-24 years of age, although all EAC member countries, including Tanzania, officially define “youth” as a wider age bracket from 15 to 30-35 years of age.

The youth make up an estimated 30% of the approximate total of 120 million citizens of East Africa²⁷. The overall unemployment rate in the EAC is estimated at 6.4%²⁸, yet the unemployment amongst youth is considerably higher.

Tanzania is concerned about the rising population in the major urban centres, and the increasing numbers of unemployed youth in these cities. The urban population in Tanzania has risen significantly over the recent decades, especially in Dar es Salaam from 5% of the population in 1995, to 13% in 1978 and to 23% according to the 2002 population Census²⁹.

Urban unemployment among the youth is 12.5% for men and 24.5% for women. This is significantly higher than the overall unemployment rate among the youth (4.7% men and 8.9% women). Yet despite this, people are rational and know that Dar es Salaam is where the jobs are. It contributed 28% of the total new employment in 2006, as compared to just 5% in 2001. Yet the youth with no education experienced a marked increase in employment activities in recent years, while those with at least a secondary school education faced increased unemployment.

All EAC member countries face considerable challenges, despite their policies to promote and encourage growth, poverty reduction and jobs. Tanzania is, however, faring marginally better in comparison to others although their labour market differs significantly from that of Kenya, for example. The prevalence of the widespread informal sector in Tanzania may explain why there is low unemployment relative to countries such as Kenya, which have a larger formal private sector. It may be the case that Tanzania faces less unemployment, but more underemployment than Kenya. For Tanzania, this calls for a concentration on productivity gains, on matching labour supply with demand, and on higher job growth within the formal private sector.

At the aggregate level, Tanzania has created on average 630,000 jobs per year since 2005, ensuring employment growth annually at 4.3%. This is just below what is required to hold employment rates constant at 2006 levels (85%), and makes the target of the President's 2 million jobs (2005-2010) potentially achievable. It absorbs a large portion of new entrants emerging each year and increasing in part because of demographic change. However, to reduce the unemployment level will require increased efforts to create more than 800,000 new jobs per year. Overall, this suggests that Tanzania may be on the right path, but may struggle to keep this pace.

However, employment growth has been primarily in poor quality low paid jobs in the large urban centres. The structure of the economy is shifting, with reduced shares of employment in agriculture, and growing informality. The largest employment growth has been in the service sectors of trade, restaurants and hotels (720,000 jobs). The sectors with the largest increases, albeit from a low base, have been in finance/insurance and mining.

²⁷ Op. cit. See e.g United Republic of Tanzania (2008),pg. 5

²⁸ Op. Cit. <http://web.worldbank.org>

²⁹ National Youth Development Policy 2007

Table 7: Changes in the Sectoral Structure of the Economy, Value Added and Employment, 2001-2006

	Share of value added 2001	Share of value added 2006	Annual growth rate 2001-06	Share of employment 2001	Share of employment 2006	Annual growth rate 2001-06
Agriculture, Forestry, Fishing	32.9	30.2	5.2	82.3	74.6	2.0
Mining and Quarrying	1.7	2.7	22.0	0.2	0.6	53.4
Manufacturing	9.0	9.7	9.5	1.6	3.2	26.6
Electricity, Gas, Water	2.8	2.8	7.6	0.1	0.1	3.1
Construction	5.5	6.8	14.0	1.0	1.2	8.1
Trade, Restaurants, Hotels	16.7	16.0	6.2	8.3	10.9	11.8
Transport, Storage,						
Communication	7.0	7.5	9.2	0.8	1.4	26.0
Financing, Insurance,						
Real Estate, Busin	12.7	11.2	4.1	0.2	0.6	54.5
Public admin and						
Community, Social, Pers	11.6	13.1	10.8	5.5	7.5	13.1

World Bank, 2008

Most job-seekers prefer to work in Government, private formal or parastatal posts. These, however, account for only 2 million positions or about 14.5% of total employment, and although this employment cluster grew by a remarkable 72% between 2000/01 and 2005/06, it only accounts for a small proportion of the total opportunities³⁰. The private sector has pulled the cluster of opportunities with a growth rate of 15.1% during this period. However, sustained growth, particularly from the private sector, needs to be higher than what has been seen in order to match the labour force supply. It needs to shift into job growth within the formal private sector, because the informal sector provides scattered and low quality jobs, which are unable to produce significant multiplier effects or to increase productivity.

Job quality has shown less positive signs in Tanzania, with increased informality (as mentioned above) and an increase in the working poor. In 2006, 60% of wage earners and 39% of those self-employed were reported to be earning below a living wage (this represents an increase for those earning wages, and a decline among self-employed)³¹. Recent research indicates the importance of personal characteristics (such as youth) in determining the segment in which people are employed, and in determining mobility out of the informal sector over time³².

³⁰ Kibria, R. Jan 2008

³¹ This is based on WB 2008 calculations using the earlier minimum wage updated with GDP growth and inflation rather than the 2007 sector specific wage scales.

³² World Bank 2008

Is it a lack of skills and training that is holding the youth back from gaining more, and better jobs? Work in the private and informal sectors has increased, but so have the number of young people working in unpaid family labour. This, combined with the increase in unemployment for those with at least a secondary school education, brings into question whether available schooling and training are relevant to the demands of the market.

