

# Chinese agriculture in Africa

Perspectives of  
Chinese agronomists  
on agricultural aid

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# Acronyms

FAO	Food and Agriculture Organisation, United Nations
FECC	Foreign Economic Cooperation Centre of the Chinese Ministry of Agriculture
FOCAC	Forum on China-Africa Cooperation
M&E	Monitoring and evaluation
MOFCOM	Ministry of Commerce, China
SSC	South-South Cooperation Programme, FAO-China

# Executive summary

Chinese actors are increasingly engaging in African agriculture. Despite China's innovative approaches to aid and assertions of comparative advantage in agriculture technologies, experience shows that technologies that have worked well in China may not offer the same benefits when transferred to Africa. The local contexts in African countries provide a continuous challenge to even simple technology-transfer models; often, the effectiveness of aid depends on the resourcefulness of aid experts and staff on the ground.<sup>1,2</sup> The perspective of the Chinese agronomists implementing these initiatives, however, is largely missing from the literature on China-Africa agriculture engagements. Understanding their experiences and reflections seems a crucial missing piece in ensuring continual learning and in improving the design, management and finance of Chinese agricultural aid programmes in Africa.

This paper presents the reflections of more than 160 Chinese agronomists who have spent time implementing agricultural aid projects in Africa. Although Chinese agricultural aid in Africa dates back to the 1950s, there has never been an attempt to systematically gather the perspectives of practitioners implementing these projects on the ground. This research,<sup>3</sup> conducted by the newly constituted research division of the Foreign Economic Cooperation Centre (FECC) of the Chinese Ministry of Agriculture,<sup>4</sup> can be seen as a first step to gain insight into their experiences, in order to allow a more productive dialogue with a range of stakeholders in China-Africa agriculture engagement.

As a whole, the surveys reflect a pragmatic optimism about the great potential for improving African agriculture through sharing of China's own agriculture development experience, coupled with a critical openness about certain aspects of project design and management that hinder the aid's effectiveness. For instance, a need for innovation and adaptation of Chinese technologies is reflected strongly in the research, and there are examples of achieving this in the field; but assessing adaptation potential is not yet

integrated systematically into project design. Another key message is the need to focus on an integrated, full-value-chain approach to technology transfer rather than on relatively isolated projects.

Regarding the targeting of aid, the surveys found disagreement among respondents as to which African target group is most appropriate for Chinese agriculture intervention—smallholders, trainers/vocational workers or farm owners? Some even suggested that Chinese agricultural aid has been hindered by its focus on smallholders. Regarding implementation, the research highlights key challenges related to the selection and training of experts, their length of service, and the support and promotion of those experts. It also pointed to a need to set clear expectations in project agreements about what local governments will contribute.

Finally, FECC researchers identified top-level recommendations based on the survey. These include: improving the process of conducting research on African needs; planning and designing projects to include baseline surveys; selecting and training Chinese-aid workers; developing a system for monitoring and evaluation (M&E); increasing learning exchanges and capacity-building for Africans in China linked to these projects; and improving lessons-learning and outreach.

The findings of the research were compiled into a bilingual draft report that has not yet been published.<sup>3</sup> This discussion paper provides a window (for researchers and practitioners in Africa and beyond) into Chinese perceptions on how Chinese agriculture technologies may be introduced and promoted more effectively within agrarian communities in Africa.

# Introduction: China's increasing agricultural engagement in Africa

# 1

A strong and growing agricultural sector in Africa is required to feed the continent's rising population and ensure food security worldwide. There is increasing international interest in sustainable agriculture intensification as a potential solution, and a growing reliance on multilateral collaboration on innovative technology and knowledge exchange to achieve the UN's 'Global Goals for Sustainable Development'. However, investment in African agriculture remains well below average global levels, and current efforts fall short of achieving the Global Goals.

Within this context, Chinese actors are increasingly engaging in African agriculture. During last year's high-level Forum on China-Africa Cooperation (FOCAC), Chinese President Xi Jinping pledged US\$60 billion in 'funding support' to African countries.<sup>5</sup> In his announcement, agricultural modernisation was identified as one of ten 'priority areas'.<sup>5</sup> This support will come in a variety of channels including implementing direct development projects at the village level, conducting collaborative research and exchanges, and supporting Chinese agribusiness investments as outlined in Box 1 below.<sup>6</sup> Through these efforts, Chinese leaders aim to help African countries "break the three development bottlenecks of backward infrastructure, talent shortage and inadequate funds in order to accelerate industrialisation and agricultural modernisation, and realise independent and sustainable development."<sup>5</sup>

This new pledge builds on an array of existing engagements. There are currently 21 Chinese units from 19 provinces working in 23 African countries in agriculture technology-demonstration centres,<sup>1</sup> with a total of 30 such centres planned so far. In addition to direct agriculture-technology demonstration, support is provided for agricultural vocational education for Africans, including agriculture education and training programmes for African stakeholders in both China and Africa.<sup>7</sup> Beyond bilateral aid, Chinese government offices, state-owned enterprises and universities are also involved in trilateral agriculture cooperation, for example, through engagement in and funding of the UN Food and Agriculture Organisation's (FAO) South-South Cooperation programme (SSC)<sup>8,9</sup> and other trilateral pilot projects (eg, with the United Kingdom and Japan). The Chinese government continues to encourage investment by Chinese firms in the African agricultural sector in order to develop "China-Africa agricultural industrial chains."<sup>6</sup>

All of these activities, along with the new pledges, are part of the Chinese government's overall effort to "share its experience in agricultural development with Africa and transfer readily applicable technologies" to African countries.<sup>6</sup>

## BOX 1. OFFICIAL CHINESE GOVERNMENT PLAN FOR AFRICAN AGRICULTURE MODERNISATION

1. Encourage Chinese enterprises to engage in large-scale farming, animal husbandry, grain storage and processing in Africa to create more local jobs and increase farmers' income.
2. Carry out agricultural development projects in 100 African villages to "impart and spread Chinese agricultural expertise suitable to local conditions and needs".
3. Send thirty teams of agricultural experts to Africa for "agricultural planning, academic exchange, experiments and demonstration, and technical and teaching guidance" with an aim to building agriculture development capacity in Africa.
4. Conduct agriculture-research cooperation by establishing a "ten plus ten" cooperation mechanism that pairs Chinese and African agricultural research institutes researching seed breeding, poultry and livestock improvement, pest and disease prevention and treatment, and epidemic prevention and control. The aim is to enhance agricultural productivity and value-addition in agro-production.
5. Provide emergency food relief to regions experiencing severe drought and resulting 'food crisis' through 1 billion renminbi (US\$145 million) of emergency food aid and cooperation with international organisations.

The underlying assumption is that existing international aid is unable to solve the food insecurity problem in Africa and that China's aid model represents a new paradigm for development.<sup>10</sup> As researchers from the China Agricultural University, Beijing explain, Chinese agriculture engagements show more flexibility than those of conventional actors from Western countries, which usually have a 'rigid logic framework' for the design and implementation of aid projects.<sup>1,11</sup> Furthermore, Chinese leadership asserts that its model of 'development cooperation' – merging government funding with private-sector implementation and attempting to enable "an all-dimensional, interlinked and systemic cooperation between China and Africa" – can more effectively sustain long-term engagements.<sup>1,6,12,13,14,15</sup>

Indeed, both Chinese and international researchers and politicians have suggested that Chinese investment practices and technologies may be more appropriate for Africa in some circumstances than those from the West.<sup>16</sup> According to the Chinese Ministry of Commerce (MOFCOM) website, "As a major farming country, China is in possession of some production and management experience and practical technologies in agricultural development that are suitable for African countries."<sup>6</sup> This rationale for the role of Chinese experience based on its own agriculture success is a strong theme within both literature and policy

narratives. A scoping study commissioned by the UK Department for International Development last year, for example, found that stakeholders across Africa, Britain and China saw a clear need for increased research and development in African agriculture.<sup>17</sup> The report further pointed to opportunities for multilateral (Africa-Britain-China and China-Africa) agricultural technology collaboration to support Africa's agricultural transformation.

