

CHINESE, BRAZILIAN AND INDIAN INVESTMENTS IN AFRICAN AGRICULTURE:

IMPACTS, OPPORTUNITIES AND CONCERNS

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SUMMARY

This study offers new analysis of Chinese, Brazilian and Indian investments in African agriculture. It brings together three new case studies of Chinese investment and aims to assess the impacts of investment on Africa's small-scale farmers. The report aims to assess how appropriate these investments are for Africa's small-scale farmers, including how aligned they are to Africa's own agriculture strategies.

Despite much rhetoric, Brazilian, Indian and Chinese investments and aid in African agriculture remain relatively small, especially compared to those of OECD countries and multilateral actors such as the World Bank. The extent of influence is often exaggerated in media reports, especially when it comes to alleging land grabs. That said, these countries have increased their influence in African agriculture in recent years to become important actors, and this influence is likely to grow in the future.

The report finds that there are major problems with Chinese, Brazilian and Indian investments in African agriculture. It finds that some investments are indeed associated with land grabs, that several projects are having adverse consequences on local farmers, and that the kind of technology being promoted in Africa tends to be more suited to Chinese, Brazilian and Indian agribusiness interests than to Africa's smallholder farmers. Above all, investments and cooperation programmes do not appear to systematically involve African smallholder farmers in project design or implementation, but appear more suited to large-scale farming. This is despite some projects which proponents claim are resulting in significant crop yield increases, although there are few genuinely independent evaluations of these projects.

Investments in African agriculture

According to the Chinese government, **China's** total (not just agriculture) direct investment in Africa increased from US\$1.4 billion to US \$3.2 billion during 2009-14 and its FDI stocks rose from US\$9.3 billion to US\$32.4 billion. Figures for agricultural investments vary widely according to different sources. Chinese government figures from 2013 are that FDI in African agriculture stood at \$173 million in 2013, a figure which had risen from \$30 million in 2009. Another estimate is that the value of (approved) Chinese investment in farming in Africa was somewhere between \$172 million and \$488.5 million in 2012.

In terms of the number of projects, Chinese government figures from 2013 are that China had approved 212 agriculture-related projects (grains, cash crops, animal husbandry, fisheries, forestry, agro-processing and commodity trade) in 37 African countries by March 2013. Of these, 86 were specifically related to farming (production of grains, cash crops or animal husbandry) in 27 African countries. The six countries with the most projects were Zambia, Zimbabwe, Nigeria, Sudan, Mozambique and Tanzania. Despite widespread allegations of land grabs, there appears to be no strategic effort by the Chinese government to obtain land in Africa for food security purposes.

Chinese agricultural investment in Africa is occurring in a variety of crops, including sisal in Tanzania, oil seeds and sugar cane in Ethiopia, cotton and tobacco in Zimbabwe, rice production and agro-processing of cotton, rice and maize in Mozambique, and rice in Cameroon. These investments are often complemented and supported by aid efforts of which two key related areas stand out – agricultural technology demonstration centres and training.

It is not clear exactly how many agricultural technology demonstration centres China has established in Africa. The government stated in 2013 that it had set up 15 since 2006. In December 2015, it stated it has built 25. They are run by quasi-private companies on behalf of the Chinese state, involving the transfer of knowledge, seeds and mechanised farming equipment through intensive training courses aimed at farmers. These centres appear to be closely associated with the promotion and supply of Chinese equipment and technology, especially hybrid seeds and agro-chemicals, from which Chinese agribusiness is likely to benefit.

According to the government, China has helped train over 5,000 Africans in agricultural technology and management, and has provided practical agricultural guidance and training through trilateral agreements with a dozen African countries.

Despite the avowed interest of the **Brazilian** government in agricultural development in Africa, very few private Brazilian firms have invested, thus investments are much smaller than China. Like China, the most significant Brazilian investments in Africa are in petroleum, mining and construction. Brazilian agribusiness still prefers to invest in lucrative markets in Brazil and neighbouring South American countries. However, agriculture features more strongly in Brazil's development cooperation in Africa.

