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Chinese Agricultural Expertise Support in Ethiopia: Approaches, Motives and Perspectives

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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). 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 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.

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1 Introduction

Many people including researchers, policymakers and development partners in Ethiopia believe that sustainable economic development to ensure food security can be achieved by modernisation of the agricultural sector through improving availability and application of agricultural technologies; improving skills and knowledge of all actors; and providing associated favourable policies and institutional support. In line with this, the Government of Ethiopia's (GoE's) economic growth strategy, Agriculture Development Led Industrialization (ADLI, formulated in 1991), places very high priority on accelerating agricultural growth and achieving food security. Agriculture is also a main focus of the current GoE's Growth and Transformation Plan (2010–2015), as was also the case for its predecessors, the Sustainable Development and Poverty Reduction Program (SDPRP) approved in 2002, the 2004 Food Security Strategy (FSS) and the 2006 Plan for Accelerated and Sustained Development to End Poverty (PASDEP).

In the effort to modernise the agricultural sector, the GoE has been heavily investing in agricultural education, research and extension. Linked with such investment, the GoE duly considers the importance of technology and skill transfer from all over the world. In general, facilitation of the technology and skill transfer is envisaged through two main complementary approaches. The first is through promotion of foreign private investment that will ensure flow of required capital into the country along with easily transferred skills and technology. The second is through cooperation agreements with different countries and donors linked with technology and skill transfer.

Apart from the promotion of formal higher learning (public and private universities and colleges) and Technical Vocational Education and Training (TVET), the specific measures that have been put in place to ensure technology, knowledge and skill development are related to promotion of specialised training and technology institutes or centres with the support of development partners. Some of these are the Ethiopian Leather Technology Institute, Ethiopian Textile Technology Institute, Ethiopian Water Technology Center, National Rice Research and Training Center, Ethio-German Agricultural Technology Center and Ethio-China Agricultural Technology Demonstration Center. The key components of these measures are technology introduction and local human capacity building using both local and foreign experts with diverse modalities of implementation.

This paper documents the role of the different acts of cooperation between China and Ethiopia in ensuring the transfer of agricultural technology and knowledge in the process of agricultural modernisation in the country. It specifically assesses (i) how these interventions are aligned with ongoing public programmes; (ii) how they are perceived by both locals and Chinese; (iii) what challenges and opportunities are emerging in achieving the objectives set in their design, especially in support of the Ethiopian agricultural extension system's improvement; and (iv) what implications can be drawn for other development partners engaged in support of the Ethiopian agricultural sector.

2 Historical trends in agricultural expertise support to Ethiopia

As one of the world's ancient civilisations, Ethiopia used to have a traditional church education system, and during the early nineteenth century the proportion of citizens able to read and write was about the same as in Western Europe (Ferede 2013; Pankhurst 1968). However, in the late nineteenth century there was a deterioration of church education and a subsequent decline in literacy. Pankhurst (1968) associates this decline with the Zemen Mesafinet chaos, the destruction of Gondar by the Dervishes, the war of Gragn and the civil war caused by the latinisation experiment. As a result, teaching began to be regarded in a derogatory manner, at least among the soldiers. People would remark that "the worst of the beasts is the scorpions, the worst of men is the [teacher] and intelligence is better than study" (Ibid).

The attempt to institute modern education and training in Ethiopia can be traced back to the nineteenth century and Emperor Tewodros II, who was inspired by European technological advancement and military power linked with the armament manufacturing school at Gafat to train young Ethiopians in arsenal production (Ferede 2013). The then aspiration to catch up with the economic and social advancement of Western European countries was linked with sidelining traditional schools and promoting modern education. This has resulted in a failure to create a synthesis between the new and the old, the local and the foreign systems ever since. The traditional system directly counteracted the effort of modernisation by producing a mindset that repudiates everything except that sanctioned by tradition. It is with this challenge in mind that different attempts in promoting modern education have been made. Following the attempt to establish modern education in the early twentieth century, the Italian invasion in 1936 changed the Ethiopian educational system as thousands of educated Ethiopians were killed and the survivors became exiles in England, France and the United States.

Following the end of the war, a secular modern higher education was started in 1950s with the founding of the University College of Addis Ababa. Since then different cooperation agreements of the Ethiopian government with different countries started to play an important role in formal education and training in the country in general and formal agricultural education in particular. The focus of the different cooperation agreements varied with the overall regimes, which can be categorised into three. The first is the phase of an elitist education system under the Emperor. The second phase is during the Derge era when

the country was under military rule and ideological control penetrated into the educational system. The third phase is the experience under the Federal Democratic Republic of Ethiopia (FDRE) where the country is experiencing spectacular expansion of higher education.

During the imperial era, under the University College the College of Agriculture, now called Haramaya University, was founded in 1952 through a joint arrangement between the Imperial Ethiopian government and the United States government in strong affiliation with Oklahoma University. The Institute of Building Technology was established on 13 October 1954 by an agreement between the Imperial Ethiopian government and the Swedish government. A Public Health College was established in 1954 at Gondar in the historic north central part of the country in cooperation with the World Health Organization and United States Agency for International Development (Asgedom 2005). These agreements had two major components: partial financing of the construction of required facilities and provision of technical staff. For example, in the Oklahoma Contract for the establishment of the then College of Agriculture about 50 percent of the funding was from the United States government. In terms of staff, of the total 29 staff in 1960, 20 were Americans from Oklahoma University. Similarly, at the Institute of Building Technology there was only one Ethiopian member of academic staff in the total of 17 staff members (Ibid). Linked with the Emperor Haile Sellasie's visit in 1959 to Moscow, the former Soviet Union was also involved in supporting the country in higher education, where an agreement was signed to establish a technical school. Accordingly the Bahir Dar Technical High School, now upgraded to Bahir Dar University, was inaugurated in 1961. Ayele (2013) states that because of the heavy Soviet involvement in construction and training activities, the technical school was sometimes known as the "Moscow School" by the local people. When training commenced in September 1963, there were 10 Ethiopians and 14 Russian instructors to teach in the school in five fields of study: Agro-Mechanics, Electrical Technology, Industrial Chemistry, Textile Technology and Wood Technology.