Despite China's innovative approaches to aid and assertions of comparative advantage in agriculture technologies, there have not been systematic reviews of effectiveness in China's aid programmes. The experience of those involved suggests that technologies that have worked well in China may not offer the same benefits when transferred to Africa. The local contexts in African countries provide a continuous challenge even to simple technology-transfer models, and often the effectiveness of aid depends on the resourcefulness of aid experts and staff on the ground.<sup>18,19</sup> The perspective of the Chinese agronomists implementing these initiatives, however, is largely missing from the literature on China-Africa agriculture engagements. Understanding their experiences and reflections seems a crucial missing piece in ensuring continual learning, and improving the design, management and finance of Chinese agricultural aid programmes in Africa.



# Reflecting on experiences so far

# 2

In 2015 the newly constituted Research Division of the FECC took an important first step to fill this gap. Their research surveyed more than 160 Chinese agronomists who had spent at least two years in Africa, seeking insight into the actual lived challenges and opportunities of China-Africa agriculture-technology exchange. To some extent this survey was unprecedented: rarely have we been able to hear directly from Chinese practitioners about their experiences in Africa. The research reveals a strong commitment by FECC to engage in collaborative lesson learning with international partners (including IIED) on experiences to date, as well as an introspective willingness to reflect on experience, explore gaps in knowledge and examine opportunities for improvement. To date, Chinese policy advisers have had limited experience in joint research with African stakeholders, and research on the effectiveness of overseas development is still nascent in China. This research was a first step.

The purpose of this discussion paper is to highlight the key findings of FECC's research, and to engage a wider group of stakeholders including researchers and practitioners in Africa. The paper was produced during a writeshop with one researcher each from FECC and IIED in June 2016, followed by input from a multi-stakeholder discussion workshop in Kampala, Uganda in August 2016 co-organised with the Agency for Cooperation and Research in Development. We share the key findings of this research here, with the aim of spurring further dialogue and research collaboration between Chinese and African researchers and practitioners. It is our hope that this co-production of knowledge can contribute to a deeper understanding of how Chinese agriculture technologies may be introduced and promoted more effectively, with the greatest positive impact for African agrarian communities and landscapes.

## Key research questions and methodology

In mid-2015, a team of researchers from FECC came together to design a survey targeting Chinese agronomists who had returned from agriculture technology exchanges in Africa. The team invited input from other researchers in China, the UK (including IIED) and Africa to take part in the questionnaire design as well as the research write-up.

The survey aimed to explore these key research questions:

- How do Chinese technicians perceive African countries' needs for agricultural technical assistance? Is there a gap between what is intended and what is being delivered?
- How can current research and project design be improved to ensure that future technical assistance can better meet the demands of recipient countries?
- How can the management of agricultural technical assistance be improved and optimised?

The starting point for this research was the recognition that, despite some successes and external praise of Chinese agriculture engagement in Africa, "there still exists the problem that some technologies can't meet the demands of the recipient countries in terms of varieties, farming modes and market demand."<sup>3</sup> FECC researchers felt that it was "very important to understand, respect and consider the technology requirements of the recipient countries so as to enhance the effects of international agricultural cooperation and the efficiency of relevant agricultural technical aid." If the gaps are not taken seriously and resolved, they maintain, "the efficiency of the aid funds will be compromised, and there might be doubts about the sincerity and capacity of the aid providers. What's worse, this may also damage the confidence of the recipient countries in improving their local capacity and realising the 2030 Sustainable Development Goals through international technology cooperation."

The FECC research team identified Chinese agronomists as an important target group for this research because they are on the front line of implementing a range of China-Africa engagements, and presumably in an advantageous position to reflect on existing barriers and opportunities. No-one had previously systematically surveyed this group for input. The resulting rich reflections of the survey respondents can be taken as actionable, constructive feedback for Chinese leaders and practitioners on how to better design, manage and finance overseas aid programmes, and how to prepare and support agriculture technicians overseas.

FECC hoped that their research could be used by the Ministry of Agriculture and other government departments to inform the policy goals and targets of agriculture engagements under the new commitments.

Furthermore, they aimed to inform actors in trilateral agriculture cooperation, and provide practical 'adjustment mechanisms' for managing agriculture-technology transfers 'across the globe'.

## Profile of the Chinese agronomist

The final survey included 61 questions, both closed and open-ended, soliciting respondents' perceptions of the design and implementation of technology transfer between China and Africa. The questions gathered the following information:

- Basic personal details of the respondents
- Goals of specific aid projects they were involved in
- Experiences of making adjustments during implementation
- Reflections on Africa's agricultural technology needs, and
- Suggestions on how to improve agriculture-technology transfer and better identify recipient-country needs.

From a database of 200 Chinese agronomists, 161 responded to the survey. In addition, FECC researchers held focus-group discussions with 20 agronomists in Hubei and Sichuan, where the highest concentration of returned agronomists are found.

The survey respondents comprised three main profession types:

1. **Agricultural experts** (>50%) mainly responsible for agricultural-policy input, project planning, design and technical guidance
2. **Technicians** (30%) in the FAO's trilateral South-South Cooperation on Food Security project, whose primary responsibilities were to assist other experts in carrying out technical demonstrations, and
3. **Teachers** (8%) in vocational agricultural education projects in Ethiopia whose primary responsibility was to train future agriculture trainers.

As a whole, FECC researchers described the respondents as "in the prime of their professional careers" (they averaged 47 years old, and 70 per cent were senior agronomists), well-educated, and "passionate and energetic in the pursuit of career development".

Nearly 80 per cent of survey respondents had worked in Africa for two or more years, and almost half (45 per cent) had been to the continent two or more times (Figure 1). Geographically, agronomists had been posted to a total of 32 African countries, with the highest percentages in Ethiopia, Nigeria and Uganda respectively (Figure 2). Respondents had delivered a wide range of technologies, with nearly half focusing on horticulture and planting techniques; 17 per cent each on animal husbandry and aquaculture; and the remainder on water conservation, agricultural machinery, management and other areas (Figure 3).