Brazil's National Development Bank (BNDES) is the principal source of financing to African governments and Brazilian companies and has several mechanisms to finance foreign investments, notably a credit line for Brazilian firms. Financing focuses on Angola and Mozambique and on large companies in the infrastructure, minerals and petroleum sectors. The main Brazilian investment interest in agriculture has been in sugarcane/ethanol and the Africa office of Embrapa, Brazil's leading agricultural research institute, has forged a large number of bilateral biofuel cooperation agreements with African countries. Aside from ethanol, Brazil's engagement in African agriculture tends to be through specific bilateral or trilateral projects (often involving Northern donors) mostly run by Embrapa. Several African countries, including Ethiopia, Ghana, Benin, the Democratic Republic of Congo, Guinea and Kenya have signed technical cooperation agreements and have begun implementing joint projects with Embrapa.

Two key Brazilian programmes are the Food Acquisition Programme and More Food Africa. The Food Acquisition Programme in Africa, which was launched in 2012 jointly by the Brazilian Government, the FAO, the World Food Programme (WFP) and the UK's Department for International Development (DFID), involves government bodies purchasing food from smallholder producers at set prices to boost food security and local economic development. More Food Africa (Mais Alimentos) is a Brazilian credit programme aiming to promote exports of agricultural equipment, especially tractors, to Africa and is Brazil's most prominent technology transfer cooperation project. The programme has provided over US\$2 billion in credit through over 100,000 contracts.

Brazilian agricultural policy in Africa is noteworthy for promoting two distinct, and sometimes contradictory, models. The first promotes capital-intensive, large-scale farming for the production ethanol and soya, backed by the Ministry of Agriculture, which supports agribusiness, and sometimes by Embrapa. The second, promoted by the Ministry of Agrarian Development, promotes programmes providing technical support and credit for family farmers.

Indian investment in Africa focuses on energy resource extraction, manufacturing, financial services, and infrastructure development, in addition to agriculture. Private companies are the main vehicle for Indian investments in African agriculture and Indian agribusiness is notably involved in selling modern farm technology, such as irrigation pumps, tractors and harvesters and/or investing in large-scale farms or plantations, notably in Ethiopia.

Indian investments in African land have been explicitly promoted by government policies, especially lines of credit (LOCs) to foreign countries from India's Export-Import Bank (Exim Bank), which are used by countries to purchase Indian goods and services. LOCs, which are soft loans, have been signed with around 40 African countries, amounting to around \$1.2 billion for agriculture-related projects during 2003-12. The largest line of credit approved by Exim Bank outside the Indian subcontinent was a \$640 million loan to Ethiopia for its Tindaho sugar project, part of a controversial sugar expansion in Ethiopia. Increasing investment and cooperation are also promoted through the Indo-Africa Forum Summits held by India's Ministry of External Affairs and the Department of Agricultural Research & Education under the Ministry of Agriculture, which is providing agricultural training to a small number of African students and scientists.

Case studies

The report contains three case studies of Chinese investments in Africa, investigated by fieldwork. **The Zambia Agricultural Technology Demonstration Centre (ZATDC)** became operational in 2012 and is situated in Chongwe district near Lusaka and staffed by Chinese nationals. It is managed by the Jilin Agricultural University (JAU) which collaborates with the University of Zambia (UNZA) and the Ministry of Agriculture through the Department of Agriculture.

The objective of the ZATDC is to improve the capacity and expertise of Ministry of Agriculture staff, university/college students and small-scale farmers in order to increase crop productivity through trainings and demonstrations. The Centre has so far conducted around 38 training sessions and has trained 718 people. The main training focus of the Centre is on mushroom production.



Creating Mushroom Industry in Zambia

Research found that the training offered by the Centre was valuable. However, the research found no evidence that small-scale farmers are consulted on what trainings they would like to attend; instead they are just told by their camp extension officers to prepare to attend trainings that have already been arranged. Trainings are attended by interested individual farmers, and selection is not based on whether farmers are members of a particular cooperative or represent large numbers of farmers.

Thus it is not at all clear how or whether farmers being trained will pass on their knowledge to other farmers. Small-scale farmers could be represented at the Centre by a cooperative federation which is likely to be best suited to negotiate and speak on behalf of farmers. There is currently no such cooperative on the board of the Centre. Of the 718 people trained so far, only 42 are women. This is a low proportion indicating that the Centre has no particular focus on women farmers. Yet women comprise around 65 per cent of smallholder farmers in Zambia, and are the main producers of food.