Following the 1974 change of regime, technical cooperation was more oriented to the East European countries linked with the ideological alignment of the then leaders, and there was considerable decline in the linkage with traditional supporting Western countries like United States. The main forms of agriculture-related cooperation with East European countries were: (i) scholarships for Ethiopians to study in East Europe; (ii) sending university instructors to Ethiopian universities and colleges; (iii) establishment of the National Plant Protection Research Center; and (iii) technical backstopping investments in huge state farms.

The regime change in 1993 has again brought the re-orientation of diplomatic relations to different countries including Western nations, East Asian countries, the Middle East and North Africa. The shift was, however, more pragmatic and more connected with economic relations. Within this framework, the different economic development models that have demonstrated quick impact dominated the orientation of ties with different countries. Though relations are maintained with both Western countries and Eastern European countries including Russia, the developmental state orientation has resulted in stronger ties with the People's Republic of China.

This history indicates Ethiopia's long engagement with outsiders in supporting its agricultural sector through agricultural expertise and associated facilities, and how this engagement varied depending on the socio-political situation in the country. In general, the support from different countries made major contributions to agricultural sector development. The former Alemaya College, now Haramaya University, is the origin of most Ethiopian agricultural professionals in the country, while the former Bahir Dar Technical High School, now Bahir Dar University, plays a key role in supplying qualified technicians and engineers in agro-mechanics, electrical technology, industrial chemistry, textile technology and wood technology. The same is true with the Institute of Building Technology.

In recent years, the engagement of the Chinese in support of agricultural development through different forms of agricultural expertise and associated facilities has considerably increased. This paper assesses the key factors involved in the increased engagement; whether there are any similarities in approaches and motives compared to historical engagements of other countries; and what impacts have been achieved.

3 Overview of Chinese agricultural cooperation

The agricultural cooperation between Ethiopia and China emanates from the demand from both sides. The aspirations of the GoE to replicate Chinese achievements in terms of rapid economic development in general and agricultural development in particular, as well as the adoption of an economic development model more similar to the Chinese, have created interest in learning from the Chinese experience in agricultural development. Similarly, the Chinese strategy of international cooperation to strengthen its outward economic development, referred to as its 'going out' (zou chu qu) strategy, has included the diversification of food supplies so as to ensure China's food security. This in turn has contributed to the interest in technical cooperation with Ethiopia in the agricultural sector (Sun 2011; Jiali 2009). The important economic ties between the two countries in the area of agricultural trade and Chinese engagement in basic infrastructure development in Ethiopia are also reported to be key motives of Chinese engagement in supporting the Ethiopian agricultural sector.

China's strategy is based upon its own experience, and an understanding that by achieving self-reliance and independent development in agriculture, African countries can eliminate poverty and realise socioeconomic progress. The key areas of agricultural sector development cooperation are designed to be (i) establishment of

cooperation mechanisms through high level engagement of policymakers from China and Africa; (ii) strengthening agricultural assistance in the form of agricultural aid projects; (iii) personnel training and despatch of agricultural experts; (iv) technological exchanges and cooperation; (vi) agricultural technology demonstration and extension; and (vii) agricultural product trade and investment development.

In view of this, the Chinese cooperation with Ethiopia in the agricultural sector emanates from the General Agreement between the two countries on Friendly Relations and Cooperation that was signed on 24 November 1970, and the Agreements on Economic and Technical Cooperation signed on 18 December 2006 and 20 March 2007. All the subsequent specific agreements and letters of intent of cooperation refer to these general agreements. Some agreements like the agreement on the establishment of the Agricultural Technology Demonstration Center refer to the need to follow up the outcomes of the Beijing Summit on China-Africa Cooperation.

The specific areas of cooperation of China in the agricultural sector of Ethiopia are highly associated with agricultural technology, knowledge and skill transfer and emanate from four agreements, which are (i) the agreement between the Ministry of Agriculture (MoA) of Ethiopia and the MoA of China for providing Chinese instructors in agricultural technical vocational education and training (ATVETs) to Ethiopia, which has been put in place since 2001; (ii) the agreement on the establishment of the Ethio-China Agricultural Technology Center at Ginchi in October 2009 and subsequent agreement on sending Chinese experts to the centre; (iii) the agreement on sending Agricultural Technology Teams to Ethiopia; and (iv) the tripartite agreement among the GoE, the Chinese government and the Food and Agriculture Organization of the United Nations (FAO) for the implementation of the South-South Cooperation (SSC) programme in support of the Agricultural Growth Program in Ethiopia, signed on 17 April 2012.

4 Expert support related agricultural cooperation

4.1 Chinese Instructors for Agricultural Technical Vocational Education and Training (ATVETs)

4.1.1 TVETs and ATVETs: Overview

Recognising the role of TVETs as an approach in modern education systems both in developed and developing countries, the Education and Training Policy of 1994 had a provision for promoting the TVET education system in Ethiopia, which has among others facilitated the emergence of a number of formal and non-formal TVET provision centres. Subsequently, in order to ensure quality and proper specialisation, a number of provisions were made including the Technical and Vocational Education and Training Proclamation in 2004 and the National Technical and Vocational Education and Training Strategy in 2008. The Ministry of Education reports that in the five years since 2009 the TVET enrolment was on average 317,262 trainees per year all over the country.

In line with the TVET system, ATVETs have been promoted in the country since 2000 by the MoA and regional Bureaus of Agriculture, mainly to train Development Agents (DAs) to work in Farmer Training Centers (FTCs) to enhance the knowledge base and skills of farmers and thereby provide the institutional framework for increasing the efficacy of agricultural extension services (Davis et al. 2010). Before the ATVETs, the few universities with agricultural faculty were the only institutions offering training at degree and diploma levels in general agriculture. Currently there are 25 ATVETs in the country, which have been operational since 2001 and trained more than 60,000 DAs.