Figure 1: Survey respondents' number of missions in Africa

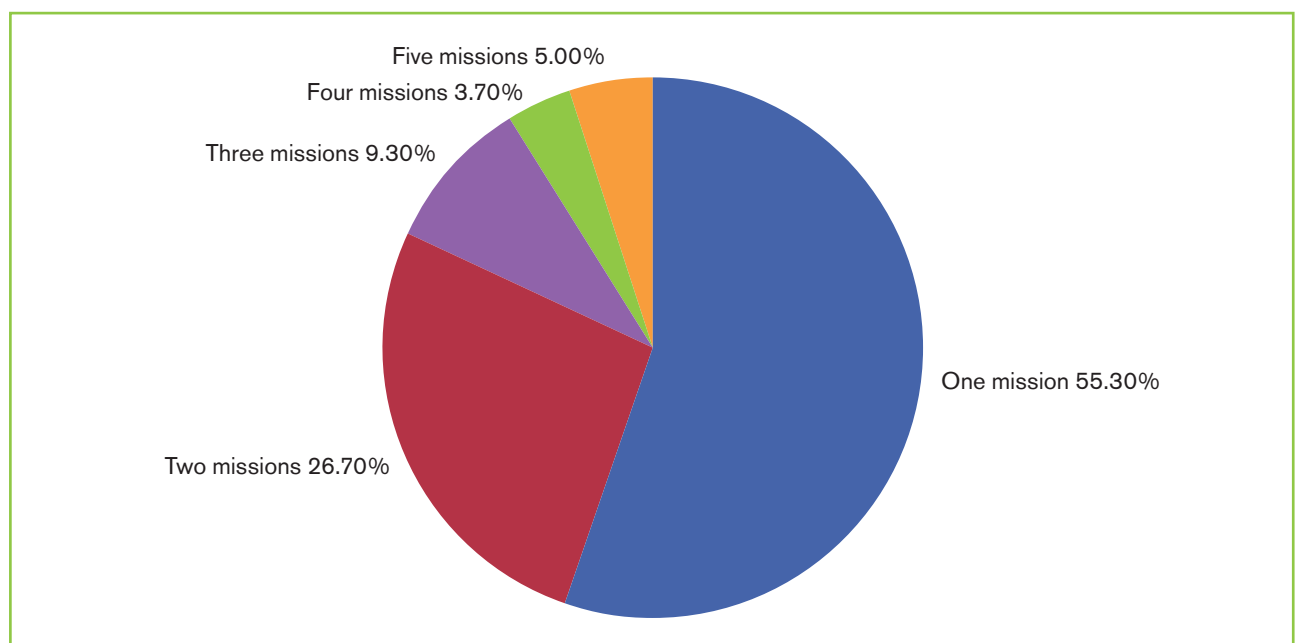


Figure 2: Survey respondents' geographic spread of African missions

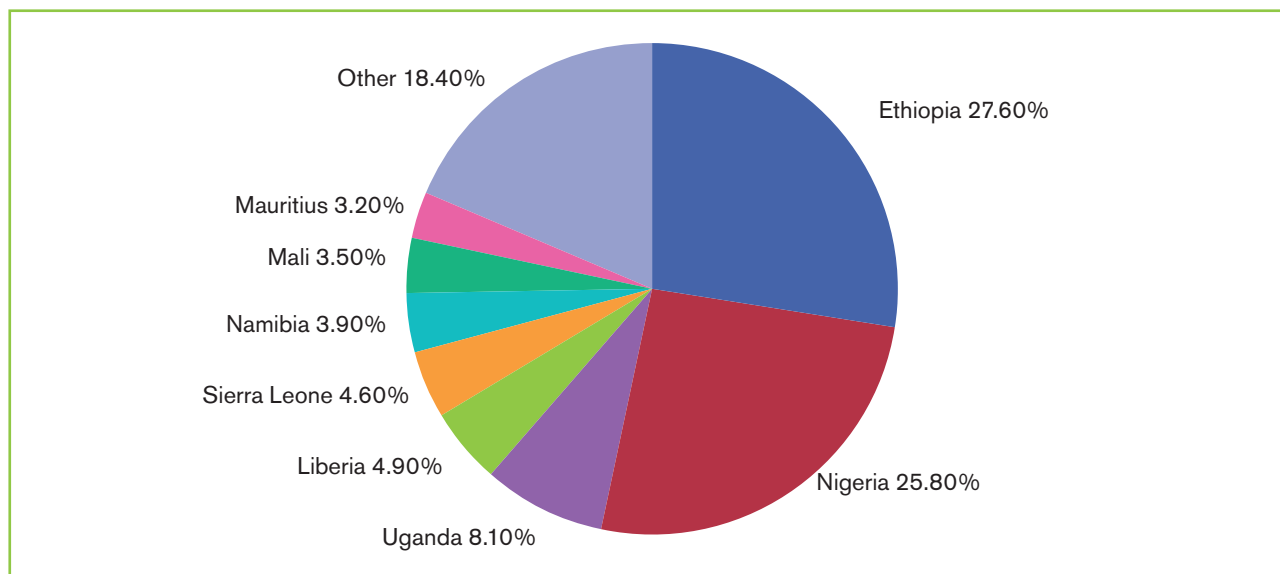
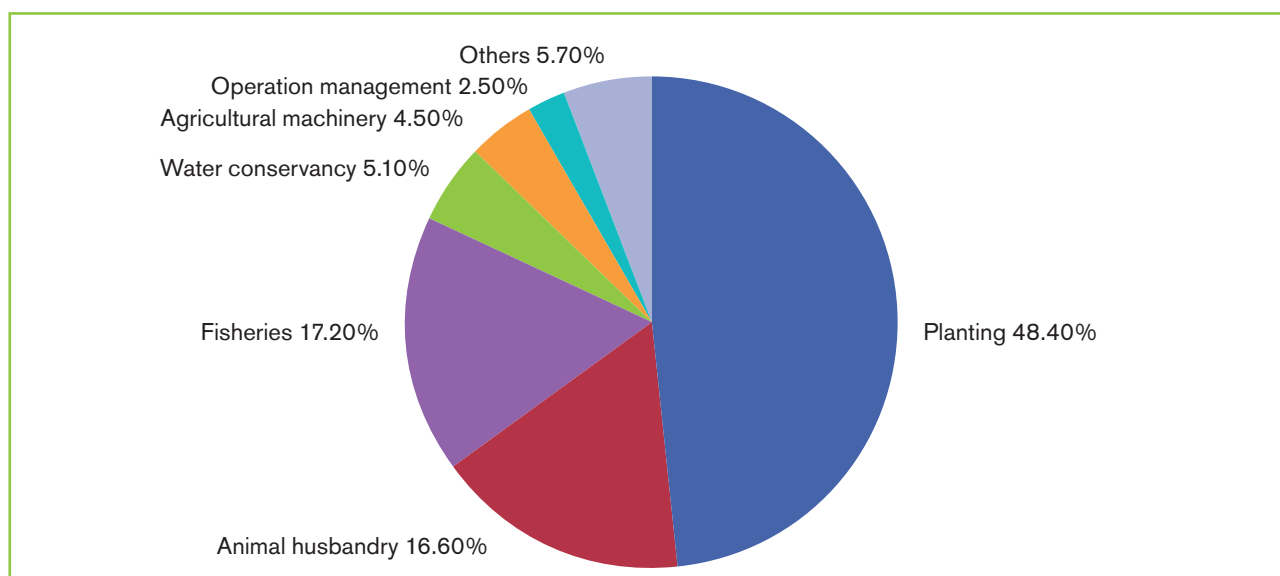


Figure 3: Survey respondents' technology-exchange sector focus



## Research limitations

Although this survey is an important first step, FECC researchers recognise that the insights they gathered would have been deepened through more active engagement with African stakeholders. Conducting a parallel survey in Africa was beyond the scope of the research, but the team did take some steps to mitigate the gap in African perspectives. In addition to conducting the survey among Chinese agronomists, the research team met with officials visiting China from FAO offices in Kenya, Ethiopia, Namibia and Uganda in order to gather their input on the research questions. They also collaborated with the SSC team in Namibia, conducting further surveys and holding a symposium in Namibia to discuss the research. Finally, a multi-stakeholder workshop was held in China during

the drafting of the research paper to invite input and discussion among scholars, experts on foreign aid in agricultural technologies, government officials in charge of China's foreign aid, staff of the UK's Agriculture Technology Transfer project, African agronomists taking part in a study tour of China, and representatives from the International Food Policy Research Institute and the FAO's China Office.