In Uganda, research was conducted into the Osukuru fertilizer project, whereby the Guangzhou Dongsong Energy Group, a private Chinese company with assets of over \$1 billion, is promoting a US\$620 million project to build a fertilizer plant and conduct phosphate mining in the east of the country. The project is expected to employ around 1,000 people and produce 300,000 tonnes of phosphate fertilizer annually - enough to supply Uganda, Kenya, Tanzania and Rwanda. The financial benefits to Uganda of the project are unclear since the Mineral Agreement signed between the company and government has not been made public. Different estimates have been circulating: the Ugandan government was reported as claiming that the project would 'generate' \$350 million a year; however, reports in China Daily state that, according to the company, the project will generate an annual net profit of \$81 million.

People affected by the project are overwhelmingly subsistence farmers who have small holdings of around two acres. The project's Economic and Social Impact Assessment states that 'the major impact [of the project] is the loss of crops and the land itself. Being a fertile area, the persons affected are likely to become more vulnerable as they will lose their source of income'. The project covers 26 square kilometres and could displace up to 1,500 households; some 122 have already been relocated. The project paid compensation according to government standards, which benefited those who used the money to invest in, for example, starting other businesses or in livestock like cows and goats. Yet the relocation process did not involve providing training on developing alternative livelihoods; thus most people moved in ignorance, without ensuring a reliable source of income to sustain them in future.

This has meant that most people have spent their compensation money and now have no alternative livelihood. Community members interviewed also said they were in effect made to sign documents to relocate in an intimidating atmosphere amidst heavy police deployment. Since many more people will be relocated, the project will have an even greater impact on the livelihoods of the people of the area. The project may create over 1,000 jobs, but most community members are likely to be employed as casual labourers only, and mainly in the construction phase.



The research found that the company generally has positive local impacts, especially in creating employment, stimulating local economic development and through some voluntary community development initiatives. The provision of 414 direct jobs and others indirectly is significant in this rural area, which is probably generates many more jobs.

In **Tanzania**, research focused on a Chinese sisal farm in Morogoro District owned by the Chinese government's China National Agricultural Development Group, which established the China Africa Agriculture Investment Company. The farm involves a sisal plantation and processes the sisal to fibre, producing around 14,000 tonnes of sisal during 2000-15. Chinese occupy senior management positions in the farm, which employs 414 people, of whom 128 people are in permanent positions and 286 are casual workers.

At the same time, however, many workers also complain of low wages and poor housing conditions. The research found that the farm pays a low rate but which is more than the government's minimum wage.

The three case studies highlight the diversity of Chinese agricultural investments in Africa. However, transparency is key and it is vital for public authorities to insist that all agricultural investments are opened up to public scrutiny. These authorities also need to ensure that local people, notably smallholder farmers are fully consulted on new projects and play a key role in their design. Promoting the concept of free, prior and informed consent is vital in these cases.

Impacts and concerns

Few independent evaluations have been conducted on Chinese, Brazilian and Indian investment programmes in Africa, making them hard to assess properly. However, a review of the literature points to four main areas of concern.

Land grabs and large-scale investments

Land grabs are not a generalized feature of Brazilian, Chinese and Indian investment in African agriculture. However, several current large-scale land investments do raise major concerns, notably with Brazil (in Mozambique and Ghana) and India (in Ethiopia) but also with China, and some of these investments can be regarded as land grabs. As regards Brazil, it is the Prosavana project in Mozambique that has become the most controversial and widely discussed. Initiated in 2011, Prosavana is aimed at increasing production in the Nacala corridor, a 14.5 million hectare area in central and northern Mozambique, some of which land has agricultural potential similar to Brazil's savannah. Opposition to Prosavana has been widespread and led by organisations arguing that this project will benefit only the big agricultural companies rather than small-scale farmers, who may simply end up as employees of large-scale projects.