There are occupational standards that have been developed for different types of TVETs by the Ministry of Education in consultation with relevant stakeholders, including for those managed by the MoA, Ministry of Health, Ministry of Culture and Tourism, Ministry of Defence and Road Authority. In general, the occupational standards were developed for 10+1, 10+2 and 10+3 programmes, accepting that students who have completed the tenth grade had the possibility of three programmes. Lately the development of the occupational standards has been re-categorised into five levels, mainly to consider the possibility of engaging drop-out students before the tenth grade who are not entitled to enrol in 10+1, 10+2 or 10+3 programmes (in Level 1 and Level 2).

All the ATVET colleges provide a three-year diploma programme in a possible five disciplines: (i) Animal Science, (ii) Animal Heath, (iii) Agricultural Cooperatives Development, (iv) Natural Resources and (v) Plant Science. The curriculum has been changing over the years and currently it is based on a module approach. Over the three years the number of modules that need to be covered are about 200, or about 20 modules for each instructor. The proportion of theoretical and practical training in the ATVETs is reported to be 30 percent and 70 percent respectively. In addition to their training role, the ATVET colleges have expanded their mission to include the provision of specialised short-term training based on demand in the areas of fruits and vegetables (agronomy or crop science), beekeeping, poultry, dairy and the fattening of both cattle and small ruminants.

The ATVET instructors are dominantly BSC degree holders, with few having MSc degrees and most of them being trained in local universities. In an effort to strengthen the training capacity, especially in the area of practical training, the MoA has been deploying Chinese experts in selected areas since 2001 based on an agreement between the MoAs in China and Ethiopia. As stated in the agreement, the main objective of cooperation is to send Chinese ATVET instructors to Ethiopia to assist in providing practical training within the ATVET system.

The MoA administers seven ATVETs and the rest are managed by respective regional Bureaus of Agriculture. Students that join the federal ATVETs are selected by respective regional Bureaus of Agriculture based on the quota given by the MoA for each region. Similarly, the ATVETs managed by the regional Bureaus of Agriculture select students and the total number of trainees is determined by the capacity of the respective ATVETs. The selection follows the same procedure of providing quotas to the different administrative levels (zone and woreda). The students that join ATVETs are those who are eligible to participate in 10+3 programmes.

4.1.2 Chinese experts in ATVET and implementation modalities

The agreement stipulates the implementation modalities of selection, deployment, duration of stay, performance evaluation and financial arrangements. It also presents the responsible organisations for the implementation. Accordingly, the Chinese MoA delegates the responsibility of implementation to the Center for International Cooperation Services (CICOS) of the MoA in China. From the Ethiopian side, the Project Coordinator at the ATVET Department of the MoA is responsible.

The number and specialisation of required Chinese instructors is determined by the respective ATVETs. Once the total number of instructors is known, Ethiopian instructors from selected ATVETs are sent to China to undertake interviews based on academic credentials and interview performance and the CICOS facilitates the process.

The contract for each instructor is for one year, with renewal based on performance and the instructor's interest. There are a number of instructors who have stayed for more than 8 years by renewing their agreements.

The whole cost of the project used to be covered by the GoE, but since 2012 the Chinese government has started covering the costs. The key components of the costs of the project are (i) the instructor's salary, which varies by level of education and ranges from US$1,635 to US$2,403 per month; (ii) accommodation and utility costs; (iii) international and domestic travel; (iv) medical costs; and (v) candidate selection costs in China.

The agreement also stipulates that each instructor should handle at least two courses and the total hours of engagement should not exceed 20 hours per week for both theoretical and practical teaching. Each instructor is also expected to prepare teaching and training manuals in his area of specialisation and also conduct demonstration work.

To ensure the relevance of each instructor, there is an efficiency evaluation procedure designed by MoA and it provides the opportunity for the management, Ethiopian instructors and students to give their input. The weight of evaluation is 50 percent for department head, 20 percent for Ethiopian fellow instructors, and 30 percent for students. These evaluations can be used for termination of contract and also for consideration of extending contracts. The number and professional composition of the instructors at different ATVETs in the country in the 2011/12 academic year is summarised in Table 1.

4.1.3 Key value addition

The main contributions of Chinese experts are related to (i) provision of practical skills in management practices of agricultural production to both student and Ethiopian instructors; (ii) attempts to introduce new varieties of crops and agricultural technologies; (iii) introduction of new approaches in provision of practical training to students; and (iv) preparation of practical manuals, especially in areas where there is limited skill and knowledge in the country – such as a manual for artificial insemination for poultry; manual for fish egg incubators; and manual for silk worm and mulberry production and management.

The hardworking and disciplined attitude of Chinese instructors is reported to have inspired students and Ethiopian instructors. Students often prefer to bring their questions to the Chinese instructors rather than to Ethiopian instructors due to their responsiveness and welcoming attitude.

4.1.4 Key challenges

The extent of knowledge and skill transfer from Chinese instructors is constrained due to the following challenges:

- Lack of required support material and basic infrastructure for training. The group discussion with Chinese instructors at Alage ATVET revealed that they were constrained by lack of required inputs and facilities to provide hands-on practical training for students, which has basically forced them to focus on theoretical aspects.

- The change in the responsibility of instructors from teaching and teaching material development (in 2001–2006) to teaching and provision of practical training. This has reduced the possibility of making available teaching materials critically required in the process.

- Critical shortage of training materials and facilities, which has forced the instructors to bring materials from China. Therefore, the personal initiative of the respective instructors determines the availability of key training materials and facilities.

Table 1 Specialisation and academic levels of Chinese Instructors in Ethiopian ATVETs, 2011/12 (2005 EC)				
Sub-sector	**Specialisation**	**Educational level**		
		MSc	**BSc**	**Total**
Crop	Agronomy	2	3	5
	Fishery		2	2
	Horticulture	1	1	2
	Tea science	1		1
	Plant protection		1	1
Livestock	Livestock	1	2	3
	Sericulture	1		
	Veterinary	1		
Total		**7**	**9**	**16**

- The ATVET module approach. There are about 200 modules and every instructor on average handles about 20 modules. This is very challenging and in some cases leads to a lot of overlap in courses. Moreover, this creates shortage of time as there has to be an exam for all of the modules. In China, the courses are given based on categories of important agricultural commodities.

