

# **Copying the Extension System of China and Beyond: Implementing the Chinese Agriculture Technology Demonstration Centre in Ethiopia**

**Gubo Qi<sup>i</sup>, Lerong Yu<sup>i</sup>, Dawit Alemu<sup>ii</sup>, Seth Cook<sup>iii</sup> and Xiaoyun Li<sup>i</sup>**

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# China and Brazil in African Agriculture

## Working Paper Series

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This Working Paper series emerges from the China and Brazil in African Agriculture (CBAA) programme of the Future Agricultures Consortium. This is supported by the UK Economic and Social Research Council's 'Rising Powers and Interdependent Futures' programme ([www.risingpowers.net](http://www.risingpowers.net)). We expect 24 papers to be published during 2015, each linked to short videos presented by the lead authors.

The CBAA team is based in Brazil (University of Brasilia, Gertulio Vargas Foundation, and Universidade Federal do ABC), China (China Agricultural University, Beijing), Ethiopia (Ethiopian Agricultural Research Institute, Addis Ababa), Ghana (University of Ghana at Legon), Mozambique (Instituto de Estudos Sociais e Económicos, Maputo), Zimbabwe (Research and Development Trust, Harare), the UK (the Institute of Development Studies, the International Institute for Environment and Development and the Overseas Development Institute).

The team includes 25 researchers coming from a range of disciplines including development studies, economics, international relations, political science, social anthropology and sociology, but all with a commitment to cross-disciplinary working. Most papers are thus the result of collaborative research, involving people from different countries and from different backgrounds. The papers are the preliminary results of this dialogue, debate, sharing and learning.

As Working Papers they are not final products, but each has been discussed in project workshops and reviewed by other team members. At this stage, we are keen to share the results so far in order to gain feedback, and also because there is massive interest in the role of Brazil and China in Africa. Much of the commentary on such engagements are inaccurate and misleading, or presented in broad-brush generalities. Our project aimed to get behind these simplistic representations and find out what was really happening on the ground, and how this is being shaped by wider political and policy processes.

The papers fall broadly into two groups, with many overlaps. The first is a set of papers looking at the political economy context in Brazil and China. We argue that historical experiences in agriculture and poverty programmes, combine with domestic political economy dynamics, involving different political, commercial and diplomatic interests, to shape development cooperation engagements in Africa. How such narratives of agriculture and development – about for example food security, appropriate technology, policy models and so on - travel to and from Africa is important in our analysis.

The second, larger set of papers focuses on case studies of development cooperation. They take a broadly-defined 'ethnographic' stance, looking at how such engagements unfold in detail, while setting this in an understanding of the wider political economy in the particular African settings. There are, for example, major contrasts between how Brazilian and Chinese engagements unfold in Ethiopia, Ghana, Mozambique and Zimbabwe, dependant on historical experiences with economic reform, agricultural sector restructuring, aid commitments, as well as national political priorities and stances. These contrasts come out strikingly when reading across the papers.

The cases also highlight the diversity of engagements grouped under 'development cooperation' in agriculture. Some focus on state-facilitated commercial investments; others are more akin to 'aid projects', but often with a business element; some focus on building platforms for developing capacity through a range of training centres and programmes; while others are 'below-the-radar' investments in agriculture by diaspora networks in Africa. The blurring of boundaries is a common theme, as is the complex relationships between state and business interests in new configurations.

This Working Paper series is one step in our research effort and collective analysis. Work is continuing, deepening and extending the cases, but also drawing out comparative and synthetic insights from the rich material presented in this series.

*Ian Scoones, Project Coordinator, Institute of Development Studies, Sussex*

## Abstract

The Chinese Agriculture Technology Demonstration Centre (ATDC) in Ethiopia is an aid project on agricultural technology cooperation between China and Ethiopia. The process of cooperation is the art of improvising on the ground when the original project plan doesn't quite match reality. This study analyses the logic behind the improvising of implementation on the ground. It found that the running of this project is not following project management procedures and log-frame indicators but is instead based on the experiences of agricultural extension in China. Through Chinese experts, as individual actors, ATDC brought in the approach of top-down planning, assumption of package support and integration of commercial functions which can be found in the reformed extension system in China. The Chinese experts carry this working approach – along with its assumptions and principles – to Ethiopia, without considering the lack of any parallel institution and culture there at the beginning. This results in many challenges for implementing the ATDC activities and novel reactions by the ATDC experts, which also reflect the individual's working style in the Chinese extension system. Though the technologies are still present inside the ATDC after many efforts, a request to extend the cooperation phase from the Ethiopian side implies an appreciation of the approach and its results to some extent.

**Keywords:** ATDC, China, Ethiopia, Agricultural Extension

## Introduction

We were supposed to be here to demonstrate technologies, but not do on-farm trials; however, we ended up taking suggestions from various partners, and started four demonstration households this season with funding from the Department of Agriculture in our province in China.

So said the director of Ethio-China Agricultural Demonstration Centre (ATDC) in Ginchi, as he looked out at the large area of maize and smaller area of teff in the fields around us.

After one and a half hours of driving down an 85km road from Addis Ababa, several whitewashed buildings with red roofs jump out at you from a distance. Surrounding the buildings are fields of green vegetables and maize, and Chinese and Ethiopian national flags fly in front of a gate with several Ethiopian farm workers standing to one side. Running along the perimeter of the buildings and the fields there is a barbed-wire fence. This is the ATDC. When you enter through the gate you first go along a cement road into a small yard. This was originally designed for the builders' temporary accommodation and is now used as a kitchen for the 14 Chinese staff members working here.

The ATDC in Ethiopia was established to transfer agricultural technology from China to Ethiopia via the demonstration of Chinese farming approaches to local Ethiopians. The project is implemented by Chinese agronomists who come from a strong background of agricultural extension within China, characterised by comprehensive top-down management of information and technology dissemination from the highest policy goals to the farmers on the ground. They are accustomed to doing everything in their power to achieve the goals set by the higher levels. They carry this working approach – along with its assumptions and principles – to Ethiopia, despite the lack of any parallel institution or culture there. This results in many challenges for achieving the ATDC's project goals and ultimately demands a lot of improvisation by the ATDC experts. Understanding the actual context and the realistic potential of the ATDC, therefore, requires looking beyond official rhetoric and the original project plan. It requires looking at the life stories of the individuals involved, their interests, motivations, skills, past experiences and networks. This research aims to contribute to this through an exploration of the experiences of staff at the ATDC, based on empirical fieldwork in Ethiopia from November 2013 through September 2014.

The analysis in this paper comes from a Chinese perspective exploring the nature of China-Ethiopia agricultural cooperation. Some of the researchers involved in this project's wider research programme have already conducted similar ethnographic research, not only considering the success or failure of a particular programme or policy, but also the nature of its process. In her research in Senegal, for example, Buckley (2013) analysed how distinct repertoires for land management are negotiated and reshaped by different subjects in a kind of improvised dance, where individuals' improvisations lead to unanticipated project outcomes. She argues that a Chinese agricultural management regime for African land is simultaneously fraught with conflict, while also replete with collaboration benefiting smallholder farmers. She shows how Chinese aid workers seem to avoid grand discourses or standard solutions. Moreover, their approach is practical, often responding to recipients' requests, thus reflecting their development experiences but not necessarily a systematic political and economic model (Nordtveit 2009). The process of China-African agricultural cooperation, furthermore, does not follow the criteria of Development Assistance Committee of The Organisation for Economic Co-operation and Development in terms of aid to developing countries (Li et al. 2014). This research will explore deeper why Chinese experts behave in this way, what the logic is behind their apparent improvisations and how they understand and respond to unexpected situations throughout their work.