Indian companies' acquisition of agricultural land is even more controversial, at least in Ethiopia, where most Indian agricultural investment has been concentrated. The Ethiopian Government leased at least one million hectares of land for agricultural investments during 2005-12, in which the main investors are Ethiopian but 9 of 31 approved projects are by Indian investors, more than from any other foreign country. Research by the Oakland Institute finds that most investments are producing non-food export crops and that some of the investments are in areas where the Ethiopian government is using its villagisation programme to forcibly relocate around 1.5 million indigenous people from their homes and farms to make way for agricultural plantations. In addition, Indian investments generally take place in regions where the government offers extra tax incentives, which can deprive the country of valuable earnings.

India and China are also involved in the Ethiopian government's controversial expansion of its sugar sector, in which the government is building no less than 10 new sugar facilities across the country. In the Lower Omo Valley of southern Ethiopia, the government is building a massive hydroelectric dam to promote large scale irrigated agriculture for sugar production. Human Rights Watch notes that this is threatening the delicate ecosystem and way of life of the 200,000 people from eight indigenous groups who rely on the river for growing crops and replenishing grazing lands.

Promoting agribusiness: hybrid seeds, chemicals and ethanol

Brazilian, Indian and Chinese investment and cooperation programmes are substantially about promoting agribusiness interests. China's agricultural technology centres promote Chinese technology in Africa, notably seeds and agro-chemicals, and the introduction of Chinese companies to Africa. In particular, hybrid seeds are being heavily pushed by China through the Centres. A recent study notes that Brazil is alone among the three countries in experimenting with non-profit driven models of seed sector development. But even this is limited to just one project. Seeds are big business for Chinese, Brazilian and Indian firms and expanding markets for hybrid rice is a key interest of growing agribusiness in Africa.

The promotion of patented seeds in Africa includes genetic modification (GM), although the extent of this is unclear. For example, the Chinese government is providing \$1 million worth of funding for a crop molecular laboratory at Egerton University in Kenya involving China's Nanjing Agricultural University. It aims to train 500 crop technologists, scientists and small-scale farmers every year but its main focus will reportedly be on genetically-modified organisms, including gene cloning and molecular crop genetics. In 2013, India hosted a biotechnology conference with African and Indian ministers, from which emerged proposals to set up laboratory standards for seeds and other sources of genetic materials such as plant tissues; establishing seed incubator facilities for private-sector entrepreneurs in Africa; and building Africa's capacity for seed research. India is especially promoting Bt cotton, a genetically modified cotton variety.

Finding new markets for agro-chemical exports is also a priority for Chinese agribusiness. Chinese companies are now the largest producers of glyphosphates in the world, and have largely captured the African market. China has been promoting various trade fairs in Africa seeking to sell more chemicals.

Brazil's primary interest in African agricultural investments has been ethanol, but little information is available in the public domain to assess the impacts of these projects. There are some exceptions, however, which highlight both positive and negative impacts. For example, the ProCana project in Mozambique was until its collapse promoted by a British firm over 30,000 hectares and involved the Brazilian company Dedini as the contractor to build the sugar/ethanol factory.

This project involved displacement of local communities, the lack of supposedly 'available' land, and an asymmetry in negotiating power between company and community even when following formal consultation procedures.

Appropriate technology?

Technology transfer is a key feature of many Chinese, Brazilian and Indian investment and cooperation programmes in Africa. While these projects usually come with no 'policy conditionality', they are, however, normally heavily 'tied' to buying and using equipment and technology from these countries. Some projects may well be beneficial, enabling farmers to access equipment more cheaply than elsewhere, and perhaps especially useful when accompanied by technical assistance. However, available information does not provide strong evidence that the technology being transferred, or the process by which it is transferred, is generally in tune with the major needs of Africa's smallholder farmers. On the contrary, as one recent study argues:

'The present policy environment, which is aimed at attracting FDI into Africa, is not designed to promote links between high technology based large scale commercial agriculture and the smallholder sector. The overemphasis on industrial agriculture is altering systems of land management, and this will have huge social and environmental ramifications and will further marginalise small scale famers, herders and minority groups'.

Indian companies are selling irrigation technology and farm tractors to Africa, but there is 'little evidence to suggest that expensive infrastructure built to service large-scale commercial farming is directly benefiting small-scale farmers who cultivate at the subsistence level'. Similar concerns about the appropriateness of technology have been raised in Brazil's flagship programme More Food Africa, which focuses on improving farmers' access to equipment and agricultural technologies and is meant to be targeted at small and medium farmers.