The findings of the research were compiled into a bilingual draft report that has not yet been published.<sup>1</sup> This discussion paper provides a window, for researchers and practitioners in Africa and beyond, into Chinese perceptions on how Chinese agriculture technologies may be introduced and promoted more effectively within agrarian communities in Africa.

# Chinese perceptions of agricultural aid in Africa

3

The FECC research sought to understand how Chinese aid workers perceived their experiences in both the targeting and implementation of Chinese agricultural aid in Africa. The following sections summarise the findings of the survey, specifically exploring how these practitioners view African agronomy, how they assess the targeting and performance of Chinese aid, where they have identified gaps, and their suggestions for filling those gaps.

## Perceptions of Chinese agricultural aid performance relative to African needs

In order to explore existing gaps in technical assistance from China, the first question that FECC researchers asked was: how do Chinese technicians perceive the agricultural situation in Africa relative to the projects they had implemented? That is, what does Africa need from China in terms of technology transfer? In response, the survey identified the following key issues:

1. A need to better understand and account for the diversity within Africa
2. A need for demand-driven assessment
3. The importance of innovation and adaptation to local conditions
4. The suitability of simple technologies versus high-tech solutions
5. The divergence between where Chinese technology can be most helpful and where the country most needs technological investment
6. The importance of finding effective methods for technology transfer, and
7. Continued lack of clarity on who should be the target beneficiaries of aid and how needs assessments are made.

First, respondents stressed that it is not possible to make generalisations on agriculture across the entirety of Africa. Since “some countries are stronger than others in development,” their needs are different, and different plans and expert input should therefore be applied accordingly. Only 3 per cent of respondents thought that agricultural conditions in China and Africa were quite similar, whereas almost 50 per cent thought conditions contrasted sharply.

Respondents reflected that understanding African ecosystems and agrarian landscapes is a crucial issue for technology transfer because it affects the appropriate selection of experts, technologies and target groups. For example, one interviewee told of a

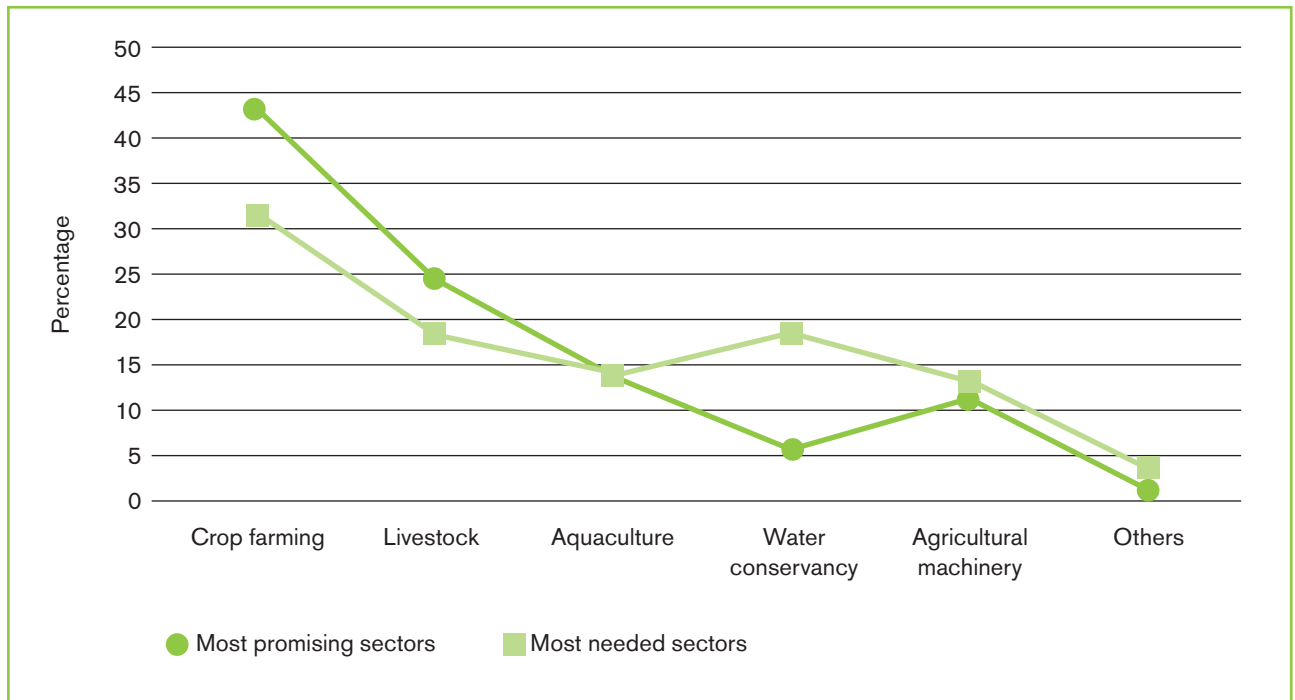
native Ugandan bird that was fond of eating the hybrid millet in a Chinese agriculture demonstration, resulting in “serious damage” to populations of this bird before they could intervene.

Within this “exotic” African landscape, respondents expressed a concern that Chinese agricultural technology aid should make a more concerted effort to be demand-driven and adapted to local conditions. Many respondents suggested that Chinese agricultural technologies are highly adaptable to African agricultural production conditions, but urged that this be done through a systematic effort to take into account various factors such as local climate and farmers’ input capacity. One SSC project expert who had worked in Nigeria, for example, reflected on his successes in applying Chinese technologies to planting Chinese eggplant, cucumber, radish and other vegetables, achieving “very good demonstration effects”. However, he found that technologies that were successful in Nigeria were completely inapplicable in Namibia due to different environmental conditions. Similarly, when another SSC expert tried to promote plastic-film mulching to solve the problem of moisture retention in soil in Gabon, he found that the Chinese plastic was too easily burned by the high temperatures in Gabon. After some experimentation, he applied the film with a local shading technology using straw and “achieved good results” by adapting the technology to local conditions and resources. The need for innovation and adaptation is reflected strongly in the survey, project design does not currently allow much space for this process.

Although some areas are more developed and ripe for advanced technologies, most survey respondents felt that “simple and practical technologies” are generally best suited to meet the current needs of African countries, thereby providing a “technical basis for the application and extension of new agricultural technologies” in future. The surveys highlighted that Chinese agriculture technologies may be able to add value in a wide range of sectors, but not all sectors offer promise for Chinese intervention. As one respondent explained, “The simple technologies that require no inputs or limited inputs are popular in Africa and can be extended, while the agricultural technologies that require a lot of investment or agricultural machinery support [are more] difficult [for Africa to adopt].”

Specifically, respondents pointed out a distinction between sectors most in need of agriculture improvement and those that seemed to offer the “most promise” for Chinese interventions (see Figure 4). They recognise and emphasise that Chinese agricultural aid is not suited to meet all of the needs of every sector in African agriculture. Nearly half of the respondents felt that crop farming was the most promising sector for successful demonstration of Chinese technologies, whereas a quarter chose livestock; just over 10 per

Figure 4: “Most promising” versus “most needed” sectors for technology demonstration



cent pointed to aquaculture and agricultural machinery; and the remaining few chose water conservancy and other sectors. On the demand side, although many respondents identified water conservancy as in need of technology improvements, it was deemed less likely to be successfully demonstrated. In contrast, demonstration is easy to achieve with agricultural machinery, but respondents felt that this is less urgently needed. The respondents identified crop farming, livestock and aquaculture as the areas where interventions are simultaneously most needed and most likely to succeed. Regardless of the type of technology applied, respondents overwhelmingly felt that focusing on a single technology (wherever it falls in the value chain) is less effective than an integrated, full-value-chain approach to technology transfer.