Tanzania is often hailed as a success for its increase in primary school enrolment rates, which stood at 97.3% in 2007. However, the percentage of pupils completing primary school lags behind at 78%. Of this, 67.5% make the transition from Grade 7 to Form 1. As students proceed through secondary school, only 35.7% pass the Form 4 exams in Divisions 1-3 (the MKUKUTA target is 70%). Over a quarter of Form 6 graduates progress to tertiary studies (with about 35% female enrolment), and gross enrolment in higher education institutions has doubled from 2002/3 to 2006/7³³. The result is just less than 800,000 annual entrants to the labour market from the education sector, plus a vast number of drop-outs (as above).

The numbers, plus the curriculum and its value-added, both pose major hurdles for the country, particularly as evidence suggests that a primary school education is not sufficient for increasing the incomes and employment opportunities for the poor. Developments in technology globally have resulted in increased demands for higher levels of education, and jobs previously held by primary school leavers will increasingly have to be filled by secondary school leavers.

A small portion of the potential job seekers (approximately 45,000) join technical training schools, known as VETA. The Vocational Education and Training Authority (VETA) was established by Parliament in 1994 as an autonomous Government agency to provide vocational education, which meets labour market needs in the country. It is funded by a national employers levy on all employers with 4 or more employees.

VETA has 21 established training centres (with a combined training capacity of approximately 12,000 students annually) in 18 regions. VETA has also certified more than 200 private training institutions to run technical courses, provided they meet the necessary criteria³⁴. Approximately 45,000 students graduate with VETA certificates each year, of which 23% are female students. Though significant, this falls short (in both quantity and quality) of the labour demand for technicians in the country. Urban graduates tend to enter wage employment, while rural graduates migrate to towns, and most frequently become self-employed.

At a national level, VETA has established a directorate with labour market analysis in each of the 9 zones³⁵ of Tanzania. Labour market surveys are supposed to be carried out regularly at zonal level (with the onus on the zones to decide which sectors to survey), consolidated, and sent to the Training Directorate, which then develops training packages that respond to the skills required. Nationally, surveys have been carried out in the construction, hospitality and manufacturing (printing sub-sector) to date. Labour market surveys in the agriculture sector are in the pipeline for 2010.

³³ PHDR, 2007

³⁴ These are long term premises with workshops, tools and equipment, competent teachers and relevant course offerings

³⁵ DSM, Coast / Morogoro, Moshi / Arusha / Tanga, Dodoma / Singida, Mtwara / Lindi, Iringa / Ruvuma, Mbeya / Rukwa, Tabora / Kigoma / Shinyanga, Mwanza / Mara / Kagera

It is clear that a secondary school education, combined with appropriate VETA training, are appreciated by the market. And this is evidenced through attempts to develop the relevant training, with local and national industries invited to participate in curriculum presentations, and input to training material. In some specific instances, courses have been developed addressing particular regional labour market needs in conjunction with industries e.g. pump mechanics in Dodoma, and mining in Mwanza. However, despite these ad hoc efforts by public and private actors, there is still a notorious gap in manufacturing training and process engineering.

Based on the surveys to date, VETA reviewed its curriculum in 2005, and has introduced CBET (competency based training). However, CBET courses are more expensive to offer (and therefore offered at fewer centres), and a sustainable fee model (given Government subsidies) is yet to be developed. It has also begun to introduce 3-4 month field attachments as a requirement for their longer courses, with zonal offices linking to local industries to secure internships for students. This has proven to be a major challenge because no incentives are given to the private sector to participate, and Government / parastatal placements have declined in recent years.

In summary, the foundation for improving youth employment opportunities exists in Tanzania in the form of primary, secondary, VETA and tertiary education and some progress has been made this decade in both quantity and quality. Further efforts to expand, and improve the market relevancy of the VETA system is needed, especially in process engineering and manufacturing training. This needs to be a matter of Government priority. Overall it is essential to adjust the curriculum and in-takes of students to areas of study which meet the market needs.

Labour demand in Mtwara (Energy Sector)

Will natural gas extraction and electricity generate job opportunities in Mtwara? Interviews with master electricians and apprentices in Mtwara revealed that business has increased since the initial expansion of electricity which began in 2006, and that even though becoming a qualified and certified electrician takes a number of years and is technically challenging, it offers opportunities and is held in high social esteem.

Improved skills and capacity, sustainable and affordable energy, the development of financing and business support for small and medium-sized enterprises, the need to improve business environments – these initiatives are integrated and mutually reinforcing.

Africa Commission 2009

Evidence of the expansion of electricity is based on the Mtwara Energy Project's objectives to provide reliable, accessible and affordable energy to end users in the regions³⁶, and to improve the standard of living and quality of life for the 1.3 million inhabitants of the region. The economic significance of the project is considerable given that Mtwara has been without reliable electricity since independence, eclipsing the region's potential for growth in spite of its abundant agricultural, mineral and fisheries resources.

The first signs of electricity arrived in 2000/01 with diesel powered generators from Dar es Salaam. These were followed by the Artumas Group installation of a natural gas-fuelled power plant, with a generating capacity of 18MW in late 2006. Current provision of electricity in the Mtwara and Lindi Regions stands at between 2.8-5MW, with approximately 17,000 households connected by December 2008.