- Time allocation. The current curriculum assigns 70 percent of the time to practical training and the remaining 30 percent to theoretical aspects; however, in practice the time allocation is the opposite.

- The calibre of students, as the ATVETs cannot directly select their students. It is estimated that only 30 percent of students achieve good performance; 30 percent are average, and the remaining 40 percent are poor. The group discussion with Chinese instructors at Alage ATVET indicates that it is the regional BoA's responsibility to nominate trainees based on the general criteria.

- The college has been reviewing the curriculum in the last three years and it is expected that a new curriculum will be approved soon.

4.2 *Chinese Agricultural Technology Team*

As per the official request of the GoE within the framework of grants stipulated in the agreement on economic and technical cooperation signed in 2003, the Chinese government despatched eight agricultural experts to work with the MoA for two years in 2011. The domestic salary, international travel, accommodation, medical insurance and transportation (fuel, driver and vehicle maintenance) and purchase of two work vehicles, equipment and office supplies were covered through this Chinese grant.

Table 2 presents the academic composition of the expert team members. The wood technologists are placed at the Forestry Research Center of the Ethiopian Institute of Agricultural Research (EIAR). Similarly, the rice expert is working with Werer Agricultural Research Center of EIAR on irrigated rice. The cotton expert is working with MoA extensionists in providing training on cotton production and processing for development agents and Subject Matter Specialists (SMSs, who are public agricultural extension service providers) from regional Bureaus of Agriculture. The post harvest expert and the expert on edible fungi production (mushroom production) are linked with the Ethio-China Agricultural Technology Centre at Ginchi.

Discussions with key informants indicated that while the experts came at the request of MoA, the process of attaching experts with relevant organisations was not well designed before the experts' arrival. For instance, the organisations hosting the Chinese experts were only identified after their arrival, thereby wasting precious time. The Chinese experts are also unhappy about the arrangements made in ensuring their timely engagement in the planned activities. The expert on edible fungi production started providing training for local mushroom producers informally, which indicates the overall poor planning of Chinese expert support through this collaborative agreement. The Chinese experts estimate that only about half of their two years' stay was utilised effectively, suggesting the extent of wasted opportunities in this programme.

4.3 *South-South Cooperation (SSC) programme in support of the Agricultural Growth Program (AGP)*

The Chinese expert team (SSC team in the agreement documents) were sent to support the Agricultural Growth Program (AGP) within the framework of the tripartite agreement between Ethiopia, China and FAO signed in April 2012. It is also part of the general agreement on the Trust Fund between China and FAO in support of SSC signed in March 2009.

Table 2 Specialisation and academic levels of members of the Chinese Agricultural Technology team, 2011/12 (2005 EC)

Sub-sector	Specialisation	Educational level		
		MSc	BSc	Total
Crop	Rice	1		1
	Cotton		1	1
Forestry	Wood machinery	1		1
	Wood anatomy	1		1
	Plantation forest		1	1
	Bamboo processing		1	1
Post harvest	Post harvest technologies		1	1
Edible fungi	Edible fungi production		1	1
Total		**3**	**5**	**8**

The main objective of the SSC programme is to provide technical assistance to improve the AGP. The AGP is a five-year GoE/multi-donor programme to promote agricultural production, commercialisation and rural small-scale infrastructure in the target woredas in the four major regions (Amhara, Oromiya, SNNP and Tigray). The specific roles of the SSC team are related to (i) irrigation linked with small-scale irrigation scheme development, horticultural crop production, agro-processing and associated farm tools and machinery maintenance; (ii) animal husbandry including livestock development, forage and feed improvement, animal health laboratory services and associated livestock product market development; (iii) crop production and protection, including harvest and post harvest management; and (iv) extension service improvement, which is related to the improvement of the performance of the FTCs as an entry point for the extension services.

The SSC team is composed of six experts and 23 technicians, with a team for each of the four regions. These teams are based at Alamata in Tigray, Debre Markos in Amhara, Woliso in Oromiya and Hawassa in SNNP. The experts are former staff of the MoA in different parts of China and they are selected based on competence and relevance to the expertise required by the Ethiopian side.

5 Technology centre related agricultural cooperation

5.1 Ethio-China Agricultural Technology Demonstration Center (ATDC)

As per the agreement made in 2008 between the MoAs of Ethiopia and China, the establishment of the ATDC is occurring in three stages: (i) physical construction of the centre, (ii) making the demonstration centre functional and (iii) sustainable management of the demonstration centre by the Ethiopian MoA. In each of these steps, the roles and responsibilities of the two governments are clearly stated together with a timetable.

For implementation of the first and the second phases of the project, the Chinese government has selected Guangxi Bagui Agricultural Science and Technology Co. Ltd. The selection of the project site, site investigation and design were undertaken starting from late 2008 until the end of 2010. The actual construction started in early 2011 and was completed in June 2012. As per the new MoU signed in August 2013, operation of the Centre with Chinese technical and financial support will proceed until November 2015. After that, the Centre will be officially handed over to the GoE. The extension directorate of the MoA in Ethiopia has the responsibility of follow-up and support for the project.

5.1.1 Overview of the ATDC

The ATDC is located about 85km to the west of Addis Ababa, near Ginchi town in Dendi woreda of Oromiya region. It covers about 52ha of land allocated for agricultural technology demonstration, office facilities and a residential compound.

The centre is managed by a team of 14 Chinese experts, including two translators. The experts have either an MSc or bachelors degree, with considerable experience in their respective fields as employees of Guangxi Bagui Agricultural Science and Technology Co. Ltd.

In addition, as per the initial design, the centre management team was expected to include three Ethiopian experts. The Chinese technical team leader assumes the position of Centre Director and the Ethiopian side provides a Deputy Centre Director. The main purpose of having the three Ethiopian experts is to smooth the project implementation, ease the handover and sustain the training after the project phase-out in November 2015. However, no Ethiopian experts have been assigned so far.