The research was conducted by three researchers from the China Agriculture University, with support from UK and Ethiopian partners. The authors visited the ATDC three times. The first visit in November 2013 was for one week, the second stay in July 2014 was for four days and

the third visit in September 2014 was for one day. Semi-structured interviews and participant observations were used for communications and data collection. The research team also interviewed officials working in the Ethiopian Ministry of Agriculture and Ministry of Financial and Economic Development (MoFED), and other Chinese experts in other Ethio-China agricultural cooperation projects on the first and second visits. During their stays at the ATDC, the authors took part in the centre's daily work and spent time together with both Chinese experts and Ethiopian workers. After the visits, the authors kept in touch with staff via the internet to follow up on their progress. However, they were unfortunately unable to capture some of the broader activities conducted by the centre such as training courses and negotiations with local officials. Consequently this study is largely presented from the Chinese experts' perspective.

## Chinese agricultural experiences in Ethiopia: Background of the ATDC

The Ethio-China ATDC is one of the agricultural cooperation projects developed under a political arrangement between the two states. There are many policy discourses from the Chinese side which show the role of agriculture in practicing cooperation between China and African countries. In the document 'China's Africa Policy' announced on 12 January 2006, a specific item of agricultural cooperation appears under the economic field in part IV of the cooperation section. It says that China intends to further promote its agricultural cooperation and exchanges with African nations at various levels, with the focus on land development, agricultural plantation, breeding technologies, food security, agricultural machinery and the processing of agricultural and side-line products. China will intensify cooperation in agricultural technology, organise training courses of practical agricultural technologies, carry out experimental and demonstrative agricultural technology projects in Africa and speed up the formulation of the China-Africa Agricultural Cooperation Program. It was described again in a white paper on China's foreign aid in 2014 (State Council 2014) that agricultural development is crucial to poverty reduction in developing countries. China believes that through establishing agricultural technology demonstration centres; dispatching agricultural experts to provide consultations and conduct technical cooperation; and training technical and managerial personnel on agriculture in other developing countries, China has taken proactive efforts to help other developing countries raise their agricultural productivity to effectively cope with food crises (State Council 2014; Agriculture Exhibition Website 2012).

Within the frame of the policy guidance, concrete projects from the Chinese side were initiated including 15 ATDCs built by China in Africa, committed by the premier in 2007 and increased to 20 in the Fourth Ministerial Conference of the Forum on China-Africa

Cooperation in November 2009. At the same time, China tried to match the needs from African countries. Entering into the twenty-first century, amid multiple global crises, agricultural development was revisited and the challenge related to agriculture in sub-Saharan Africa was still identified as the need to increase food productivity and production of smallholder farmers (Dethier and Effenberger 2012). A number of problems were addressed corresponding to this challenge: property rights, R&D for seeds and inputs, irrigation, fertiliser, agricultural extension, credit, rural infrastructure, storage and connection to markets. In Ethiopia, the government's openness to attracting resources from the international development community for agriculture is aligned with its general economic development agenda and strategy. One of the key areas is capacity development for the next generation of R&D professionals, such as supporting Ethiopian Agricultural Technical and Vocational Education and Training (ATVET) with external teachers and experts. This is in keeping with the idea that 'capacity-building of middle-level technical workers is an important factor in the drive to enhance productivity, stimulate economic competitiveness, and raise people out of poverty' (World Bank 2012: 138). In its recent five-year Agricultural Growth Program (AGP), supported by several donors, the aim is to promote agricultural production and commercialisation and rural small-scale infrastructure in target woredas<sup>1</sup> in the four major regions of Amhara, Oromia, Southern Nation Nationalities and People (SNNP) and Tigray.

The implementation of the ATDCs referred to past experiences and lessons of agricultural extension farms in African countries funded by the Chinese government. Researching on more than 40 years of China's agricultural aid projects in Africa, it was found that there was a vicious cycle of starting off fast and achieving some impacts, followed by a rapid decline (Yun 2000). Bräutigam (1993) found that operating Kpatawee in Liberia as a state farm effectively transferred China's own difficulties with state-controlled, overmechanised and uneconomic production. Even China's small-scale irrigation techniques, when considered separately from the rainfed area of the state farm, appear at best only marginally competitive with imports, and offer limited promise as a viable farming system for rural Liberia. Aid funded China's enterprises to build up ATDCs, with an expectation that the motivation of economic benefits will sustain the project and ultimately end the repeated recovery actions taken by China's government (Bräutigam 2009). The Chinese government also considered its own geographic diversity of agricultural production, and assigned the work of taking care of ATDCs to executive agencies in different provinces throughout China, an approach called 'one province in China corresponding to one African country' (*yi sheng bao guo*, 以省包国).

With the recommendation of the Guangxi Department of Agriculture, Guangxi Bagui Agricultural Science and Technology Corporation Limited (Bagui for short) was approved by the Ministry of Commerce (MOFCOM) in 2007 to be the executive organisation of the Ethio-China ATDC. The corporation also implemented a Modern

Agricultural Park in Bagui, Guangxi Province in China. This was established in 1999 in affiliation with the Guangxi Department of Agriculture. With the support of the government, 35m yuan was input over more than ten years to set up this demonstration park on a total area of 25ha. It has five objectives: demonstration of modern agricultural facilities; introduction and extension of new varieties, new technologies and new research results; agricultural science and technology education, training and placement; demonstration of agro-industrial operation; and demonstration of tourism agriculture. The operation is based on different projects, such as an Education Base of Science and Technology for Guangxi Youth, Demonstration Base of Population of Rural Sciences in China, Demonstration Base of Agricultural Tourism in China, Demonstration Site of Agricultural Tourism in China, and Tourism Site with National AAAA Level (the highest standard awarded by the government). Eight hundred new varieties have been tested successfully and 35 percent of them have been extended to 200,000ha throughout the province. The Park also demonstrates organic farming and other sustainable agricultural practices. It represents a company taking on the mandate of technology demonstration to the public, but not the mandate of producing profits. And its positioning was identified within the agricultural development strategy in the province, as can be seen in the Park's five objectives.