Electricity demand in Mtwara is expected to increase significantly with the construction of a cement factory (anticipated power use of 10MW) and a fertiliser plant (anticipated power use of 6MW); both expected to be functioning by 2012. The Artumas turbines have been structured to be able to add generating capacity in staggered amounts (by 2.5MW) over time, as the demand grows.

Let There Be Light

The numbers of buses running from Mtwara to Dar es Salaam have quadrupled to approximately 10 per day, with most passengers engaged in petty trading. A few years ago, there were only 2/3 buses running to and from Mtwara. There are now radio and fridge shops everywhere, and the town is bright and busy at night.

Anecdotal evidence from Mtwara residents, 2009

There is a significant potential for expansion, both using existing capacity and through the expansion of the Mnazi Bay gas reserves, which hold an estimated 3 trillion cubic feet of natural gas. Artumas has committed itself to market the available power to industrial players in the region through the use of power purchase agreements. Currently, connections to households cost USD \$156 and are 50% subsidised through a grant from the Netherlands (via the REA). The Rural Electrification Agency is in discussions with private banks to create a revolving fund, which would allow the financing of household connections with a longer term payback, as even the subsidised connection fee is unaffordable by many.

It is projected that between 2008 and 2013, 45,000 households in Mtwara will be connected to electricity through the Mtwara Energy Project, and this will offer significant direct and indirect job opportunities, while improving the standard of living of the average citizen. The connections will use ready-made board meters, which are easy to connect and do not require sophisticated wiring, allowing the generation of local jobs in servicing the meters and households, and enabling the benefits of a clean and reliable power source to households.

Electricity is known to be able to increase productivity (both in terms of volume and rate), and serves as a catalyst for new private sector activities. It has the potential to create jobs (formal and informal), and to increase investment.

In Mtwara, the immediate effects of the increased electricity availability are already apparent. For the first time, there is steady water supply available in Mtwara town, due to reliable electricity to operate the water pumps. The region is now easily accessible by air (daily flights to Dar es Salaam), road and sea. Digital and mobile telephony is now widely available in Mtwara Urban, although rural areas remain poorly served.

With the introduction of reliable electricity, one of the major barriers to economic growth and development in Mtwara is being removed. The demand for a range of labour will be generated from commercial and industrial interests who are re-examining the region, and reassessing the untapped potential in the following sectors, including agri-business, mining, forestry, livestock, fishing, tourism and light industry. Discussions with the regional business council suggest that a ship building yard could also be in the pipeline. The natural deep-water harbour, largely under utilised, is due for expansion. The development of the road network will allow for greater access to national markets, with the road to Dar es Salaam now in its completion phase. The Unity Bridge between Tanzania and Mozambique is expected to open in 2010, which will further enable significant trade with an otherwise isolated segment of Mozambique. Further strategic infrastructure development, public support and private investments could enable Mtwara (and its Corridor) to act as a gateway to regional and international trade.

One of the key steps in this transformation is the Special Economic Zone in Mtwara, currently being established. This will provide incentives for increasing exports facilitated by the Tanzanian Investment Centre. Under this project 2,600 hectares adjacent to the Mtwara Port, and in close proximity to Artumas' generation plant, have been set aside for industrial development. This area offers access to deep-water harbour shipping facilities, institutional investor support, and regional and international market access. In turn, the revenue generated from taxes, and associated levies, should assist the local council in ensuring the delivery of improved social services to its growing population.

5.1 Direct Employment: Artumas

Artumas currently employs 67 people full-time, with an additional 150 casual labourers. There are 24 technical employees, while others are employed by the drilling and transmission companies. More than 75% of these staff come from outside of Mtwara, the highest-grade Mtwara residents are in junior administrative positions and are Grade 7 graduates. In an effort to ensure that the local community benefits from the presence of the power plant, the company has reserved seven low level positions for local residents.

The company has faced a shortage of locally skilled persons for positions it required for its operations, which are highly technical, and often require trained professionals such as electrical engineers. Skilled persons have not been available on the local market, so they have frequently hired people with experience in the mining sector, where there is some similarity in the types of skills required. Most employees are required to have degrees, or VETA technicians' certificates, and all employees must participate in on-the-job training modules offered by Artumas (and delivered by Manitoba Hydro) in order to gain promotions. The training modules are equivalent of a Trade Certificate in petroleum/oil/gas handling, and are offered as both practical sessions and in classes at the end of the day. For the average employee, approximately a year is required to progress from level to level. Advanced levels as electrical/mechanical operators can require up to four years for completion.

5.2 Indirect Employment Opportunities

There are far more indirect job opportunities created by electricity provision than the small number of positions available directly from Artumas, as mentioned above. To begin, power suppliers in Tanzania, including Artumas, are only responsible and licensed to connect electricity to domestic and industrial properties. All in-house or industrial wiring is the responsibility of the client.

Artumas and the Mtwara Energy Project are preparing to connect an additional 28,000 households in the next three years (at a rate of approximately 9,000 households per year). With less than 100 local electricians, it is estimated that each electrician would have to handle 90 households per year. Assuming that the initial 17,000 households already connected were clustered in urban centres, and that those remaining are further a field in distant rural areas, it may be barely feasible that the local supply of electricians could cater to the electricity installation needs of the 45,000 designated households. It is less certain that the demands of secondary services (such as repairs) can be met.