Closely linked to the question of which technologies to promote is the issue of which methods to use for effective technology demonstration. More than 81 per cent of respondents felt that direct interaction with farmers (either through demonstration field sites or one-on-one ‘teach by doing’ guidance in the field models) is the most effective way to achieve meaningful technology transfer. “Providing targeted field guidance on farmers’ own land in particular can let farmers truly master the promoted technologies, so this method is the most effective way.” Less than 20 per cent stated that classroom training alone was effective. Despite language barriers, respondents overwhelmingly felt that face-to-face guidance had achieved good results. This approach, they felt, “is a special feature” of Chinese agricultural technology demonstration in Africa.

One interviewee explained that “local farmers ... are interested in learning face-to-face, and may be able to master the skills within one, two or several sessions.” Furthermore, the FECC researchers argue, “It is important to make sure that local farmers are actually able to learn what they have been taught; otherwise technology aid becomes meaningless.” Respondents also emphasise that English-language proficiency on the part of both the Chinese and the African stakeholders is important to ensure effective technology aid.

Choice of methods for technology transfer, of course, should be closely linked to the nature of the target group of any agricultural intervention. Nearly 30 per cent of respondents agree that the current targeting of smallholder farmers is the right approach for improving basic food security. However, the remainder of the respondents were sceptical. The majority of surveys reflected one respondent’s reasoning that smallholder farmers “have no need for technology because they have no [significant amount of] land.” Respondents reported low farmer participation in their trainings, and described smallholders as “rather conservative” about adopting new technology. They felt this to be a rational attitude, given that new technology “always means a certain degree of risk, and smallholders have low tolerance for risk.”

A quarter of respondents suggested that Chinese aid should instead target government departments of agricultural technology extension and emphasise a train-the-trainers approach that includes vocational training. “Since technology demonstration by Chinese



agricultural experts is faced with many constraints including language, culture, time and distance” reflected one respondent, “the technical services they provide are limited.” At the same time, respondents noted that African countries need support for their own “underdeveloped agricultural extension systems”. Although most African countries have established some form of agricultural extension system, it was reported that agricultural technicians are unable to provide adequate technical services for farmers due to lack of funding. Nearly a quarter of respondents observed “almost no local technical services available” in the countries where they worked.

With strengthened African agricultural vocational education, respondents suggested, Chinese agricultural aid could reach extension staff, technicians and trainers, providing training for them to master the basic Chinese techniques of agricultural production so that they can then pass on their skills to local farmers through training or other forms of technology-demonstration activities. This approach, they say, “can help the local farmers get a good grasp of the technologies recommended by Chinese agricultural experts while ensuring the sustainability of agricultural-technology demonstration.” As mentioned earlier, promoting agricultural vocational education has been listed as a key area for future cooperation between China and Africa. FECC researchers suggested that the survey results point to a need for further research into experiences encountered thus far, such as the agricultural vocational education cooperation carried out in Ethiopia in recent years.

Beyond smallholder engagement and vocational training, a third of respondents – the largest group – suggested looking further up the value chain at farm owners, as the group most in need of Chinese technologies. Chinese technologies, they explained, are potentially most appropriate for improving the conditions of those who own farms due to the higher capacity of this group to invest in new technologies and improve their own land. More than a third of the survey respondents argued that “technological progress [of the kind that China offers] is of greater significance to [this group’s] livelihoods”. They argued that the possibility of smallholders utilising new technologies, by contrast, was quite low due to a lack of necessary agricultural production tools and inputs discouraging smallholders from adopting new technologies. “Although labour-intensive technologies can increase the output to some extent, in many areas this increase is so limited that it can hardly stimulate local farmers to adopt new technologies.”

From this perspective, the survey points to the targeting of smallholders as “one of the important reasons that many institutions haven’t achieved clear results in agricultural technology extension for many

years.” Indeed, the successful cases described by the respondents were mainly those targeting local medium- and large-sized farm owners, while many failed efforts cited in the surveys were those that had targeted smallholder farmers. For example, in Malawi, the SSC programme dispatched Chinese fishery experts to expand high-yield fish-raising technologies in the Mzuzu area. But the Chinese technologies could not be adequately used in the small (100-square-metre) ponds used by smallholders in that region. The technicians reported that only fish farmers with ponds greater than 500 square metres and who were described as “basically not smallholders” could afford to dig large ponds and fully apply the Chinese technologies.

This section has highlighted the top-level perceptions of Chinese agronomists on the design and targeting of the agricultural aid programmes in which they were involved in Africa. The practitioners offer pointed insight into the need for more responsive, innovative and demand-driven assessments of needs. However, the wide disparity in the discussion of ideal target groups reflects a continued confusion regarding how to best understand African needs and, more importantly, how to match Chinese technologies and agricultural experience with those needs. This could be a constructive approach toward future engagement with Chinese practitioners and researchers. The next section reflects further on specific improvement areas in project design and management identified by survey respondents.

## Perception of gaps and key challenges in project design and implementation

When asked whether existing Chinese agricultural aid projects meet the needs of African countries, survey respondents were largely positive about their performance overall. However, in more detailed questions unpacking that performance, it emerged that significant challenges exist in project design and implementation. This section explores both viewpoints.

More than 95 per cent of respondents gave an overall positive assessment of the Chinese agricultural aid projects, repeatedly citing three perceived strengths:

1. Chinese programmes integrate with national and local agriculture-development strategies
2. Chinese agricultural aid strategy emphasises market realities and responds to these needs, and
3. Chinese experts endeavour to work directly with smallholders in the field.



As one interviewee expressed it, “We believe the technologies we provide are those that are needed by Africa. African partners believe that there is no issue of supply-demand match. Chinese experts not only provide technologies, they also go to the field to transfer those technologies. What is crucial is to find a way to ensure the sustainability of this technology demonstration.”

While the 95 per cent figure (citing an overall positive assessment) is striking, it is worth bearing in mind that a positive overall assessment would be expected of these practitioners before they were asked to share more specific and constructive criticism in the detailed discussion. Indeed, though the overall perception of project design and targeting was largely positive, during detailed questions related to specific aspects of project design and management, respondents were often critically reflective. Key criticisms included:

1. Chinese agricultural aid project design does not adequately reflect the local situation, ie the actual needs of the recipient communities in Africa.
2. Approximately 60 per cent of practitioners are often unclear about the expected tasks and working methodologies of their programme prior to arriving in Africa.
3. Practitioners have to adjust their work as they go, with 20 per cent changing work targets, 17 per cent changing their role, and 9 per cent ultimately working outside their specialty area.
4. A quarter of respondents suggested that the “biggest obstacle for technology aid” is inadequate support from local governments.
5. More than one tenth of respondents considered the standard two-year assignment too short to enable Chinese technical experts to fully adapt Chinese technologies to African needs.