Technology demonstration at the centre covers different sub-sectors of agriculture including field crops and vegetables, livestock (cattle, poultry, pigs), fisheries and other specialised areas like edible fungi and duck farming (see Table 4).

Table 3 Specialisation and academic levels of members of the SSC team

Sub-sector	Specialisation	Experts		Technicians		
		No	Edu	Educational level		
				MSc	BSc	Total
Irrigation	Field irrigation	1	MSc	-	7	7
Crop	Agronomy	1	MSc	3	1	4
Livestock	Livestock production	1	MSc	1	1	2
	Animal health laboratory	1	MSc			
Post harvest	Post harvest technologies			2	2	4
	Agro-processing for fruits and vegetables			2	2	4
	Post harvest and processing of crops	1	MSc			
Farm mechanisation	Farm mechanisation			1	1	2
Extension	Agricultural extension	1	MSc			
Total		**6**		**9**	**14**	**23**

Trainings are supposed to be undertaken four times per year with 45 trainees each time for a period of 30 days. The total number of trainees is expected to reach 540 in 12 sessions over the three project years.

The centre is supposed to be self-sustaining, whereby the agricultural production in the demonstration areas generates income for training programmes. The demonstrations are designed to include crop production, animal feed production, livestock production and other specialised production such that the by-products of one process are used as input for the other. For instance, maize grown at the centre is processed into animal feed, which is then fed to pigs, cattle and chickens. In turn, animal manure is applied to the fields as organic fertiliser.

5.1.2 Current status of the centre

The centre began its training programmes in 2013 using seven hectares of land developed for vegetable and field crop production, as well as facilities for poultry, pig farming and aquaculture.

5.1.3 Key challenges

- The delay of the appointment of the Ethiopian experts within the management structure of the centre. This seems to have created a challenge for the Chinese experts and limited the transfer of management expertise. This also has implications in terms of the limited transfer of skills in demonstration field design and establishment, as currently there are no Ethiopian experts gaining such knowledge and skills.

- Lack of formal linkages between the centre and other Chinese experts. These exist only as informal relations, which have resulted in exchange of information and technology like transporting pigs from Alage ATVET to the Centre.

- Imported technologies known only to the Chinese experts, with limited linkage to the national agricultural research system.

- Seemingly informal technology transfer mechanisms. In some cases, such as the importation of plant materials, these may not even follow the country's rules and procedures, which may lead to unnecessary phytosanitary risks.
- Delay of planned activities due to long import procedures for required facility/technology and overly lengthy decision-making procedures for practical operations.

Table 4 Coverage of the Agricultural Technology Demonstration Center			
No	Demonstration type	Land allocated (ha)	Current status
1	Experiment and demonstration of crop farming	8	started
2	Vegetable production demonstration	20	started
3	High-quality pasture production demonstration	4	started
4	High-efficiency breeding demonstration (cattle, goats)	30 beef cattle or 150 mutton goats	started
5	High-efficiency breeding demonstration of broiler chicken	2000 broiler chickens (1 to 2 times/season)	started
6	High-efficiency breeding demonstration of live pigs	50 pigs/season	started
7	Demonstration of edible fungi		planned
8	Demonstration of duck farming		planned
9	Demonstration of fish farming		started

- Communication challenges linked with language, as well as the desire to implement activities only as per the initial agreement from the Chinese side and the desire for greater flexibility from the Ethiopian side. One case in point is requests by the MoA to support mushroom production techniques, which is not an activity stated in the initial agreement.

- Limited provision for the sustainable use of imported technologies. Many of the crop varieties in the demonstration sites are imported, and many of these are hybrids. No one knows how trainees and farmers at large will have access to these technologies.

5.2 Comparison with other similar Centres

5.2.1 *Ethio-German Agricultural Training Centre (ATC)*

The ATC was established within the framework of technical cooperation between the Ethiopian MoA and the German Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) together with eight German private companies involved in agriculture. These are AGCO (tractors and combine harvesters), LEMKEN (land preparation, seeding and plant protection equipment), GRIMME (potato cultivation and harvesting), RAUCH (fertiliser application technology), BEINLICH (irrigation systems), EUROPLANT (improved potato varieties), BAYER CropScience (crop protection) and EURO GRASS B.V. (soil fertility). The main mission of the centre is provision of advanced training programmes for agricultural machinery operators, technicians, mechanics, farm managers, agricultural business leaders and similar service providers. This is expected to improve the knowledge and skills of the workforce in the area of agricultural mechanisation for accelerated modernisation of the country's agricultural sector (EG-ATC 2013).

The training programme has seven major areas of training. The first area deals with training on operation of tractors and other machinery, including for tillage, seed drilling, chemical fertiliser applications, chemical sprayers and harvesting. The second category deals with mechanisation of production for wheat and potato. The other four trainings are associated with skills and knowledge sharing about managing farms that includes training on farm planning, production flow management, business planning, etc. The last deals with basic metal welding training (Table 5).

The ATC has two options for providing trainings. The first option is based on the annual training programmes that are designed by the centre and conducted at the centre, and the second option is training designed based on requests from clients and conducted on the premises of the client. The fees for the trainings vary according to these options.

Since the centre is partially supported through donations, the fees are only related to covering costs for consumables and trainees' accommodation, travel and refreshments. In general, instructors' fees and allowances as well as costs for training materials are covered by the ATC, even for trainings provided outside based on requests. The tractors, machinery and equipment that are required for the training programmes are provided by the respective German private companies.

Trainers are both from Germany and local professionals employed by the ATC. The ATC also uses professionals from universities, ATVET institutions and farm enterprises for selected training programmes. The training programmes have both classroom theoretical presentations and hands-on practical training.