As Artumas begins the implementation of TanGen, and the connection of the additional 300MW to the national grid in the next 2-3 years, the demand for industrial electricians will grow exponentially. It is estimated that an additional 300,000 households will need to be connected, over and above the industrial connections required from two-thirds of the power which will be generated. At the current connection rate, it would require more than 30 years for the current cadre of electricians to connect all the households. However, if 900 additional electricians were trained, these household connections could be realised in four years. This, however, illustrates the challenge. There are inadequate numbers of places available in the current VETA system to train the number of electricians required.

This, combined with the increase in business registration, illustrates the growing demand for electricians. Small businesses with 5-9 employees³⁷ have nearly tripled in three years, and there are more than 200 new business registrations for those with 10-49 employees over the

same time period. While the number of small businesses has doubled since 2004, the rate of growth has slowed since 2006. The numbers of larger businesses have grown by 20-40%, and one can safely assume that more formal jobs have been created by these businesses. Whether the growth of larger businesses can be fully attributable to the onset of power in 2006 may be open to debate, it is reasonable to assume that big businesses would not have established themselves in Mtwara without a reliable and affordable supply of power.

Using business registration and size as a proxy, between 3,400 and 13,000 new jobs within the private sector may come available each year if growth continues at the same pace that it has reached to date.

Table 8: Business Registration in Mtwara

Type of business by number of employees	2004	2006	2007
5-9	273	684	764
10-49	224	359	432
50-100	21	28	26
100-499	17	25	43
500+	3	3	4
Total	538	1,099	1,243

NBS, Central Registry of Establishments, 2004-2007

Although many of the jobs created have been in services, including education, hotels, restaurants and trade, new sectors may come on stream as productivity increases and new demands emerge from the provision of electricity.

Figure 9: Numbers of Businesses, by Type, Mtwara

Type of business by sector	2004/2006	2007
Education	139	573
Hotels & Restaurants	96	98
Manufacturing	46	74
Trade	94	-
Public Administration	63	173
Agriculture	29	27
Transport, Storage & Communications	20	20
Other Community Services	30	60
Health & Social Work	12	35
Construction	10	9
Mining	10	7
Electricity, gas & Water	5	9
Financial	8	11
Real Estate	4	19

Central Register of Establishments, NBS Website, 2004-2007

The electrification of Mtwara is creating a myriad of employment opportunities. The largest industries, in terms of employment, are in cashew nut processing. There are currently four large industries and one medium scale private cashew nut processing plant in Mtwara, each employing over 1,000 workers.

The provision of electricity could increase agriculture productivity on which most residents depend. Value addition to output from crops through electrical agro-processing has the potential to increase farm incomes significantly, and to allow for crop diversity. However, VETA does not currently offer process engineering or manufacturing courses. This needs to be addressed. The fishing sector also holds potential, as reliable refrigeration becomes more accessible, allowing fishermen to preserve their catch and access markets further field. Commercial deep-sea fisheries are more viable now that cold-storage facilities can be efficiently developed. Mtwara also hosts a number of tourist attractions (historical ruins, game reserves, marine parks and cultural tourism), which have been under-marketed due to the lack of an adequate infrastructure. With a reliable energy provision and easy access via the new road, a modern tourist infrastructure can now develop, including travel services, hotels, restaurants, guest houses and recreation facilities.

Small industries such as flour mills, industrial carpentry workshops, fuel filling stations, machinery workshops, vegetable oil extraction plants, cold storage facilities, business and technology services, conservation and trade of fresh produce (including seafood and meats), mineral water plants, refrigeration and air-conditioning workshops, barbershops, internet and secretarial bureaus, electrical appliance shops and repairs, and electrical contractors (domestic and industrial) will all grow exponentially as the region has more access to electricity. All of these require skilled and unskilled labour as an inevitable outcome of this electrification. One main challenge is to ensure enough electricians are trained to enable this development to take place.

Point of View:

Plugging the Leaks in Agriculture

Agriculture feeds and employs the majority of the population in Mtwara, and the youth should be given incentives to remain in Mtwara and benefit from it, especially cashew nuts. Before 2007/08, cashew nut farming was not seen as profitable because farmers were being 'sucked dry' by middlemen. This is why the youth left the region. In 2007/08, the new Warehouse Receipt System began. Previously, farmers were being paid TZS 610/kg, but now they get TZS 1030/kg. Local problems require local solutions. Agriculture can be improved by improving markets and adding value to local products. Finding markets for all parts of the cashew nuts (shell, oil, kernel and husk) can add profits for farmers. Training is needed in processing and packaging. Youths with a primary school education will not be able to be absorbed into factories or plants which often require technical skills - agriculture is the only answer.