The ceremony to start construction of the Ethiopian ATDC was successfully held on 8 November 2009 (Guangxi Agriculture Information Website 2009). Both the Executive Vice-Minister of the Ethiopian Ministry of Agriculture (MoA) and the Chinese Ambassador to Ethiopia expressed that this ATDC is the output of long-term cooperation between China and Ethiopia, and they expect it will play a role in demonstrating modern agricultural technologies and promoting incomes of smallholder farmers in Ethiopia. In fact, when Bagui got this task in 2007, it took part in the ceremony in Beijing for sending experts to African countries, which was presented by the Chinese Vice-Premier and Ministers of Commerce and Agriculture (Bagui Company 2007). After 2 years of Bagui as the implementer and another 1.5 years of unexpected issues (discussed in the next section), construction formally began in April 2010. The ceremony of transferring the completed ATDC to the Ethiopian government was held on 19 June 2012 and it went into its second phase of technology cooperation in November 2012. Production fields, a seedling greenhouse, a mushroom plant, vegetable storage and bio-gas facilities were completed and all in their places when entering into this operational phase, as it was designed in 2008. However, only 50 percent of production fields were put into use and only in the rainy season in the first year of this second phase. According to Dong, the current director of the centre,

Exporting vegetable was one component in original plan of ATDC. But we could not get the authorized qualification to export vegetables. And we were not sure of the domestic market, so we did not put

the fields into use fully. As to another component of mushroom demonstration in the plan, since there are not mushroom experts in ATDC, so the mushroom plant is still empty.

Another explanation from Xia, the horticulture expert, is that,

Previous director did not think about to promote the process. After assigning the production tasks in the field, he just stayed in the dormitory and never came out except meal times. And the area of the field even did not put into use fully.

The harvesting of the vegetables faced big problems with marketing, according to several experts. Said one, 'the vegetables that could not be sold just rotted in the field. It was a waste.' Both the experts and some Chinese expressed the same opinions on the first year of cooperation at ATDC. From November 2013 the personnel structure started to adjust, and the demonstration, training and even on-farm trials (which were not originally planned) have been designed and carried out.

When the 52.36ha field is in full use, the off season needs about 20 local workers per day, and the peak season needs about 50 per day because of the running of the irrigation system. In the open field for demonstration in July 2014, there are 9ha planted to grass, 1ha of teff, 14ha of maize, and the remaining 17ha planted to vegetables including green pepper, tomato, cucumber, bean, kidney bean, broccoli, lettuce, edible chrysanthemum, spinach, zucchini, cauliflower, Chinese leek, celery and asparagus. Seedlings of vegetables and some further vegetable production for demonstration are housed in 11ha of greenhouses. There are also about 40 pigs, 120 chickens and 16 cattle. There are four wells in the four corners of the field to provide bombing water for irrigation in the dry season. The ploughing and harrowing of the land is done by three tractors, sometimes with the help of a fourth rented from a research centre nearby.

The products are sold to the agricultural markets located in Addis Ababa and to mostly Chinese restaurants and Chinese companies around Addis Ababa. After going through a difficult time in its first year and a half, the centre's annual profits could reach US\$120,000, according to the current director.

## **Human capacity of the ATDC: staff and their backgrounds**

Though the project is implemented by Bagui as a whole, the experts come from different institutes under the system of the agricultural department in Guangxi, all of which implement extension tasks at the provincial level. The Chinese government re-established a strong public agricultural extension system at the end of the 1970s, with more than a million extension staff and more

than 90 percent of them working at the county and township levels, providing high quality extension services (Hu et al. 2009). Because of the staffing burden of this system, in the early 1990s, the Chinese government formalised the commercial reforms by classifying agents by their source of funding: fully funded agents (government payroll), partially funded agents (government pays part of base salary) and self-funded agents (base salary comes from commercial activities and grants) (Ibid). Commercial activities such as selling fertilisers and seeds were separated from public services that are provided by fully funded agents. Normally the public services such as trainings and demonstrations are jointly set up. Trainings and public advocacy were the main methods before the 1990s, and setting up pilot households to do on-farm trial and to demonstrate new technologies appeared after that in the extension system. Furthermore, these are generally complementary activities in the villages. Training courses are also accompanied by specific programmes supported by the government. Experts from different organisations are invited to provide trainings for different programmes. The design of the ATDC in Ethiopia included the three steps of extension, which are experiment, demonstration and training.

There are 14 Chinese staff at the ATDC who are all male and came to Ethiopia without family accompaniment. Most of them signed a contract for 1.5 years and have a month's holiday at the end of the contract. If both Bagui and the individual would like to re-sign the contract, then the expert will sign for another 1.5 years and come back after the holiday. There were four special cases in which experts were sent back to China before finishing the first contract and another four came for substitution. Two translators were in each contract period.

Except for translators, more or less all of the experts have the experience of working in a strong agricultural extension system within China or even abroad. At the beginning, the director sent to the ATDC was the vice-director of the Guangxi agricultural extension centre, but after one year of poor working results, particularly the lack of any training courses at all – which were supposed to be key activities in the operation phase – he was sent back, and another director from the Foreign Funded Projects Office of the Guangxi Department of Agriculture was sent to the ATDC in November 2013. Actually, there are only four staff originally from Bagui: one is a translator who just graduated from the English programme at Guangxi University before being hired for the ATDC project; one is a horticulture expert who worked in Bagui demonstration park and is responsible for vegetable experiments and field production; another is the horticulture expert who was hired by Bagui as the manager responsible for the project abroad and came

to Ethiopia in 2008 to supervise the construction process; and the last is responsible for administrative issue.

Three of the staff had experiences working outside of China before. Director Dong worked for a bilateral agricultural project in Cambodia extending bio-gas technology from China to local farmers and got satisfying results. Horticultural expert Yu worked for an Indonesian-Chinese company to initiate vegetable production in Indonesia for half a year. Livestock expert Ya worked for a joint venture of Guangxi International Cooperation Company and Chinese Construction Company together with Gambia Development Bank from 1987-1994 to take care of livestock there and sell the products to local hotels.

For those who did not have experience working abroad, some of them had strong capacity in extension in Guangxi. Shang, who is responsible for maize breeding and demonstration, had almost 20 years experience in seed breeding and duplication in Guangxi. The agricultural engineer Tian worked for county agricultural machinery bureau, also for around 20 years.

Since Bagui is administered by the Department of Agriculture, the announcement of enrolling staff to send to the ATDC project was distributed widely in this system, including to various divisions of the Department and agricultural bureaus and colleges affiliated with the Department. Some staff applied very positively and some were recommended by their institutes. After the selection, the Department still worried that people would not like to go abroad if the time duration was too long, so the agreement was signed for 1.5 years with an allowance to go back home for vacation for one month at the end and discuss continuation of the agreement. All staff, including translators, are signed under the name of experts and can get the corresponding subsidies for experts, starting at US\$600 per month for a junior expert, including translators.

None of the staff working in the ATDC received formal training in foreign aid prior to arrival in Ethiopia. 'There might be some regulations in our agreements, but we are not sure', expressed some staff who arrived at ATDC in November 2012. 'We thought we did not receive any training because we were here late. Now we just know that those who arrived at the beginning of technology cooperation phase did not receive any training either', said the director and two other staff who arrived in November 2013, during a chat among the staff in December 2013.