Table 5 ATC offered trainings, 2013				
Category	**Training area**	**No.of sessions / year**	**Average length of training in days**	**No. of trainees per session**
TOP	Tractor and associated accessories operation training	12	3 - 5	8 - 12
MOP	Mechanised production training (wheat and potato)	2	2 - 3	30 - 50
WT	Basic welding technology training	1	15	8 - 10
CBP	Credit application and business planning	1	3	25 - 30
FPE	Farm planning and economics	1	5	25 - 30
OCP	Production chains for potatoes	1	4	12 - 15
PCC	Production chains for cereals	1	4	12 - 15

Source: Summarised from EG-ATC (2013)

5.2.2 National Rice Research and Training Center (NRRTC)

The NRRTC is a public federal research and training centre supported by the Japan International Cooperation Agency (JICA) within the Coalition for Africa Rice Development (CARD), which aims at doubling rice production in Africa by 2018. The JICA support has three key components: (i) construction of physical facilities; (ii) research and laboratory equipment and facilities; (iii) despatching experts for technical support; and (iv) long term training for Ethiopian experts in Japan and/or other relevant countries.

5.2.3 Key features and comparison among the ATDC, ATC and NRRTC

The key features of these centres can be considered in terms of the source of experts, technology, type of training, physical facilities, modalities of centre management and financing. A summary of these features is presented in Table 6.

Deployment of experts

At present, the ATDC is fully managed by the Chinese side. The plan indic ates that training will also be conducted by Ethiopian experts together with Chinese experts. In addition, the trainees are expected to work on different agricultural fields for surplus production since the centre is expected to earn revenue in order to fund its operations.

The ATC has experts employed from both Germany and Ethiopia who plan and provide the training. The centre also deploys local experts from universities and ATVET colleges for its training programmes on a case-by-case basis.

Since the NRRTC is attached with the federal research institute (EIAR), all the researchers working for the centre are expected to serve as trainers. JICA is expected to deploy both short and long term rice experts through its rice project.

This indicates that the centres all deploy experts from their respective countries, but the extent of involvement of local experts is limited with the ATDC compared to the other two centres.

Technology introduction and adaptation

While the agreement for the establishment of the ATDC indicates that technologies will be imported, there is no clear statement about which technologies will be imported and what will be the mechanism of transferring them if they are found suitable to local conditions. However, depending on the experts' interest and knowledge, a number of crop technologies have been imported and put into the field both for adaption trails and demonstration purposes.

The ATC has a target of introducing tractor operated technologies and accessories that are manufactured and donated by the German private companies, ranging from land preparation to sowing, cultivation, plant protection, harvesting and threshing equipment. It is clear that once demand for these technologies is created and there is skilled labour that can operate them, the companies can deliver these through open market access.

JICA support for the NRRTC envisages introduction and adaptation of technologies not only from Japan but also from other Asian and African countries. The technologies could be rice germplasm, pre-harvest, harvest and post harvest instruments, polishers, etc.

It is therefore evident that the introduction and adaption of technologies through the ATDC is not yet clear in terms of coverage and sustainable access to the technologies, whereas for the other two centres the technologies to be introduced are known and there is a clear framework of access to the technologies in a sustainable manner.

Training for target stakeholders and own staff

All three centres target provision of training to respective stakeholders. The stakeholders of the ATDC are DAs and SMSs. There is not any planned capacity building for experts who will continue providing the training. This is mainly due to the expectation that there will be three Ethiopian counterpart experts who will be working with the 14 Chinese experts during the project implementation period that will enable them to acquire the required knowledge and skills.

The ATC targets provision of training to personnel who will be operating tractors and other farm equipment. The trainers are often senior experts from Germany and also Ethiopia who are employees of the centre. In special cases, the centre employs short term experts from local universities and ATVETs. The centre does not have any capacity building programme for its staff.

The NRRTC targets provision of training, in addition to its research mandate to generate rice technologies, to extensionists at different levels, researchers and other actors along the rice value chain. JICA support will also include provision of short and long term trainings abroad for the centre staff as part of the national human capacity building efforts.

Physical facilities

The ATDC was constructed using Chinese funds by a Chinese company. Similarly, the ATC was constructed by the German government grant but the construction was done by a local contractor. The NRRTC is under construction through a Japanese government grant and the construction is being done by a local contractor.

Centre management and financing

The management of these centres is quite different. At the ATDC, the Chinese Centre Director is responsible for the overall guidance and implementation of the planned activities and its human resources. As indicated in the agreement, the three Ethiopian counterpart experts, who are expected to work at the centre and one of them to serve as Deputy Centre Director, are expected to get their salaries from the Ethiopian MoA. The two sources of finance have created a challenge for the Centre Director to fully manage the centre as per the plans.

The ATC is managed by a German Centre Director and there are both German and Ethiopian employees that run the day-to-day training and related activities. Since the centre is partially supported through donations, the fees are only used to cover costs for consumables and trainees' accommodation, travel and refreshments. In general, instructors' fees and allowances as well as costs for training materials are covered by the ATC, even for trainings provided outside based on requests. The machinery and equipment that are required for the training programme are provided by the respective German companies.

The NRRTC is fully managed by the Centre Director assigned by EIAR. The construction of the physical facilities is partially managed by EIAR and partially by JICA. The JICA rice project will be fully managed by long-term JICA experts.

Control over financing different activities for the ATC and NRRTC creates the possibility of proactively managing the centres, as compared to the ATDC, which is partially dependent on Ethiopian counterpart experts for some of the activities. The Ethiopian counterpart experts at the ATDC are expected to get their salaries through the MoA.

Table 6 Key features of technology demonstration and training centres supported by development partners

Category	Key features	ATDC	ATC	NRRTC
Expert	Despatch of foreign experts	***	**	**
	Involvement of local experts	-	**	**
Technology	Import of technology	**	***	**
	Engagement in adaptation of local technologies	**	-	***
Training	Short term expert training	***	***	***
	Long term expert training (degree)	-	-	***
	Training of farmers	***	**	***
Physical facility	Physical construction of offices, dormitories, etc.	***	***	***
	Laboratory facilities	**	**	***
	Farm/demo/research field development	***	**	***
Management	Led fully by developmentpartner	**	***	***
Financing	Private sector role	**	***	-
	Training fee			

Note: (***) high, (**) medium, (-) none

6 Contents, financing mechanisms and targets: common features and trends

The contents of the different programmes, quality of involved expertise and associated financing mechanisms are very important for effective implementation of the programmes. A summary of the different Chinese agricultural cooperation programmes in terms of their contents, financial arrangements and targeting is presented in Table 7.