Discussions with the Regional

Commissioner Mtwara, Col. Tarimo 2009



Labour Supply in Mtwara (Energy Sector)

The number of VETA-qualified basic domestic electricians in Mtwara is estimated at below 100, although exact figures are not available. The previous chapter illustrates that this falls far short of what is demanded, currently and for the near future, in Mtwara. VETA is not the only training facility, although business registration indicates only five registered electricity, gas and water businesses, and training institutions indicate fewer than 30 qualifying graduate domestic electricians in the region per year. Vocational skills in fields such as electricity installation are traditionally regarded as male oriented, with females relegated to reproduction and non-wage employment. Most electricians are male³⁸ and function in the informal economy, for which limited data exists. Some trained electricians migrate back to rural areas or to larger urban centres after training.

There is also growing demand for more advanced, industrial level electricians, process engineers and manufacturing specialists. These skills are not offered in VETA Mtwara, and most industrial contractors are brought in from Dar es Salaam when required. Currently, VETA does not offer any advanced qualifications for electricians beyond the Trade Certification level 2 required for domestic electricians. There is currently no qualification being offered by VETA in Mtwara which fits the requirements for immediate jobs in the energy sector with large firms such as Artumas (in spite of the fact that it is the third largest VETA centre in the country outside of Dar es Salaam and Kigoma). Discussions between Artumas and VETA had begun to consider offering a course in Oil and Gas Safety, but have not led to solid outcomes. Artumas will not allow internships within their facilities because of safety risks.

Electricians in Tanzania (both domestic and industrial) require VETA certification, and must therefore take the VETA trade tests. And, although some electrical craftsmen do take the VETA trade tests without having done the course, they have often followed an informal apprenticeship in order to be skilled and to succeed in the certification. Indeed, informal apprenticeship is the main means through which tradesmen, such as electricians, gain entry into positions in the informal economy.

In the Mtwara zone, there are 17 certified vocational training centres, of which one is owned by VETA, with a capacity of 624 students each year³⁹. Smaller centres, either privately owned or run by religious organisations, cater for an additional 250 students. Demand for VETA places is high, usually with ten applicants vying for every place. The course offerings are fairly limited, and there are limited boarding places (180 in total). Only 50% of VETA students are from Mtwara, while others come from outside of the region. There are few, if any, dropouts from VETA. Predictably, enrolment patterns suggest that as higher levels of training are offered, enrolment numbers decline by over 50%.⁴⁰

On average, the VETA centres in the Mtwara region graduate approximately 39% females, although the number of female VETA graduates found in the market place is considerably lower at 16%⁴¹. VETA centres are not generally found to be gender sensitive, and training environments are predominantly male.

³⁸ There are no known female electricians in Mtwara.

³⁹ VETA, 2009

⁴⁰ VETA Tracer Study 2004

⁴¹ VETA Tracer Study 2004

Table 10: 1 year Courses on Offer at VETA Mtwara

Sector	Course	Prerequisites
Electrical	Auto Electric	Grade 7
	Domestic Electrical Installation	Grade 7
Mechanical	Welding and Fabrication	Grade 7
Civil	Plumbing and Drainage	Grade 7
	Masonry and Bricklaying	Grade 7
	Carpentry and Joinery	Grade 7
	Painting and Sign writing	Grade 7
Automotive	Motor vehicle Mechanics	Grade 7
	Diesel Engine Mechanics	Grade 7
Clothing	Tailoring	Grade 7
Commercial Services	Typing and Secretarial	Form 4
	Computer Applications	Form 4
Printing	Binding	Grade 7
Hospitality	Food and Beverage	Form 4
	Food Preparation	Grade 7

VETA Website, 2009

VETA appears to be generally oversubscribed, and there are institutional challenges. The first is that the Government has upgraded all ‘polytechnics’ to universities, and this has led to a definite shift away from practical learning towards theoretically focused learning in VETAs. Vocational training has ceased to produce master artisans like the European model, and this has led many vocational training graduates to seek further academic qualifications in order to be professionally employed. This shift has produced a new and concerning gap in many trades, and limited professional opportunities for VETA graduates. This gap is clearly a problem for companies such as Artumas, which require higher technical and practical qualifications than are now available.

Higher professional technical qualifications are part of the problem, but so is the perceived issue by VETA graduates that courses offered at VETA are too theoretical (17%), with less practical skills (10%), and are outdated given the technologies of today (22%)⁴². In a 2004 Tracer Study carried out by VETA, over 10% of graduates claim to be not competent in their trained vocations. The workshops are ill-equipped, and the Swahili medium of instruction and textbooks are not seen as useful, given that modern technology manuals are all in English.

It is generally agreed that completion of a VETA course does not make youth more ‘employable’, and complementary effort are required to get the trained youth started off in self employment, perhaps through microfinance or start-up toolkits. Over 71% of graduates do not have access to any capital in order to purchase tools and establish workshops. Another 24% face knowledge-related issues, such as a lack of reference material, entrepreneurial skills, and marketing and practical knowledge⁴³.

⁴² VETA Tracer Study 2004

⁴³ VETA Tracer Study 2004

That said, many people continue to feel that after secondary school, VETA is a good training path to follow⁴⁴. Indeed, 89% of VETA graduates are employed or self-employed and applying their skills. Only 0.8% of all respondents of a 2004 Tracer Study were found to be volunteering, or unemployed, while 23% were employed, and 40% self-employed. Over 30% were pursuing further education.