The knowledge and principles of taking on the ATDC's tasks have been introduced in different ceremonies celebrating its start, its progress and its accomplishments. After identifying the experts, there was a workshop organised by the Guangxi Department of Agriculture on

Table 1 Chinese Experts working in the ATDC <sup>2</sup>					
Name	Age	Expertise	Arrival time / departure time	Previous experiences of working abroad	Original position and base before coming to ATDC
Dong	44	Director	Nov 2013	Cambodia, working for three years for extending bio-gas technology to smallholder farmers	Official in Guangxi Department of Agriculture
Nan	31	Accountant	Nov 2012/July 2013	None	Accountant in Bagui
Xi	50	Horticulture and logistics	2008; Nov 2012/July 2014	None	Staff in an Agricultural Bureau, senior agronomist of Bagui and manager in construction phase of ATDC in 2008-2010
Bei	56	Well and water bombing	Nov 2012	None	Engineer in a factory in Dongguan county, Guangdong Province
Shang	41	Maize breeding	Nov 2012	None	Senior researcher in Guangxi Seeds Management Station
Xia	38	Horticulture	Nov 2012	Indonesia, initiating vegetable production for a company but through bilateral cooperation	Teacher in Guangxi Agricultural Vocational College
Zuo	25	Translator	2010/Dec 2013	None	Graduated from English Undergraduate programme, and hired by Bagui because of this ATDC project in 2010
You	22	Translator	Nov 2012/July 2014	None	Master student in Guangxi University
Qian	50	Mechanisation	Nov 2012/Dec 2013	None	Staff in Nanning agricultural mechanisation extension station
Hou	50	Veterinary	Nov 2012	None	Staff in an agricultural bureau
Gao	34	Animal husbandry	Nov 2012	None	Teacher in an agricultural vocational college
Di	38	Horticulture	Nov 2012	None	Staff in Bagui
Nei	50	Horticulture	Nov 2013	None	Staff in a county agricultural bureau in Guilin
Wai	42	Horticulture and administration	Nov 2013	None, but experiences of foreign aid project management in China	Staff in a county agricultural bureau in Guilin
Tian	44	Agricultural engineer	July 2014	None	Staff in Pubei County agricultural machinery bureau in Guangxi
Ya	56	Animal husbandry	July 2014	Gambia, working for a company for 8 years	Teacher in Guangxi Agricultural Vocational College
Hai	22	Translator	Feb 2014	None	Masters student in Guangxi University
Jiao	22	Translator	July 2014	None	Masters student in Guangxi University

19 November 2012. According to the ATDC staff and news reports on the websites of Guangxi Agricultural Vocational College (Chen 2012) and MOFCOM (ECC 2012), the contents of the workshop were an introduction of the structure and functions of the ATDC by the centre's director; a discussion of management and operation, sustainability, training and demonstration of the ATDC; and the security of experts' living and working in the ATDC. The director of the Department of Agriculture emphasised that the experts should realise the important implications of foreign aid. They should improve the quality of foreign aid work through their efforts and innovation, and improve its reputation and impacts through learning and good management. The 'innovation' was not explained or discussed further. 'Good management' was included in the statement without training on what it entails. One ATDC staff member understood that 'at least the director has to know what ATDC should do and the regulations and institution should be obeyed by all staff'. After arriving in Ethiopia, the experts took part in the meeting arranged by the Economic and Commercial Counsellor's (ECC) office of the Chinese Embassy in Ethiopia on 26 November 2012. The counsellor introduced Ethiopia's general situation; emphasised the political and economic significance of the ATDC cooperation project; and charged the experts' group to come up with a concrete and feasible working plan and take action soon. He encouraged the experts to put their fullest efforts into making the ATDC a model of experimental research, technology demonstration and extension and technology training, in order to let the Ethiopian people feel the practical results of technology cooperation. At the same time, he reminded them that everybody should obey foreign aid regulations and foreign affairs disciplines, as well as local laws, cultural customs and religious customs. He also reminded everybody to pay attention to personal safety and production safety; to maintain harmonisation and solidarity; and to uphold a good image of foreign aid personnel.

As in the aforementioned two activities, there was guidance for the ATDC in terms of foreign aid projects, but there were no concrete guidelines for its implementation and there were no concrete requirements for individual experts. Learning by doing became the major approach for the ATDC to move ahead, which is actually the approach that China has taken overall for its engagement with Africa (Buckley, 2013; Li, 2014). While individual experiences in China's agriculture extension system guided the practice of experts in the ATDC, there were adjustments made according to the local situation, which is also a characteristic of doing extension in new terms in China.

## **Transfer of China's agricultural extension system**

Though a hybrid extension system including public and non-public parts has been emerging in China since

entering the twenty-first century, a discouraging phenomenon is that the state administrative management system for the public parts has not yet changed in practice, and is characterised by a traditional 'planned plus professional' style (Li et al. 2009: 185-190). Most of the ATDC staff worked in this system and have had to practice their learning from the system in China without other concrete guidelines for agricultural cooperation between China and Ethiopia. In the management regulations of the ATDC we can see the mark of extension work in China, where there are very comprehensive requirements for staff. It has a team leader, group leader and personnel of the planting demonstration group and livestock group, administrative personnel, marketing personnel, water and electricity personnel, machinery personnel and translators. Specific experts in planting and livestock are responsible for their whole set of work including experiments, production, lectures and field guidance in training.

In the ATDC, changes to the demonstration process as well as concrete technologies are presented. The demonstration process includes the design of the ATDC, the implementation of activities and the communication between the Chinese and Ethiopian sides, which cannot be found in the legitimised policy documents but are built of individual interests, academic and practical backgrounds, understandings of Ethiopian agriculture and its R&D system, and communication skills. In other words, the ATDC brought in China's extension experiences through those individual experts who had the most understanding of China's conditions but little understanding of Ethiopian conditions, so there is a disjoint between official rhetoric on both sides and the realities that Chinese aid workers face. As one teacher at Allege College said,

The R&D system in Ethiopia is very poor in terms of its effectiveness of disseminating technologies to the farmers. There is a strict official procedure in fact, but the problem is that it is not practiced in the reality. I have been working in extension system in Hunan, China for several decades, and we have very strong linkage with farmers. But teachers here could not provide the practical skills to the students that are expected to do the field work with farmers. So we have to enhance their skills at that direction for their contribution to R&D system.

Although the ATDC's technologies are quite distant from the local Ethiopian situation and the gap between demonstration and dissemination has been largely ignored by policymakers on both sides, one extension official in the Ethiopian MoA expressed, 'ATDC has significant meaning because it is our future.'

With this as the future's prospect, Chinese experts are trying their best to transfer their experiences in China's extension system while continuously complaining of the different and not so compatible institutional, physical and cultural environments in Ethiopia.

## Improvising a new scene in a top-down frame

In China, the government sets objectives every year at the national level for types of crops and production goals, and the corresponding extension plan goes through various levels. Grassroots extensionists at the township level follow the county plan that is assigned from upper levels (MoA and MoF 2012). Although the extension workers work quite closely with farmers, they are ultimately accountable to the State, not to the farmers, so they take those high-level objectives and consider the farmers' needs only inasmuch as this is necessary to accomplish their tasks. It is a top-down approach, not directly based on the needs of the farmers themselves. Entering into the 1990s, extension approaches were diversified and new styles appeared like the Experts' Yard, Demonstration Park and Demonstration Household, but the focus remained advanced-technology oriented and treated scientists' knowledge as superior to indigenous knowledge for achieving the goals of food security and agricultural structural adjustment in China (Kuang 2012).