6.1 Contents

The four technical cooperation areas have more or less similar contents, where the ultimate objectives are transfer of agricultural technologies and knowledge to Ethiopia through practical training and demonstration. The technologies are either imported from China (vegetable crops, millet, etc.) or locally available, and demonstrations are made with improved agronomic practices for crops and practices in animal husbandry for livestock.

6.2 Targets

The four technical cooperation programmes have different targets groups. The Chinese instructors assigned to ATVET are involved in formal three year programmes to train future DAs who will serve as frontline extension agents. In recent years, ATVETs are also involved in short term training programmes as refreshment for DAs or for other interested experts involved in agriculture. The targets of the ATDC are also DAs and SMSs, who will be trained for short periods of time at the centre through practical observation of the different farm operations. The Chinese agricultural technologists' targets are different institutions of the MoA and their role is mainly backstopping. The SSC team's targets are farmers, DAs and woreda experts, along with the FTCs as an institution. In general, the interventions aim to transfer agricultural knowledge and skills to farmers and extensionists through practical training and demonstration.

6.3 Funding mechanisms

There is a shift from financing by the Ethiopian government to grants provided by the Chinese government and also a move from bilateral types of arrangements to multilateral ones through engagement of UN agencies like FAO.

However, the financial support from the Chinese government focuses on covering the costs of experts and associated tools and equipment, with limited financing for actual operations. This has limited the planned activities by Chinese experts, as activities are dependent on the priorities and availability of finance from Ethiopian hosting organisations.

7 Perspectives of Chinese expertise support for agricultural development in Ethiopia

The support that Ethiopia has received in terms of agricultural expertise from different countries since the 1950s has played an important role in building domestic capacity. For instance, the American support to the establishment of the then Alemaya College of Agriculture and the former Soviet support for the establishment of the Ambo Plant Protection Research Center made enormous contributions to the current domestic capacity in education, research and development in their respective areas of expertise. This support was not simply sending experts but was also associated with the construction of required facilities, establishment of working modalities and procedures and provision of overseas scholarships for Ethiopians to ensure the sustainability of the investments.

The Chinese engagement is more on practical training and skills transfer at a grassroots level associated with agricultural extension, with limited focus on infrastructure development, establishment of working procedures and human capacity building efforts for counterpart experts. However, the ATDC is a bit broader: in addition to experts, the support encompasses infrastructure development and working procedure setting. Local experts who replace the Chinese experts are expected to be trained within the centre.

Following the scattered success stories in the different sectoral Ministries in the country through public and private interventions, the GoE has realised the need to document these success stories as best practices and to scale up the main identified and prioritised ones to the national level. This has resulted in a national initiative called "scaling up of best practices" for all economic sectors and the "scaling up of agricultural technologies" in particular for the agricultural sector. The main interest in the Chinese support through expertise is linked with the exploration of best practices (technological, process and/or institutional innovations) in the agricultural sector that can be scaled up to a national level. The types of Chinese expertise often requested from the Ethiopian side are in areas of specialisation where there is limited knowledge and skills in the country. Examples are requests for expertise in sericulture, bamboo processing and mushroom farming. These are sectors with considerable potential but very limited development at present. While it is difficult to fully associate sericulture promotion with Chinese expertise support, the provision

Table 7 Summary of contents, financing mechanisms and targets by programme

Chinese Agricultural Cooperation programmes	Contents	Financing mechanism	Target
Chinese Instructors at ATVETs	• Area of expertise of instructors based on respective ATVETs. • Provision of practical training to trainees and to some extent to Ethiopian fellow instructors. • Provision of classroom training.	• The GoE covered the whole cost of instructors from 2001 to mid-2012. • Since mid-2012, the Chinese government is covering the costs except accommodation and utilities. • The instructors are provided with transport (vehicles) but no financing for any operations.	• Future agricultural DAs
Ethio-China Agricultural Technology Demonstration Center	• Area of expertise of the 14 experts as per the original agreement. • Preparation of high value crops and livestock (dairy, poultry, fishery) demonstration for training of improved practices. • Integrated farm operation where the product of one activity will serve as input for the next activity.	• The cost of design and construction of the centre was covered by the Chinese government. • The cost of the 14 experts and required material supply is covered by the Chinese government. • Expected to operate on its own from the income that will be generated from sale of agricultural produce from the demo sites.	• Agricultural extension experts, mainly DAs and SMSs • Serve as showcase for advanced Chinese agricultural technology
Chinese Agricultural Technology Team	• Eight Chinese technologists specialised in previously selected areas (rice, cotton, wood technology, edible fungi). • Assigned at relevant federal institutions of the MoA. • Provision of technical backstopping in the assigned institutions.	• The whole cost of the Chinese technologists is covered by the Chinese government. • Costs of two vehicles, required agricultural machinery and materials for technical backstopping are covered by the Chinese government. • The operations are partly covered by the Chinese government.	• Relevant MoA institutions and their experts • Forestry Research Programme
South-South Cooperation Chinese Technology team	• Six experts and 23 technicians selected by the Chinese government with provision of GoE approval and specialised in the areas of irrigation, animal husbandry, crop production and extension. • Improving the performance of FTCs as an entry point for technology and knowledge transfer.	• The cost of the programme is covered by FAO through the SSC Trust Fund supported by Chinese government. • Local travel, accomodation, utilities and security guard expenses are covered by the GoE.	• DAs • FTCs • *Woreda* Offices of Agriculture

of technical training for ATVET students have played a key role in the institutionalisation of sericulture extension within the extension programme of the MoA at a national level. Similarly, in the major bamboo producing regions of the country, the use of bamboo was just for fuel wood and house construction. The introduction of improved processing and utilisation in the form of household furniture and also upgrading of traditional ways of utilisation has contributed not only to efficient utilisation of the available bamboo resources but also creation of microenterprises that are key for job creation. Chinese expertise, especially in the form of training for trainers, was reported to play an important role.