Table 11: Domestic Electrical Installation Enrolment in VETA Mtwara

Year	Male	Female	Total
2005	25	7	32
2006	26	7	33
2007	27	7	34
2008	24	5	29

VETA 2009

Although VETA has begun to introduce work study attachments as part of its curriculum, apprenticeships (formal or informal) are not recognised or certified by VETA, with the exception of the practical apprenticeships offered at the Ndanda VTC.

For formal vocational training, Ndanda Vocational Training Centre, established in 1906 by the Benedictine missionaries, offers the best there is. The Centre has, however, a very small capacity and currently trains 150 students across a range of skill areas, although annual average new enrollment stands at 50 students (83% male, 17% female). It aims to equip young people with the technical and practical skills to gain employment as in lower technical jobs within local industries, or to become self-employed. In 1963, a hostel was built to accommodate young men from the locality, and in 1966, the Ndanda Trade School was officially registered by the Ministry.

Table 12: Ndanda VTC Courses & Student Enrollment 2009

Course	2009 Intake
Electrical Installation	6
Welding & Metal Fabrication	9
Masonry & Bricklaying	35
Plumbing	8
Shoe Making	2
Carpentry & Joinery	54
Cabinet Making	
Motor Vehicle Mechanics	16
Fitters & Turners	
Civil Drafting	
Book Binding	5
Computers & Secretarial	21
Total	156

Ndanda Trade School Brochure 2009

The Centre is well equipped with tools and workshops, which allows the students to gain practical experience as part of their training. It offers both the Trade Test and CBET qualifications, ranging from 1-3 years duration, culminating with a VETA certificate. The Centre's training places an emphasis on practical apprenticeships, which students partake of three days per week, with theory lessons on two days per week. All students are taught basic entrepreneurial skills, including computing, taxation, access to credit and managing staff, and all are given an essential tool kit relevant to their trade as a graduation gift. The Centre is subsidised by the Benedictine Abbey as well as other donors, as the tuition fees paid by students are not able to cover the operational costs. Overall, Ndanda offers a model of excellence which combine practical and theoretical training, and a sound start for young people entering the labour force but is very small-scale compared with the growing demand for electricians and other skilled trades persons.

Formal training both at VETA and Ndanda are supplemented with a well established, but informal apprenticeship system in Mtwara, covering many trades, including electricians. The ILO study *Understanding Informal Apprenticeship in Mtwara* (2009) undertook detailed discussions with master electricians and apprentices in 12 workshops in Lindi and Mtwara. This provided interesting and useful supplementary information specific to electricians which is drawn upon here.

Electrician apprentices averaged 21 years of age and often worked in groups of up to three, in shops with up to five other employees. Their main areas of work were in repairing fans, ovens, cookers and other small appliances, and undertaking in-house wiring. The sector was reported "still small (but) it is expected that the Mnazi Bay gas project will result in reduced connection fees, which would result in higher demand for electrical installations and devices." Electricians were considered to have high social reputations. Most had lower secondary school education (O-level), which reflects the national average in educational achievement, although in Mtwara Region, enrolment in O-level schooling is below 10%. Very few electricians had learned their trade only through apprenticeship, with most having sat VETA certification exams.

Most apprentices value their apprenticeship and confirmed that they were well respected in society. Indeed, a number of apprentices pay higher fees for an informal apprenticeship than they would pay in a formal course with VETA. In interviews with employers, several complained about low quality training in formal training systems (VETA), in particular deploring the low practical skills VETA graduates acquire. All businesses were found to require a trial period at the beginning of apprenticeships, with electricians having the longest probation period (9 weeks) of those surveyed. Apprentice electricians are frequently required to provide their own tools, and the provision of tools and raw materials (copper wiring) was the main suggestion made for improving their apprenticeship,

Apprentice periods generally lasted for 16 months on average, costing approximately TZS 4,100 per month. Apprenticeships not only train young people in skills, they introduce them to customers, and most apprentices find initial business through their apprenticeships. This enables them to gradually enter the market as a service provider. Apprentices learn a wide range of cognitive and technical skills. Accounting, costing, negotiating with customers, and

advertising were seen to be less needed than further technical skill sets for air-conditioning and refrigeration repair, motor installation and rewiring.

Overall, electricians represent the highest percentage of apprentices in the study with formal vocational training backgrounds, because of the legal requirement to be VETA certified in order to practice. All employers encouraged their apprentices to take the VETA Trade Test. The National Trade Tests (Grade 1-3) contain the practical and theoretical components, and exams cost approximately TZS 11,000. Language barriers for advanced courses are an issue because VETA Trade Tests 1 and 2 are in Kiswahili while Trade Test 3 is in English. Improving the technical and practical content of VETA courses and Trade Tests could improve the quality of service provision.

Nearly all apprentices in Mtwara, who were contacted, have set up their own business, while very few (5 out of 36) were employed by a business or large enterprise. The weekly income of an electrician in Mtwara is the highest for those who have been apprentices (TZS 21,000), and lower for those who only have had formal training (TZS 11,000), confirming that customers are willing to pay for those who have work experience, over those who have mainly theoretical knowledge.

Generally, it is clear that electricians are in increasing demand in Mtwara (and potentially beyond as the national grid expands), and that quality training exists but is scarce and of an insufficient scale. VETA training needs to be improved while continuing to be linked to apprenticeships to enable new entrants to be supported by experienced entrepreneurs.