Since the construction phase of the ATDC, this type of thinking accumulated from systematic customs in China was brought in and faced the different realities of Ethiopia. There are three phases in general for building up China's ATDCs in Africa: a two-year construction phase, three-year technology cooperation phase and several-year sustainable development phase. Normally the agreement says that the third phase will be discussed between China and the host African country to decide who will be in charge of it, except for two countries – South Africa and Ethiopia – who insisted that the third phase be transferred fully to them from the Chinese side. The agreement between the Ethiopian and Chinese governments was signed on 30 May 2008.

Unexpected issues meant that the land mentioned in the agreement, 30km southwest of Addis Ababa with wells, could not be acquired due to the farmers who rent the land not agreeing to the transfer, so the Ethiopian MoA tried to look for a new venue. After almost one year they suggested the new venue, a piece of land the government had previously readied for attracting investment 85km east of the capital. Then the construction started in November 2009. However, it was found that this land did not have wells and had volcanic soils not suitable for agriculture. Bagui then suggested that the Ethiopian MoA dig four wells at the corners of the land; otherwise, the irrigation according to the previous plan could not be set up and this would influence the whole design.

It would cost around US\$10,000-15,000 to dig one well, and the Ethiopian side did not initially agree. 'You could not imagine that the government in China did not provide a most accessible place for demonstration and did not arrange infrastructure very well, but it happened

here in Ethiopia,' said the representative of Bagui, An, who was the senior agronomist of Bagui at that time and finished his contract and returned to China in July 2014. An started to write a request letter and asked for help from the Chinese Embassy and ECC's office to submit it to Ministry of Finance and Economic Development of Ethiopia. 'It would increase the budget if not getting the support from Ethiopian government,' An explained of the process. 'It should be very difficult to do that and it was already far behind the schedule, so ECC was also urgently paying more attention on it.'

Finally, the Ethiopian government agreed to dig the wells, through 'the director of extension department of MoA moving other budget in,' according to the Ethiopian focal point of the ATDC. As for the problem of volcanic soil, the ATDC introduced soil improvement as one technology to be demonstrated that was not in the original plan.

The construction finally started following the design that had been done by Bagui in 2008. The design was led by Xi, who had experience implementing the Bagui demonstration park. It combined many advanced technologies currently used in China, such as 'cropping+livestock + bio-gas', agricultural mechanisation, plastic mulching cultivation, industrial seedlings, facilities cultivation, water-saving irrigation, rational intensive planting and fertilising and comprehensive technology of raising livestock and poultry.

These technologies did not match the local situation at all. Local conditions were no irrigation systems, no matching funds for mechanisation and even different kinds of vegetables produced by farmers. But according to the agronomist Shang, 'they are a direction and local people could learn first. Like in Nanning, every year we organised demonstration of new varieties of crops in our experimental station, and visitors could select the ones they like.' However, the difficulties the ATDC faced still exist. While accomplishing their tasks, the extensionists have to find ways to both follow the project design and adjust it to the local situation and farmers' interests.

The turning point of the adjustment was the change of the director. After one year's implementation, the previous director of the ATDC was sent back to China and Dong came for substitution in November 2013. Dong had been an administrator in China responsible for foreign projects aided by bilateral and international organisations such as the United Nations Food and Agriculture Organization (FAO). He was informed by the Department of Agriculture in Guangxi to prepare to come to Ethiopia to take the leadership of the ATDC. At the same time, he was hired as the vice-manager in general of Bagui and was sent out in the name of the new manager of Bagui. Though now identified as per new tasks assigned in the ATDC, the major roles of staff are still influenced by their previous working experiences. In the director's words,

I am representative of Bagui just for temporary and will go back to Department of Agriculture after the end of this cooperation phase. I had the experiences of working on development projects and at least we have to take the activities that have already been planned. I did not have any idea on Ethiopian agriculture upon arrival. There were already many critiques on ATDC. First two considerations from my thinking are: to make the land fully used and to find something more appropriate for local people.

This new director has a significant advantage in his experiences of development project implementation, which is rare among ATDC staff and helpful for him to change the passive situation quickly.

During our visit to Dong in the first two weeks of his arrival in 2013, we observed that he was studying agricultural structures in different regions of Ethiopia and focusing on maize and teff research work. Though only searching on the internet, such as from Ethiopian websites and Google Scholar, he found much relevant information that he did not know before and he even presented us with one article on the System of Rice Intensification (SRI) applied in teff production (Berhe and Zena, 2008). Dong said,

I want to try teff. Farmers here are all broadcasting the seeds with low-yield varieties. We could try to find several households to do the trial. The staff in Ambo research institutes also said that they had some research results in the aspect but not extended yet, I guess there are some problems. Anyway we could plant some, at least we could sell it out. Additionally, I found this article in English on the web-site of Google and found there is big potential to increase its yield.

At that moment, he also contacted Ambo research institutes 10km away to talk about their new varieties of maize, explaining, 'maize is produced in farmers' lands as well and it could be direct food for them, so we might try to demonstrate higher yield varieties with more adaptive to local conditions.'

Among other planned technologies, bio-gas was not put into use. In a 2013 internal report on adjusting the design for demonstration, Dong wrote that the altitude and weather are not suitable for bio-gas, and the customs of local people raising livestock were not conducive to accumulating the manure that is crucial for bio-gas, so the idea was given up. 'Bio-gas is well applied in our province but it was not appropriate in Ethiopia where the temperature is low, like in most places in China, bio-gas does not work,' explained the manager responsible for the construction phase, 'but we only brought this idea from our working experiences in Guangxi and there was only one person for some time then and could not think so much'. As for those vegetables that are only preferred by the Chinese, the adjustment was continuing to plant while looking for more market channels. Teff planting was integrated into the production

plan in the rainy season of 2014. The focal point of the Ethiopian MoA claimed that local people are eager for mushrooms, but this has not been demonstrated in the ATDC – though it was in the original plan. Dong said that he did not know why there is not mushroom demonstration as per planned activities, but he would consider local people's requirement for mushroom.

After another eight months, we came back to the ATDC in July 2014 and found many changes. Two training courses with almost 100 people have been done. About 70 farmers being trained asked for maize seeds from ATDC. All of the land was planted, though still with a large area of vegetables mostly from China. Local varieties of maize and teff were growing very well. The centre had started to produce mushrooms as well with the help of a Chinese mushroom expert sent to Ethiopia through another agricultural cooperation project called the Agricultural Technology Experts project. And there were four demonstration farmers starting to plant maize using the mulching technology that the ATDC had demonstrated and trained in. Explained Dong, with much more confidence than the previous November,

It is easy to complete what planned, such as experiments, training courses and participants. We are not originally required to do on-farm trial. However, since the evaluation team from MOFCOM and Ethiopian MoA all suggested setting up the demonstration households for extending the new technologies, following the model of agriculture extension work particularly in early reform period of China, we started to set up four of them and are applying for the support of around 100,000 yuan from Department of Agriculture in Guangxi.