Unlike the support the country received during the Imperial and Derge periods, the types and approaches of the different development partners within the agricultural sector are quite diverse. If one considers agricultural training centres only, in addition to the Chinese ATDC, currently there is the German supported ATC and the Japanese supported NRRTC. The targets and areas of interventions are often aligned with the general public programmes in the process of negotiations during the projects' design. The Chinese approach over the years seems to shift to more financing of the schemes while still maintaining the alignment with GoE priorities.

As the engagement of the Chinese in basic infrastructure development such as roads, electricity and telecommunications as well as in agricultural trade is increasing, it is expected that the Chinese agricultural expertise support in Ethiopia will be strengthened in a manner that is aligned with the country's development plans, especially in the form of exploring best practices.

8 Conclusion

In the history of modern Ethiopia, the attempt to modernise the agricultural sector has incorporated collaboration with different countries in the form of expertise support and associated finance. In general, the country's political conditions and economic imperatives have determined the countries with which cooperation was made. In this regard, three distinct periods can be identified: (i) the pre-1973 period when the country's political alignment was with the West and expertise support was coming mainly from the United States and Europe; (ii) the Derge era from 1973 to 1993, when the alignment was with the East, mainly Russia, East Europe, Cuba and China; and (iii) the post-Cold War period when the country started to follow pragmatic relations based mainly on economic factors.

This paper presented the approaches, perspectives and challenges of Chinese agricultural expertise support in Ethiopia. The Ethio-China expert based technology and knowledge transfer cooperation is expanding from the initial Chinese instructors' involvement at the ATVETs with Ethiopian government funding, to Chinese funded expert engagement in the extension service provision and construction of an agricultural technology demonstration centre based on bilateral cooperation agreements. The tripartite agreement between China, Ethiopia and FAO to support the Agricultural Growth programme is an indication of expanded engagement of China through multilateral agreements to support the transformation and modernisation of the country's agricultural sector.

The key features of Chinese agricultural cooperation in Ethiopia are (i) dependence on despatching Chinese experts; (ii) the attempt to make Chinese engagement demand driven, which is associated with the engagement of the Ethiopian side in expert selection; (iii) the fact that activities are partially dependent on the level of engagement and commitment of the Ethiopian counterpart experts; (iv) the focus on financing the costs of Chinese experts, with limited financing for operational activities, which has meant that the Ethiopian side has had to finance activities; (v) the limited focus on transfer of physical agricultural technologies in the process of agreement design and implementation and the dependence on the will and interest of the Chinese experts in transfer of physical agricultural technologies – the agreement design seems to be based on Chinese assumptions that there is more or less similar public capacity that fully implements what is planned and that there is similar counterpart commitment to what exists in China; and (vi) limited flexibility of intervention areas and planning of detailed activities during the implementation process. These key features clearly differentiate the type of Chinese engagement from other development partners' engagement where in addition to the support in the form of expertise, investment in required infrastructure, financing planned activities (operations and local counterpart human capacity building activities) are included. The features are instrumental for the following challenges observed in the implementation process of Chinese expertise support.

Counterpart experts related challenges: The programmes are highly dependent on the knowledge, skills and commitment of the counterpart experts assigned to work with the Chinese experts. This has direct implications for the performance of experts, especially in cases where there is a lack of appropriate counterpart experts to work with the Chinese.

Limited flexibility: In many cases, the initial agreements are the guiding principles in identification of project interventions, which has restricted flexibility. Commonly, initial plans as per the original agreements may not be feasible at the level of implementation, and this clearly requires flexibility. Lack of flexibility has reduced the possibility of engaging Chinese experts in emerging issues and reduced the capacity for Chinese engagement to be demand driven. For instance, the MoA was interested in the demonstration of mushroom technology at the ATDC due to the emerging potential of the sector in local and international markets, but because it was not in the original agreement between the two countries, it was difficult for the ATDC to accommodate this request.

Limited focus on transfer of physical agricultural technologies: In all cases, in the project design and implementation, there is no focus on ensuring the transfer of improved and advanced physical agricultural technologies from China and/or elsewhere, though the areas of project involvement are often clearly stated. This has resulted in the import of physical technologies (e.g., crop seeds, farm tools) based on the will and interest of the Chinese experts. Because of the high motivation of the Chinese experts to introduce and demonstrate improved technologies, a number of technologies have been imported by the experts themselves using their own money. A number of Chinese instructors at ATVETs have brought basic teaching materials from China, as they were constrained due to the lack of such materials.

Limited linkages with relevant stakeholders: The different projects often do not have formal linkages with relevant stakeholders. This is especially true for the federal and regional agricultural research institutes that can facilitate the transfer of knowledge and skills. The different agricultural technologies (seeds, prototypes of agricultural tools) imported for demonstration purpose can be better adapted if the research system is involved. This could also boost the impact of the projects. It can also help to reduce the phytosanitary risks of imported seeds.

Challenges related to activity finance: In the cases of the SSC team and agricultural technologies at MoA, activities are planned through annual planning processes that include drafting of tentative plans by Chinese experts, followed by approval at the regional and/or federal level. In the implementation process, operational costs are supposed to be covered by the woreda Office of Agriculture, which often provides priority to the office's planned activities. This has direct implications for the efficiency of managing the planned activities, as there may not be budget available or it may only be available in limited amounts. Unlike other donor supported programmes that are fully designed and implemented by project coordination (activity, expert, finance), the Chinese approach does not fully provide room for independent planning and implementation.

Implementation logistics as per the agreement: in all areas including the SSC team, logistical challenges related to accommodation, utility payments and local transport are still important, even though the Ethiopian side has attempted to minimise such challenges. This is mainly associated with the programme design where these are expected to be financed by the MoA or Bureaus of Agriculture. Woreda, zonal and regional Bureaus of Agriculture are always short of funds, making it difficult for them to allocate money for Chinese activities.

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