Recommendations and Conclusions

This rapid study has considered the importance of the energy sector as a facilitator of growth and began by briefly reviewing national policies affecting the development of this sector. It has considered the changes and challenges posed by the introduction of several new Acts of Parliament, the expansion of electricity generating capacity, and the establishment of a Rural Energy Agency to encourage innovation and expansion.

These macro level changes are having a significant impact on the direction and development of energy at a regional level, including in Mtwara, where the most significant deposits of natural gas originate. Concerted attention will be needed to ensure that Mtwara benefits proportionally from the natural gas reserves used for wider national and regional benefit. The Mtwara Energy Project was established to ensure exactly this. However, the key private sector partner is facing challenges (2009), caused in part by the global economical crisis and tough decisions about bail-outs, and priorities will need to be taken at a national level.

On the assumption that the electricity provision in Mtwara does expand as previously planned, there will be a need to improve the labour force training to take advantage of the opportunities created by the expanded electricity supply to both households and businesses. There is a significant shortage of electricians in the Mtwara Region, and the VETA and private training institutions are not yet equipped to address this shortfall. Therefore, it is recommended that consideration be given to the following, at national and at regional levels.

7.1 NATIONAL Level Recommendations:

The national expansion plan for the energy sector should include a study to determine the sector's employment and productivity potential (direct and indirect). This could provide deeper understanding of productivity gains from phased expansion of the national grid, and insight into skills gaps and adjustments required for labour supply to meet labour demand. The approach of such a study should be based on re-enforcing economic and social sector planning and resource allocation. A national study could also inform the national budgeting process through the Budget Guidelines.

Rapid implementation of skills development for youth workers in the electricity sector should be resourced (in Mtwara, and at national level) to address the gap in industrial and household trades persons. This should be seen as one means of putting The National Employment Policy and The National Youth Development Action Plan into action. Other growth sectors should consider similar analysis and implementation.

Concession agreement for natural gas extraction with the Artumas Group needs to be put on-track and agreed transparently through a legally binding framework as soon as possible. This should ensure affordable access to electricity for Mtwara residents and businesses, in accordance with the 2008 Electricity Act, and govern the provision of electricity to other regions through TanGen. Negotiations of this concession should include the regional administration, the private sector and elected local representatives from Mtwara. Raising awareness about customer rights, complaint procedures and other relevant issues should be implemented simultaneously.

Secondary education curricula should be reviewed with a focus on the need for social sectors to mutually re-enforce growth sectors. Specifically education curriculum needs to ensure that youth are trained in skills relevant to labour market demands in growth sectors. This may require, in some instances, the introduction of vocational subjects at a secondary school level. This could enable the youth who complete their formal education, and the significant proportion of those who do not, to become more employable in the private sector.

Vocational education should be further reviewed, with a view to strengthen practical training, upgrading vocational occupations and developing a cadre of master trades persons nationally. Region-specific labour market analysis should be rapidly undertaken for industry-specific curricula to be developed and delivered with the private sector. Sustainable financial models of delivering competency based training through VETA centres must be developed which allow for better quality of trades persons to emerge. VETA has recently announced⁴⁵ some changes, including the re-registration of vocational centres, the revision of training standards and collaboration with employers to provide on-the-job training that will increase productivity, all of which are encouraging steps towards a more competitive labour force.

7.2 REGIONAL Level Recommendations (Mtwara specific):

Regional planning documents in Mtwara should feature electricity as a growth driver, and its potential for employment of youth should be emphasised.

VETA Trade Certification should be expanded and up-graded to ensure more graduates for the labour-force, including in the areas of electricians, and other key trades including welding, process engineering, manufacturing training, and health and safe ty inspectors (oil and gas). Industrial electrical installation, and an expansion to Level 3 of the Trade Test for electricians in at least one location in Mtwara should be initiated. The Level 3 Trade Test requires complementary English language training to be introduced. Overall, there is need for an increased emphasis on practical training. Opportunities should be sought with Artumas and other large industries (agro-processing, cement, fertiliser, etc.) to develop relevant technician training courses and placements within companies. Incentives should be considered to industries that are able to offer on-the-job training for new entrants, and workers who up-grade their skills.

Informal apprenticeship expansion and upgrading (perhaps through formalisation) is required to provide practical entry-level mentoring for new tradespersons.

A scheme for business start-up kits should be developed that could enable hire / purchase/grant of start-up tools, and technical assistance from skilled and experienced electricians for training of trainers (i.e. upgrading master electricians in new areas such as air-conditioning repair, refrigeration, house and business wiring, electro-domestic appliance repair and service, etc).

⁴⁵ The Express, June 2009

Support to small and medium size business expansion should be systematically considered through training (Start Your Own Business) provided in evening classes in Mtwara town, and through links to secondary schools, VETA and private training facilities. The harmonisation of the provision of skills, tools and facilities, micro-credit and apprenticeships might be considered for specific vocations, such as electricians, through micro-business centres.

Further study on the availability of credit for small businesses (and for those started by youth workers) in Mtwara may be required. This should consider existing credit unions, and schemes implemented by Government, development partners and NGOs. Credit, particularly for the production of key crops such as cashew nuts (and their processing), should also be investigated, as should micro-investments that can catalyse existing resources.