With the purpose of mobilising more information on current research progress and some existing facilities, the ATDC also contacted Ambo research institutes for exchange in the future. The maize varieties at the ATDC are from Ambo, and the 120hp tractors are also rented from Ambo at the price of 125 Birr (US\$6) per day for 20 days during the land preparation period. The ATDC focal point in the Ethiopian extension department now said, 'we have very good communication with current Chinese director of ATDC, so the activities are going very well. Previous director could not speak English, so it was difficult to get correct and timely exchange through translation. The ATDC had even opened discussions with the China to Overseas Construction Group Co. Ltd (COGCG) for its management after the cooperation phase concluded in 2015. The Ethiopian MoA also proposed continued cooperation with China for sustaining the ATDC in the following three years after 2015, together with Bagui, the ECC and COGCG.

The adjustment of this dynamic pattern is based very much on direct guidance from the upper level, but not a set monitoring and evaluation system, which is one characteristic of extension projects in China as well. The results of the ATDC are not evaluated by a formal monitoring and evaluation procedure but by pressure

from different parties, including the Ethiopian side and Chinese side.

From the Ethiopian side, the ATDC was expected to present a future vision, as the contact person in the Ethiopian MoA expressed: 'ATDC shows the future of Ethiopian agriculture, scale-production with infrastructure and mechanisation, and we can't stop at backward production situation.' Therefore, the tractors are expected to work well and the land to be utilised on a large scale – otherwise the vision will not be realised.

From the Chinese side, simultaneously, the direct administrative organisations are sources of pressure. Led by MOFCOM and organised by the MoA of China, ATDCs were evaluated with detailed indicators in 2013 by the MoA's Foreign Economic Cooperation Centre. The results at least showed the ATDCs doing something related to experiments, demonstration and extension. Staff of the ATDC in Ethiopia faced an embarrassing situation due to only working on vegetable production, with mainly vegetables from China, with no training at all, and no mention of sustainability. The change of director was the solution, followed later on by the change of the structure of demonstration, though without changing the basic pattern of production with vegetables and maize as the main crops under conditions of irrigation and mechanisation.

Individual work experiences and personalities got the projects going in a workable direction, with a push from upper levels. In Dong's account, the Chinese Ministers of Agriculture and Commerce were in a very crucial position for guiding the direction of the ATDC's development. For example, after the latter Minister said that commercialising was not the purpose of the ATDC, and the MOFCOM evaluation group suggested that the demonstration farmers are necessary, the ATDC started to set up demonstration farmers. This process is just like in the frame of government structures in China: when policies are not clear enough to be practical for individuals' work, direct criticism and guidance from authorities are effective. At the same time, individual capacity and personality decide the flexibility of mobilising resources to fulfil the changed direction, to turn the plan again into concrete activities.

The pattern of transferring the extension system could not succeed without specific outputs of its technology demonstration, so for making the ATDC functional, a leader with plentiful experiences of extension and management is very important. That is why the change of personnel was the only solution in the existing frame which could lead to changing responsible organisations if current one could not fulfil the operational requirements.

In this approach, individual capacity is quite critical because unexpected situations require personal adaptive reactions. The new director knows the importance of individual capacity very well from his working experiences of Chinese foreign aid in Cambodia. After getting

employed for the ATDC, he started to recommend new experts who would like to come to Ethiopia together with him, and he has also been concerned with their qualifications in working practically. The agricultural engineer and livestock expert have changed. After the first round of contracts of all the staff, almost 50 percent were shifted.

## **Developing farmers' potential in demonstration through package support**

The extension system in China is top-down, but includes requirements for close relationships between the extension workers and the farmers, which does create room for input from the farmers. Furthermore, extension does not mean only demonstration and training, but also some funds that provide 'package support' for farmers. For making this support happen, the MoA, who is the direct administrative government organisation of the extension system, and Ministry of Finance, who manages public agricultural expenses, make subsidy policies to arrange physical subsidies such as seeds, breeders, fertilisers, chemical pesticides and fodder for agriculture technology demonstration households to apply new varieties and other new technologies (MoA and MoF 2012). Demonstration parks are different from demonstration households, but with the package support these two can be linked with each other. In this system, extension workers are required to organise farmers to come to the demonstration park, to select farmers to do demonstration, and to go to the village providing field guidance.

The idea of 'package support' was then carried out with the demonstration centre setup, which means that the training course should be packed together, technical staff should go to the farmers if needed, and the farmers should come to the centre to visit by themselves or in visits organised by the government.

The training courses were planned in the agreement and it was mentioned that the Ethiopian side would be responsible for organising the participants and providing transportation funds. This organisational arrangement met the Chinese experts' expectation, which was that they would simply provide the knowledge and field guidance to participants. However, it did not go smoothly because the extension department of the Ethiopian MoA could not send the participants as planned.

When the new director came in November 2013, he realised that he needed to facilitate this process. He organised an internal meeting to propose a training plan and went to the MoA to discuss this with the focal point. 'Selection of trainees is the mandate of Ethiopian side, which is written in MOU,' the new director said. 'We could not just go to the farmers to invite them here. It is not allowed either for the farmers coming to ATDC directly

by themselves.' He insisted on communicating with the director and focal point of the MoA, so only ten days after his arrival in Ethiopia, the first training date was set as 4 September 2013. However, this was not the end of the effort: the dates were delayed again and again, and success in holding the training courses was only achieved after 4 months of waiting. To enrol some workers to be trainees was also the idea of the new director for connecting the training courses with practice. At the same time, the Ethiopian MoA combined these two training courses with Agricultural Growth Program activities, so the issue of transportation costs was solved. They also invited the Chinese expert Zhao working in the Ethiopian MoA to provide lectures on plastic mulching technology, an AGP technology, to the trainees.

Even with the top-down character discussed above, the Chinese staff are highly committed to the tasks they are assigned and keen to accomplish them despite lack of salary and many challenges and hardships. Backing this up is the system of incentives and rewards for researchers and extensionists (Li et al. 2009). The staff accomplishing assigned tasks can be proud of being advanced personnel or advanced Communist Party members, appraised at the national level. The extensionists will persist and experiment in every way possible in order to achieve the goals set for them by the higher levels. If they can see even a small amount of progress towards this, with lots of effort put in, they can feel accomplishment and pride in this way. The most significant example of this was in the late 1970s, when hybrid varieties of maize, rice and wheat were introduced to farmers by the extensionists. There was much resistance at the beginning; for example, villagers were used to eating products of the old varieties and not sure of the quality and taste of introduced varieties. The extension workers had low salaries at that moment but they persisted and went to the villages again and again. Some of them invited the technicians who are close to the farmers to introduce the new technologies in a local expression. After all of this effort, they were very happy to see eventual acceptance by the farmers.