The constructive critiques of project design can be grouped into reflections that look internally within China on the design and preparation of practitioners, and those focussing externally on key challenges related to inputs from African partners. Within China, respondents highlighted key issues related to the selection and training of experts, their length of service, and the support and promotion of those experts. Respondents cite a range of issues including the selection of experts who lack work experience in Africa or have weak communication skills, and frequent mismatching of experts with the needs of the programme, which prevents experts from realising their full potential. Half of all respondents said that their expertise was only partially used, and a third said it had not been closely linked with their assignments in Africa at all. In one example, an expert in citrus cultivation arrived in Uganda to discover that the project required an apple expert

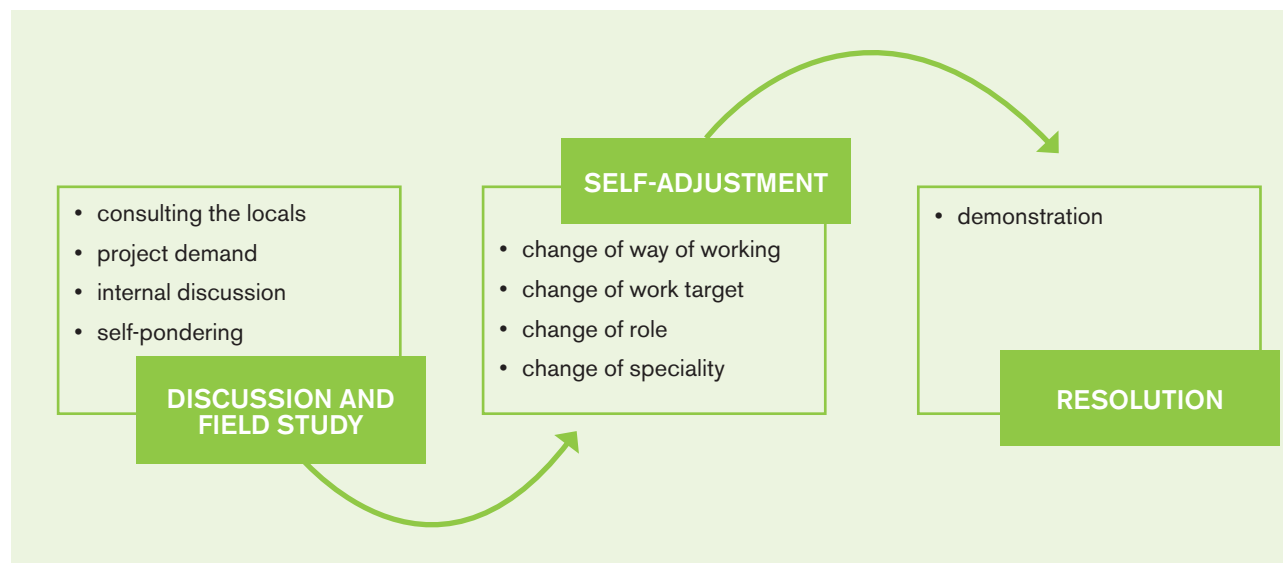
– someone with a quite different range of expertise in practice. Though this individual was able to adapt his knowledge to the circumstances (and ultimately received a positive reception by the local partner) this example, corroborated by others, reflects a systemic problem in matching project personnel with needs on the ground.

Even when qualified individuals are selected, they seldom receive adequate training to complete their assignments effectively. Many problems identified through the survey concerned the experts’ orientation training and the apparent gap between the training provided in China and the reality in Africa. Respondents explained that the orientation training mainly involves topics such as a code of conduct for working overseas, overseas work discipline, diplomatic etiquette and basic facts about the host countries. There is nearly no training on such areas as details of the specific country’s agricultural context, socioeconomic and cultural information, and agricultural technology needs. Indeed, more than 60 per cent of respondents claim that they were unclear about the expected tasks and working methodologies of their programme prior to arriving in Africa.

The current mechanism of Chinese agricultural aid thus leaves needs assessment largely up to individual experts, with highly mixed results, and the FECC survey provides unprecedented insight into how this occurs. Respondents described the process they used, citing various methods such as consulting with local farmers, consulting with other experts, and conducting field trips and site observations. Figure 5, developed from survey findings, outlines the process of learning and adjusting that a typical Chinese expert goes through in assessing needs, identifying technologies and implementing projects. It is noteworthy that, for this phase of planning implementation at the individual level, the respondents did not cite engagement with local experts, government officials or civil society organisations.

In these situations, even qualified individuals encounter a steep learning curve, as projects ultimately rely on the initiative of individual experts to engage in field studies, adjust work plans, and implement them accordingly – often with little support for this process. More than half of the respondents suggested that the greatest challenge of their work in Africa was this process of adjusting their work plans, with nearly 20 per cent saying they had needed to change their work targets, 17 per cent saying they had changed their role, and a further 9 per cent saying they had changed their specialty. One interviewee said, “We need to go to the field frequently to find out what we think is needed locally, and then consult with the farm owners. This process sometimes takes half a year.”

Figure 5: Process of conducting needs assessment and adjusting project design



In addition to challenges related to aid-project management in China, respondents also cite key challenges regarding inputs from African partners. First, working conditions such as poor infrastructure, power shortages and security concerns affect the Chinese agronomists' own comfort and effectiveness in the field. Nearly one quarter of respondents cited a "lack of facilities and conditions for demonstration" as a key barrier for agricultural aid in Africa. This applied to both their own working conditions and the wider barriers of poor infrastructure and underdeveloped markets hindering adoption of Chinese technologies. More than one third of respondents pointed to high prices, and a further 10 per cent mentioned low market availability of agro-inputs as a key barrier to improving productivity.

Closely linked with the challenging working conditions faced by Chinese agronomists is the fact that project designs and agreements do not set clear expectations about what local governments will contribute. Chinese aid projects, they explained, can sometimes be hobbled by local governments that are unable to fulfil their role in projects due to inadequate funds, land governance or other challenges. Indeed, a quarter of respondents suggested that the "biggest obstacle for technology aid" is inadequate support from local governments. According to the project design in the SSC projects, for example, recipient countries in Africa are meant to provide funds for experts' work. In practice, interviewees said, the governments of most recipient countries were not able to guarantee their teams' basic needs for housing, water, power, and travel allowance due to "severe financial difficulties". Finally, survey respondents cited additional logistical and legal barriers (eg, involving seed imports/trade) to Chinese agriculture technology transfer efforts.

Given the challenges in selecting appropriate experts and adequately training them, sometimes coupled with challenging conditions and inadequate support on the ground in Africa, it is not surprising that more than a tenth of respondents considered the standard two-year assignments too short a timeframe to enable Chinese technical experts to fully adapt the Chinese technologies, much less ensure their sustainable adoption. One respondent, for example, explained that when the SSC teams arrive, the project funding, partnership and supporting conditions are generally not yet in place. The team must set them up; then, once they begin implementation, they are restricted by the agricultural production seasons. The result, suggest survey respondents, is extremely limited time for experts to conduct research on the technical demands and to test, show and promote technologies. This restriction can severely affect the technology dissemination and its sustainability after the experts leave.

Finally, beyond project challenges, the Chinese aid workers face personal challenges related to their career progression, family separation and health care. Respondents cited problems with wages, benefits, job titles and promotions at home being held back by service abroad, challenges with family visits, and communication problems with their home institutions while overseas. Several SSC interviews described a form of 'identity issue' when working abroad, as the suspension of their domestic jobs affected potential promotions or even marginalised them upon return. Some interviewees mentioned that they hadn't had the opportunity to arrange visits with family for up to two years, resulting in serious homesickness that was difficult to overcome or ignore. Others complained about overly complicated reimbursement by personal

accident or medical insurance when they encountered illness, traffic accidents or other unexpected incidents.

This section has outlined the key challenges identified by Chinese agronomists trying to implement agricultural aid programmes in Africa. Though the overall assessment of agricultural aid is positive among practitioners in this survey, they offer constructive criticism in the details of project design and implementation, suggesting specific gaps in the role that both Chinese and African partners play in managing agricultural aid programmes.