Systemic regional data on employment and business growth, particularly in the energy sector in Mtwara, should be strengthened within the Regional Secretariat to ensure simple annual information linked to the existing system of the National Bureau of Statistics. This should include the monitoring of earnings and conditions of work generally, and the information that allows for determining potential employment within the growth sectors. Further research on calculating the production functionality of the electricity supply, specifically (multiplying labour and capital investments) is required.

A socio-economic baseline study of Mtwara, should be undertaken to establish a comprehensive set of baseline data followed by regular subsequent studies at 3-4 year intervals. These should consider the impact of specific growth sectors, such as energy, on the region. Simultaneously, regional resource mapping must be undertaken in order to understand the capacity issues at hand.

7.3 Conclusion

This study demonstrates a new research methodology that puts into practice analysis of macro policy and makes linkages to micro level outcomes, specifically for the energy sector which is a main facilitator of growth. It highlights the labour shortages of electricians regionally (in Mtwara), and the potential shortages nationally that will become more acute as the national electricity grid expands. These shortages are the result of skills gaps that can only be addressed with concerted efforts to adjust the education and training systems. In Mtwara, quality training exists in some instances, but is scarce and of an insufficient scale. VETA training needs to be improved while continuing to be linked to apprenticeships to enable new entrants to be supported by experienced entrepreneurs.

Policy-makers should gain from this study as a practical illustration of the mutual re-enforcing nature of growth drivers (e.g. energy) and social sectors (e.g. education) for development. The limited progress in reducing poverty in Tanzania during recent years has been in part a result of low productivity and limited job growth (especially in the formal sector). Addressing these will require strategic decisions that are cross-sectoral in nature in order to ensure that the Tanzanian labour force can meet the labour requirements of the market.

This study has moved away from analysing the energy sector in terms of tariffs and transmission lines, access and affordability, and presents the sector in terms of constraints and opportunities for productive job creation. These are not mutually exclusive areas of study; indeed it is clearly evident that electricity is the top constraint on formal business growth in Tanzania, and even as this constraint is addressed through the expansion of electricity provision there will not be enough skilled Tanzanian electricians to service the direct and indirect market demand.

It has been intentional in this study to focus on the implications of a key growth sector (energy) at regional level, because the very deliberate macro focus of most current development discussions is failing to consider the regional disparities that emerge as a result of a 'one size fits all' mantra. Regionally specific potentials and constraints have been marginalised in many of these discussions. Given the vast demand for energy in the East Africa region, and the significant investments in the expansion of rural electrification, similar regionally-focused studies may be relevant to other areas.

One specific issue that this study has refrained from is politics, and by its nature, the governance of the energy sector. As we move forward, there are many obstacles which will need to be overcome about the ownership and governance of energy resources. These are unlikely to be understood fully in the short-term therefore the issues remain a caveat to the heart of this study which focuses on jobs, particularly for the youth of Mtwara. There are valuable lessons to be learnt.

Annexes

Annex 1 Interview questions

- I. What are the skills requirements (type and level of skills and competences needed in the different occupations relating to electricity). What VETA qualifications and standards exist, and how can these be addressed in this sector?
- II. What are the main constraining factors to growth in demand for labour in this sector? How well is it matched to the supply of labour?
- III. Which skills sets are achieving the greatest demand and supply? Why? Why not? Are they finding jobs or joining the informal sector after training?
- IV. What are the skills gaps and the training needs to ensure the timely supply of the required skills?
- V. How can the skills required by the sector be cost-effectively developed for the benefit especially of young people?
- VI. How are the national and local Governments supporting the labour aspects of energy development in the Mtwara Region?
- VII. Are there development initiatives existing to support the expansion/electrification of Mtwara and Lindi? Who is involved and what jobs are being created (or are they planned)?
- VIII. Is there skilled labour available for these jobs? (How many graduates have the required qualifications?) What is the future potential for local jobs for the youth in this sector?
- IX. What level of basic schooling do most pupils have before they enter VETA, and before they enrol in becoming trained as an electrician? How does this link to the qualifications reached by the students in Mtwara?
- X. What electrical contractors exist in Mtwara and Lindi Regions? What level of skills/qualifications do they have? Is there need for further development?
- XI. What private training, or by NGOs/faith-based institutions exists? How do they compare? Does demand for places from the youth outstrip the private places? If so, or if not, why?
- XII. What is the average monthly earning of an electrician in Mtwara? How many years does it take to be trained/skilled? Who is considered a 'fundi'? What are the challenges they face?
- XIII. What are the attitudes of the youth towards becoming electricians? Who might choose this as a job? Why? Is it open to both genders, or mainly men only? Why?

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Annex 3 Interviews conducted for this study

Office	Name	Post
DSM		
Vocational Education Training Authority	Mrs. S. Ndimubanya Mr. E. Kibendela	Curriculum Development Expert Director of Labour Market, Planning & Development
Ministry of Energy and Minerals	Mr. N. Mwhava	Assistant Commissioner, Renewable Energy
Tanzania Electric Supply Company Ltd	Mr. A. Mwingizi	Manager Manpower Development & Training
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