In China, the local extension agencies cover lots of areas and take many activities for extension projects. Those Chinese experts coming to the ATDC expected the same conditions. In reality, follow-up is not so ideal because 'the grass root extensionist do not have enough conditions of communication and transportation like mobile phone, bike and daily working expenses; and the salary of around 1,000 Birr [US\$48] and 3-4 hours for going to and returning from field could not be incentive for encouraging extension workers,' as one expert in the Agricultural Technology Experts project commented. The same situation is described in the literature, such as by Dais et al. (2010), who found that basic infrastructure and resources at the kebele<sup>3</sup> and woreda level remain a major constraint, particularly in relation to operating funds: the vast majority of kebele-level Farmer Training Centres (FTCs) do not have operating equipment or inputs to pursue typical extension activities on

demonstration farms. Though the Chinese experts do not know much about FTCs or cooperatives, they do not think these organizations could play an important role except with some advanced farmers, and they feel that the upper levels should take more of a mandate to make dissemination work, as in China. At the same time, the Ethiopian MoA has coordinated many issues in the technology cooperation phase and the experts think that this coordination is sufficient. This includes introducing Alage College to the ATDC for picking piglet breeds from Alage; contacting Ambo research institutes to provide improved local varieties of maize; facilitating Ginchi Woreda government to recommend employees; and soliciting various data on soil and meteorology from local technical stations.

Making friends with farmers or keeping a specific linkage with farmers is one of the working approaches of extension work in China. Currently, the demonstration household method is emphasised again by way of a 'ratio policy', which means that there should be a number of farmers in demonstration households to correspond to a certain number of grassroots extensionists. For example, An county in Sichuan required the ratio of 10:1, or at least ten demonstration households to each extensionist,<sup>4</sup> and that the extensionist should stay in their village of responsibility for at least 150 days per year to provide technology guidance and other services in specific planting times, times of emergency or any time when farmers are in need. Normally they live in the houses of village leaders, and it's natural for them to understand the farmers' and villages' situations after living together. The idea of equality is always present as well, so the extensionists do not consider themselves to be at a higher level than the farmers. The format of the demonstration centre is only one component of the extension process in China, so it is supposed to be combined with follow-up.

In a different situation like Ethiopia, there is not the same system as in China. There is an FTC in each kebele, which is a platform that is supposed to provide training and demonstration for the surrounding farmers. FTCs are within the extension system, and three extensionists responsible for each kebele are expected to make full use of the FTC, at least theoretically. However, the reality is that the FTC cannot be used unless there are projects running in the area, so out of about 8,489 FTCs established at the kebele level, roughly 2,500 were reported to be fully functional at one time (MoA 2009). Thus these are not the same as demonstration households in China, which are always practicing agriculture even without material support from the government.

Therefore, although the ATDC did not do on-farm trials, several Chinese experts went to the farmers and made friends with them, while providing local improved varieties of maize. They gradually came to understand the local situation while approaching the farmers, as Wai explained.

We have to work with our employee, local people, every day, so I have learned a few Oromo language. I do not stay at home in the weekends, but visit local people's home, not for work but for personal interests of understanding local culture. However, for more efficient work, we also need to understand our employed workers in ATDC. Now there are two workers who just graduated from the universities and I will train them to become group heads. Our production is quite different from local customs. Farmers around seldom plant vegetables, and the vegetables ATDC planted are quite different from local ones. Now maize production with local improved varieties and package field management technologies is quite suitable to the farmers.

Changing the behaviour of the farmers for accepting new technologies is also one of the expectations of the experts influenced by their previous experiences. Whatever situation the experts have faced, they all assume that local people need the highest and best available technology to produce high yields. In China, new varieties played an important role in increasing yields, and extending high-yield varieties achieved significant effectiveness in quite a short time, with many efforts to persuade farmers to change their habit of using local varieties. Those who achieved such successful results in China are also very optimistic in Ethiopia. As Xi said,

We are here to accomplish our tasks of bringing advanced technologies from China. Varieties are most important, but there is also modern planting pattern, intensive and meticulous cultivation, for making high yield happen. If you look around here, you could not find even ridge planting and they just broadcast sowing. There is big potential to increase their productivity.'

At the same time, the experts realised it would take time to adjust farmers' farming customs to correspond to these new patterns. Wai commented,

Though they work on farm since very young, those activities are most simple, for example, cattle raising is just grazing and needs only looking at the cattle; another example is they never weeding. You said that you saw their weeding, but that is not weeding, they just pull up weeds for feeding cattle. They do not know how to do ploughing and harrowing, so they are also slow when working in ATDC.

Water saving irrigation is also one of the technologies that is supposed to be demonstrated. Local farmers' conditions are not good enough to build up irrigation systems, and it seems quite difficult to extend this demonstrated technology and have it be accepted by local farmers. However, experts in the ATDC think there is a solution, if the farmers have a willingness to learn. As one expert said,

Yes, many places here do not have irrigation facilities. But if they do want to learn something, they can dig a well by themselves for solving the problems of irrigation. Around ATDC, you can get water after digging only 20 meters, even without money, they could dig well with their own labour. In domestic China, you can see almost every household has one well if there is any possibility for getting water.

However, with so much confidence in the possible use of these technologies, the different needs of farmers remain. After the current trainings and other methods of making friends with farmers, there are only farmers asking for maize seeds but none asking for irrigation technology guidance, for cattle fattening technology or for mulching technology. Four households were selected as demonstration households, chosen from among the leaders of working groups at the ATDC who were working very positively and taking part in the trainings already and whose homes were not far from the centre. They are doing demonstration of maize production with package technologies of locally recommended varieties, mulching, fertilising underground (施底肥), weeding and second time fertilising (追肥), all of which were practiced at the ATDC. Though there were some existing improvements to maize production in these demonstration households, the process was pushed by the experts, who guided implementation and provided plastic cover and fertilisers. Shang was responsible for guiding one household; when Shang was in China for annual leave, this household did not do fertilisation as scheduled, and just waited for Shang's return for the second time fertilisation. Because of this, it was late and missed the appropriate time.

## Creating opportunities in a wider system

In the extension system in China mentioned above, the structure has been reformed since 2006, separating the functions of public services and commercial services into two parallel institutions. Public services include the introduction, trial and demonstration of new technologies; monitoring, prediction, prevention and management of diseases and pests of crops and trees, animal diseases and agricultural disasters; quality security check and monitoring of agricultural product processing; monitoring of resources and inputs application; water management and services of anti-flood and drought; services of agricultural public information; and training and education. Operational services include the supply of production materials of seeds, fertilisers, plastic covers and others; animal disease treatment; and post-harvest services. The public services were the mandates of local extension institutes of the government and the operational mandates were encouraged to be taken on by the commercial sector (State Council 2006).

On one hand, the approach of Bagui implementing the ATDC is providing public services. As the Chinese Agricultural Minister Han mentioned during his visit in Ethiopia, 'we are not here for making money but provide

support to local agriculture and local people.' On the other hand, the ATDC was expected from the China side to be able to get operational capacity for its sustainability (Tang et al. 2015), that is to look for funding sources for its functioning after the government phases out support, to avoid its collapse. For those experts carrying on the tasks of demonstration and extension, it is difficult to accomplish the tasks of producing profits at the same time, but it could be realistic, since there were such experiences in China. Shang had long-term working experiences in Guangxi Seed Company and then Guangxi Seed Management Station. He expressed this possibility in this way:

I have worked for a seed experimental station for more than 20 years. The additional value of seeds in China is quite high because seeds are with high demanding in agricultural production. It is also possible to do similar work here if everybody is positive to cooperate, for example, machines' playing roles and watering in time. We could do seeds selection and breeding, and even production of hybrid seeds. We could teach local technicians the process of breeding, but they need to do follow-up by themselves.