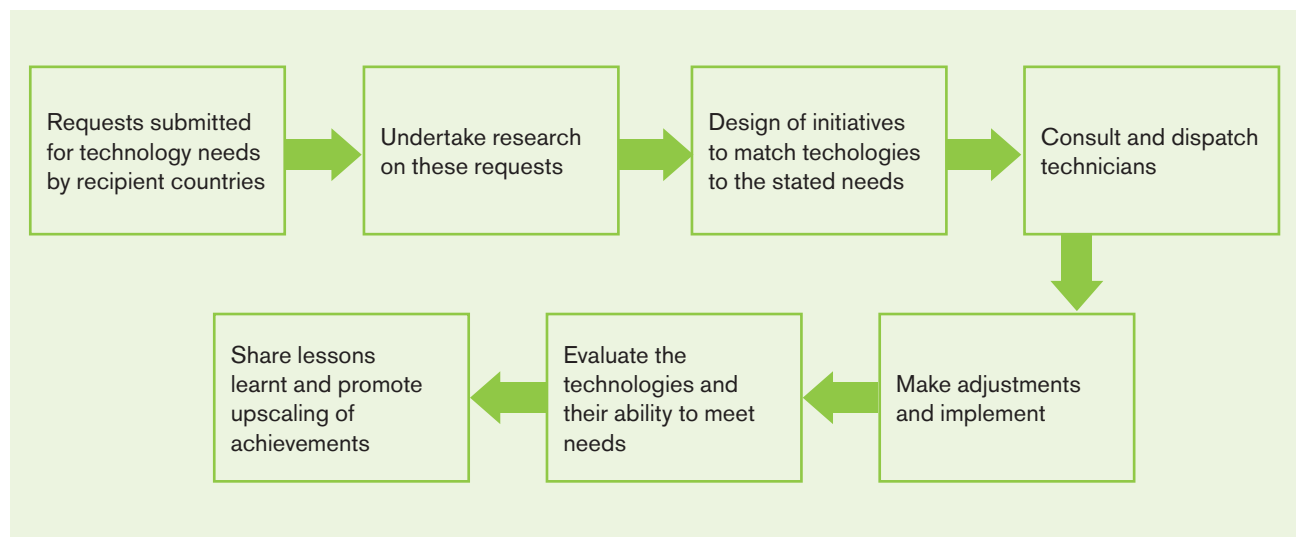
## Practitioner suggestions for optimising project design and management

Practitioners provided many suggestions for overcoming the challenges and gaps discussed above and for optimising project design, implementation and dissemination. This section summarises these key concluding suggestions as presented in the FECC report. Figure 6 outlines the broad mechanisms in place for the design, implementation and dissemination of Chinese agricultural aid in Africa.

Although the basic logical flow of this approach was not challenged by the survey results, respondents revealed ways in which each of these steps could be improved, as shown in Box 2. Regarding initial targeting, it was suggested that some African countries had not fully developed mid- and long-term agricultural development plans, or that the existing development plan did not clearly specify technology needs. The result, according to respondents, was that recipient countries did not always provide sufficiently specific, targeted demands for the Chinese projects, leaving them without necessary information for planning and selecting agronomists to be sent to the field.

Additionally, on the Chinese side, FECC researchers note that “although China has carried out relevant research on the agricultural-development situation of some African countries, the research is mainly focusing on countries with rich agricultural resources and strong willingness to cooperate.” The resultant existing understanding of Africa is rather limited and “is not able to accurately assess the technical needs of a recipient country when it puts forward a project application.” One way to overcome this, they suggest, is to better link with in-country expertise and carry out targeted research on the needs of each country in order to set more appropriate targets and plan accordingly.

Figure 6: Existing mechanism for design, implementation and dissemination of Chinese agricultural aid in Africa



## BOX 2. KEY RECOMMENDATIONS FOR OPTIMISING PROJECT DESIGN AND MANAGEMENT

- Carry out adequate and ongoing targeted demand-based research
- Conduct scientific planning and design of projects
- Conduct a baseline survey for each country project at start of implementation
- Carefully arrange trainings in China, including learning exchanges with African partners traveling to China during the projects
- Improve monitoring and evaluation systems
- Promote lessons-learning on agricultural aid and technology-transfer projects, to guide continual improvements
- Increase international outreach and publicity for the agricultural aid projects, to improve understanding and influence, and
- Promote more active roles for recipient countries, to ensure sustainability of agriculture projects.

Specifically, planning and design research require more than the usual two weeks allocated for them, and should incorporate the expertise of “government think tanks and scientific research institutions of the recipient countries”, international organisations such as FAO, and other donor experts in-country, as well as Chinese experts. Researchers should “carry out deep analysis of the agricultural technical needs through interviews, questionnaire surveys and field visits” in order to provide a clear picture of local administrative agencies, working procedures, existing agriculture working reports, the national agricultural development situation, problems of agricultural development and agriculture-technology requirements of the recipient countries. Furthermore, this effort should also “establish an open internet communication platform to understand the dynamic changes of the recipient country’s needs, and provide accurate support for agricultural technology extension at the grassroots of the recipient countries.”

The result of such a planning process should be a very detailed project design that includes specific technology needs, planned training approaches, the number of experts needed and their specific responsibilities, a budget framework, and plans for M&E and necessary logistical support (such as accommodations, or funding from local partners). Technical-assistance personnel should then be selected and assigned strictly in accordance with these requirements. The careful, detailed “scientific planning and design” of projects, conclude the researchers, is “an important basis for implementing projects successfully.” Such a rigorous planning process could tremendously improve the effectiveness of Chinese agricultural aid programmes.

Further ideas to strengthen aid projects came from those survey respondents previously involved in FAO SSC projects. For example, they suggest that the focused research and detailed planning described above should continue within the implementing and adjusting phase of projects. Specifically, the selected agronomists should receive research training in China, then further training in Africa; their first step (supported by adequate project funds) should be to conduct a baseline survey in the field to identify specific target activities. “Practical experience,” they write, “has proven that these measures are effective.”

Reflecting on this suggested process, the FECC researchers further argue that training activities before and after arriving in Africa “can deepen the experts’ understanding of the technical requirements and working environment of recipient countries, and create the conditions for experts to adapt to the technology needs of recipient countries both materially and spiritually.” Furthermore, if experts are able to carry out field research after they arrive in the recipient countries, they can “gain a deep understanding” of the local agriculture situation and plan their work accordingly, resulting in a more efficient and effective project.

Beyond implementing activities on the ground, respondents also stress the importance of inviting more African agricultural officials and researchers to China for exchange visits and targeted trainings. By coming to China in person, African agriculture experts and planners can use their own knowledge to “draw upon the successful experience of China’s agricultural development in situ, and observe related agricultural technology-promotion paths.”

At the moment, argue FECC researchers, most training exchanges are relatively restricted. SSC projects, for example, only arrange one exchange visit of about ten people from recipient countries to conduct field visits in China for an average of two weeks. Such a limited exchange limits effectiveness, since typically only one cooperation province is targeted, and those personnel are not able to gain “a comprehensive understanding of China’s advanced and applicable agricultural production technologies as they may apply to the technical demands of Africa.” Increasing exchanges and capacity-building efforts, argues the FECC study, will support Chinese aid efforts on the ground in Africa, and strengthen the strategic pathways for agriculture-technology transfer.