Because it needs a term of ten years on average and a minimum of five to six years for breeding, extension of seed technology seems not so reasonable. However, for those technologies that could be feasible to extend in the short term, the possible benefits that could be brought to the ATDC are not so significant. Water-saving technology, mulching technology and plastic film technology are very easy to learn, and there is a big gap of irrigation in the dry season. 'It is very easy to access to water in highland here, so it is possible to extend water-saving technology after application in dry season,' Shang said.

However, the Ethiopian side only expected the public functions of ATDC. 'It is government asset that is supposed to provide public services and it is not allowed to make profits from it,' the director of MoA explained. The ATDC has to sell produce, pork and poultry in order to support its operations, particular after the cooperation phase. Even the focal point for the ATDC on the Ethiopian side understands this arrangement that the produce from the centre will be sold to fund part of its operations. But marketing isn't part of the official cooperation, and this was not included in the terms and conditions for the ATDC's operations. Therefore, the ATDC can't be registered as a company or issue receipts for sales, which creates real problems for people who want to buy their meat and produce. A Chinese restaurant owner one author spoke to complained about the haphazard nature of their operations (*gan de bu gui fan*, 干得不规范) and about the lack of receipts, which makes it virtually impossible for him to buy anything from them, as he always need to have a paper trail. Furthermore, the ATDC can't sell live animals directly to potential buyers like the restaurant; a special license is required to slaughter animals, which only slaughterhouses like the ones in Debrezeit have.

The ATDC is also not allowed to open a store to sell directly to potential customers; foreigners can't open stores or trading firms themselves, but have to go through a local partner. Naturally, sales were not going well and director Dong complained about this.

This mismatch between ATDC expectations and actual Ethiopian realities forces them to invent ways to cope. Firstly they seek out potential clients for current production, and in the adjustment report of the ATDC a clear cost-benefit calculation was done for each vegetable they are producing, considering Chinese consumers around Ginchi and in Addis. Secondly, they produce maize and teff which are easy to sell to surrounding farmers. Thirdly, they discussed with potential implementers in China taking over ATDC's management after the cooperation phase, such as COCGC, who has set up Wara Agricultural Park and Kebbi and will build up a modern comprehensive agricultural demonstration park in Abuja, Nigeria; and Guangxi Agricultural Cultivation Group Ltd., a large state-owned company in China.

## Conclusion

The Ethio-China ATDC brought a working approach from China into Ethiopia. Even though they are working in a different environment, the staff follow basic assumptions, principles and experiences from their work in China.

From the design to the implementation, the ATDC in Ethiopia is very similar to agricultural research and development projects in China, particularly in the late-reform term of new China. The design was a combination of different modern technologies applied in rural China, and progress was made by adjusting and mobilising resources for project set-up, by adjusting to new demands and changing conditions, and through a mixture of individual actions and management routine.

Without any training on foreign aid project management or working style, the ATDC experts followed their working style from China. The concepts of agricultural cooperation and 'aid' feel very far away. They say they are demonstrating technologies, but in reality they are demonstrating their way of working, and their gradual realisation of a different working environment.

The problem is that Ethiopia is a different environment, lacking the strong extension system that China has. Therefore, even though the ATDC is following the effective extension approach in China, it has faced some problems in Ethiopia. In Ethiopia, where the larger Chinese system is not in place, great effort and resources have to go into any activities outside of the ATDC, and so far it is not very effective in terms of outreach. Even when they adjust the plan, their reactions are still consistent with what they would do in China when encountering a problem extending new technologies.

And the direct result is that the extension largely stops at the ATDC.

A positive reaction to this different 'domain' in Ethiopia was necessary for this demonstration approach to go on, which involves personal efforts at understanding the local situation, making linkages with different local stakeholders, communicating often with contact persons and testing new ways of experimenting that were not in the original design.

With this kind of logic of 'copying original institutions and beyond', the cooperation is not only improvising but also following some rules brought from China and adjusting to partner country's conditions. This logic is showing in the ATDCs in other African countries as well, for example, marketing of agricultural machines facilitated by Zimbabwe ATDC, and mushroom technologies application in large scope extended by Zambia ATDC. In the case of agricultural investment of Anhui State Farm Agribusiness Group in Zimbabwe, it is also following that logic, and their negotiation, tough life, clearing the thicket and alliance going out are like 'reconstruction of another Anhui State Farm' (Wu 2015).

The ATDC project was not framed in the cosmopolitan concept of international development and experts there do not claim to be in a professional team, which is always unavoidable in traditional aid projects (Mosse 2011: 21). They are not bound into report writing or brochure dissemination, not to mention exchanges with other donors. Though there was guidance on foreign aid from the ECC, it was only on how to keep up a good image of China in front of the Ethiopian people, which could be diversified according to individual experts' understanding of the criteria. Most of the criteria are from their experiences working for agricultural extension in China, where they were to complete particular extension and production tasks.

At the same time, ATDC staff in Ethiopia do not feel so comfortable in their roles producing and selling products of the ATDC. Internally, they are not from a company, though they are Bagui staff in name, so their self-identification is still as extension staff, researchers or officials. Furthermore, they are not optimistic on the commercialised operation of the ATDC: agriculture is not a profitable industry and it could not be sustained without government support, as explained by most staff according to their experiences in China.

While they are copying the extension system that they are familiar with, they do not know much about the cosmopolitan concept of development. In another way, the private-public-partnership approach does not match their extension work background either. So objectives, expected outputs and corresponding activities in the log-frame of a project were not integrated into the whole management process and implementation. At the same time, they could not manage to implement the ATDC with commercial purposes. The guidelines for actual

activities came from how to manage and practice an extension project in China, though these gradually changed into how to manage and practice a Chinese extension project in Ethiopia. This means that the ATDC staff were not necessarily more professional than others working in development assistance and were not necessarily effective at the beginning. Those proposals and work plan could be explained in relevant reports and brochures. Donor-related development can respect more this type of development approach, which has its own timing, assessment logic and relevant indicators.

## End Notes

- i China Agricultural University
- ii Ethiopian Institute of Agricultural Research
- iii International Institute for Environment and Development
- 1 A woreda, or district, is usually part of a Zone, which in turn are grouped into one of the regions based on the ethno-linguistic communities (or kililoch) that comprise the Federal Democratic Republic of Ethiopia.
- 2 Names in this article are all anonymized.
- 3 A kebele is the smallest administrative unit of Ethiopia, similar to a ward, a neighbourhood or a localized and delimited group of people.
- 4 Long Tao. Kicking-off Workshop of 2014 Science and Technology Demonstration Households in Feishui Town. 2014-09-11. <http://anxian.my.gov.cn/ax/219851821034766336/20140911/512114.html>

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