Another key recommendation is for the Chinese aid system to track and communicate its successes more comprehensively, and to more effectively share knowledge gained from agriculture-technology transfer efforts in Africa. At present, there is no system in place for M&E of China-Africa aid projects. Instead, explain FECC researchers, M&E is done on an ad-hoc basis, and only “from the perspectives of the project authorities, China’s embassies in foreign countries, and agricultural authorities of the recipient countries” – so that the role of African farmers in this “is relatively small”.

FECC researchers are clear that China “should draw on relevant international experience, and strengthen the M&E of projects”. This includes setting scientific and rational M&E evaluation indicators, evaluation criteria and methods for monitoring the entire process, including conducting mid-term and final evaluations by bringing in independent international assessment teams. Furthermore, this information should be collected from questionnaire surveys, seminars and interviews as well

as reports, publications and other statistical data, to improve the qualitative and quantitative assessment of project implementation. This approach could provide vital feedback for making continual improvements in China-Africa agricultural aid.

In addition to improving and expanding M&E, FECC concludes that Chinese agricultural aid programmes must promote themselves more actively and effectively, “to expand the publicity and influence in the international multilateral arena.” Arguably, Chinese foreign aid experts should “sort, collect and compile [examples from their] agricultural technology achievements, ... create standardised agricultural technology transfer knowledge products and explore systematic agricultural technology transfer paths.” This could be done, for example, by compiling and printing technical-assistance brochures and related documents, building internet-based knowledge-sharing platforms, opening specialised radio and television channels in recipient countries, and inviting farmers, foreign aid experts and other stakeholders to project sites and work-exchange conferences. Furthermore, with the support of China’s foreign aid experts, lessons learnt from these projects should be used to formulate national plans, policies and regulations, and guidance for extension systems suited to the agricultural technology-development needs of each country.

The above recommendations are primarily focused on what the Chinese side can do to improve the design and management of agricultural aid projects. On the African side, survey respondents reflected on a variety of ways that their aid efforts could be improved through support from recipient countries. These recommendations are summarised in Box 3.

### BOX 3: CHINESE PRACTITIONER RECOMMENDATIONS FOR AFRICAN GOVERNMENTS

- Actively provide policy support and favourable conditions for the examination, approval and entry of technology-demonstration materials.
- Stipulate clearly in project plans how recipient countries will provide essential working and living conditions such as office equipment, safe housing, transportation, water, electricity and other necessities.
- Assign regulatory agencies to set up clear coordination, including forming a project coordination office.
- Organise domestic personnel to work closely with Chinese teams, including designating a local technology partner for each Chinese expert and technician, to improve work efficiency through more effective communication.
- Conducting joint training of agricultural technical experts and extension staff to ensure successful implementation and sustainability of the project.

# Reflections for further discussion and research

# 4



IIED has engaged in this research led by FECC for its potential to add value to discussions of agricultural aid in Africa. Though the Chinese have provided aid in the African continent for many decades, most of this activity has been bilateral and closed to scrutiny from either within or outside of China. With trilateral engagement only tentatively emerging in recent years, the discussion is gradually starting to widen to encompass the multiple actors involved in supporting stronger agrarian futures in Africa. The perspectives and experiences of Chinese agronomists involved in Chinese aid projects, as presented in the FECC survey, provide a rare lens for understanding how the Chinese projects are developed and implemented. The survey findings also point directly to a need for more active involvement by African communities receiving this aid, as well as the international development community. This paper is only a first step toward widening the discussion.

Manifesting in this research inquiry is the question of how to best identify African needs. On one hand, there is generally an assumption within project research design that Chinese experts have an advantage in identifying opportunities for improvement in African agriculture based on their understanding of Chinese technologies. FECC researchers themselves suggest that “without the understanding of the technologies of other countries, local technicians may not have a clear idea what technologies they need.” However, it is Chinese practitioners who may in fact be at a disadvantage when reading the local landscape and identifying appropriate technologies, since they lack experience in the host countries. One clear point that emerges in this research is that the design, management and practice of China-Africa agriculture-technology transfer projects will have to more effectively address this tension between sharing Chinese knowledge and learning from African partners in future.

Another key challenge highlighted by the FECC research is the need to improve the current Chinese mechanism for needs assessment, which is largely left up to individual experts, with mixed results. The study provides useful insights into a typical Chinese practitioner’s learning and adjusting process for assessing needs, identifying suitable technologies and implementing projects. For African stakeholders, the planning and implementation phase could be a useful starting point for reaching out to and supporting practitioners in their learning process. On the Chinese side, some of the individual ad-hoc activity required at this stage might be formalised and incorporated into project planning and implementation for a more efficient and effective result.

Aligned with the question of needs is the question of whom to target for these interventions. The research identifies new targets to explore, focusing, for example, on integrated agriculture-technology demonstration (versus single technologies); on policy barriers and enabling factors such as strengthening agriculture extension systems; on new groups such as landowners (rather than focusing on smallholders); and on support for programs such as agricultural vocational training. These are potentially powerful channels for improving the uptake and impact of Chinese technologies in Africa. However, the wide disparity among survey respondents in the discussion of ideal target groups reflects continued confusion regarding how best to understand African needs and, more specifically, how to match Chinese technologies and agricultural experience with those needs.

This could be a constructive window for future engagement by African and international researchers and practitioners with their Chinese counterparts in future. For example, MOFCOM asserts that “agricultural technology is the guarantee for African agricultural modernisation.”<sup>14</sup> This heavy emphasis on technology transfer above all else could become more nuanced with stronger needs-based assessment and local ownership of projects. Also of crucial importance within these discussions is that those groups who are easiest to work with are not necessarily those who will benefit most, or who are most in need. Further clarity is needed on what defines success in Chinese agricultural aid in Africa. Targeting may look quite different, for example, if success is defined as food security rather than simply improved technology uptake or more positive government relations. The primary target group for Chinese engagements should be defined by this perspective, with additional input solicited from Chinese experts on the realities of practice in the field.

The research also highlights the need for a collaborative learning process in designing agricultural technology-transfer projects. One example of this is already happening; as one survey respondent noted, “In West African countries, farmers irrigate the land every day during the dry season. [Irrigation] can hold up to two days when covering the land with weeds. Chinese film when applied alone could easily be burned by the high temperature. So I recommend applying the film with the local high-straw shading technology. In this way, it could last 15–20 days rather than irrigating the land every other day, which brings much economic benefit while saving limited water resources.” Thus, conclude FECC researchers, “African countries are very fond of Chinese technologies as long as they can be adapted to local agricultural conditions.”

Though the overall assessment of agricultural aid is positive among practitioners in this survey, they offer constructive criticism regarding the details of project design and implementation, suggesting specific gaps in the role that both Chinese and African partners play in managing the agricultural aid programmes. There are further innovative suggestions for how to achieve this, such as a team approach to selecting experts so that available skills are more complementary and efforts better coordinated. Involving researchers early in the projects (including intensive field work by experts, and input from government think tanks and scientific research institutions within the recipient countries) could provide a much stronger foundation for needs assessment, and a promising basis for Chinese agricultural aid going forward.

One key aspect missing from this research is consideration of other existing agricultural aid projects in Africa. With donors increasingly interested in reducing duplication in aid programmes, and with the agrarian policy context in Africa continuing to evolve, this discussion would benefit from further contextualisation of Chinese agricultural aid.



# Join the debate

The FECC survey was a first step toward understanding Chinese agricultural aid projects in Africa from the perspective of the people implementing them and this discussion paper aims to promote dialogue on these issues. Further research is needed to engage African perspectives on the effectiveness of Chinese agricultural aid, and to build comparative perspective and ground discussions in international literature on development assistance, technology transfer and African agriculture. We hope that you will join this effort.

# Related reading

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