Sales of tractors by Brazilian firms have been a particular feature of this programme; in 2009, over 17,000 tractors were sold under the programme, making it lucrative for Brazilian agribusiness. But while More Food Africa is creating demand for Brazilian equipment, it is questionable whether it is really of benefit to African smallholder farming, which takes on place on small plots of land over which farmers have with use but not ownership rights, where farming is often the responsibility of women and where there is very little in the way of technical assistance.

Alignment with African government priorities and the needs of small farmers?

African Governments have clearly welcomed Chinese, Brazilian and Indian agricultural investment and have habitually requested cooperation in agriculture. However, when it comes to individual projects, Chinese, Brazilian and Indian agricultural investment does not regularly appear to be strategically managed or aligned with African policy priorities. For example, it is not at all clear how the Chinese agricultural technology centres are integrated into wider policy-making in several countries. The case study on Zambia notes that China's agricultural technology demonstration focuses on mushroom production, yet mushrooms are grown by perhaps less than 1 per cent of local farmers and the government has not identified it as a priority.

But the biggest problem is the failure to systematically involve African smallholder farmers in investment and cooperation projects, which can be as much a failure of African government as of the designers of Chinese, Brazilian and Indian projects. It appears that few Brazilian agricultural aid practitioners recognise that they may have something to learn from Mozambican farmers or agricultural researchers. And on the African government side, the country's policy elites often share with both Brazil and China a tendency to emphasise technologically-driven modernisation as the key to the future of agricultural development.

The apparent failure to systematically target and involve smallholder farmers in projects is compounded by the distinct lack of transparency in such programmes, especially in Chinese projects. This is a big problem in itself, meaning that scrutiny of projects by civil society groups and others becomes difficult or impossible.

And a related broader failing, also noted above, is to systematically evaluate projects and judge whether they are successful in reaching their goals. Although China has trained thousands of Africans, Li Jiali of China's Ministry of Agriculture notes that 'the Chinese Government has yet to form a China-based tracking and assessment management mechanism to scientifically evaluate the improvement and revision conducted by the trainees to their future work, the relevancy of the contents of training, as well as the effectiveness and applicability of the training results'.

Policy recommendations appear at the end of this report.

INTRODUCTION

This study offers new analysis of Chinese, Brazilian and Indian investments in African agriculture. It brings together three new case studies of Chinese investment and reviews the literature on the impacts of such investment. Although the agricultural investments of the BRICS countries (Brazil, Russia, India, China and South Africa) have received growing attention, most analyses have focused on aims and modalities rather than actual impacts. This report aims to assess the impacts of investment on Africa's small-scale farmers, and also considers the impact of some aid programmes (given that the lines between these two are often blurred). The report aims to assess how appropriate these investments are for Africa's small-scale farmers, including how aligned they are to Africa's own agriculture strategies.

Despite much rhetoric, Brazilian, Indian and Chinese investments and aid in African agriculture remain relatively small, especially compared to those of OECD countries and multilateral actors such as the World Bank. The extent of influence is often exaggerated in media reports, especially when it comes to alleging land grabs. That said, these countries have increased their influence in African agriculture in recent years to become important actors, and this influence is likely to grow in the future.

The report finds that there are major problems with Chinese, Brazilian and Indian investments in African agriculture. It finds that some investments are associated with land grabs, that several projects are having adverse consequences on local farmers, and that the kind of technology being promoted in Africa tends to be more suited to Chinese, Brazilian and Indian agribusiness interests than to Africa's smallholder farmers. Above all, investments and cooperation programmes do not appear to systematically involve African smallholder farmers in project design or implementation, but appear more suited to large-scale farming. This is despite some projects which proponents claim are resulting in significant crop yield increases, although there are few genuinely independent evaluations of these projects.

Methodology

This report was produced from secondary and primary research. A thorough literature review was conducted, sourcing government, academic, media and NGO reports and analyses of Chinese agricultural investments across Africa. Primary research was undertaken on three case studies in Uganda (the Osukuru fertilizer project), Tanzania (a sisal farm) and Zambia (China Agricultural Technology Demonstration Centre). Researchers in those countries visited the project areas, met with project/company staff and interviewed local people affected by the project, as well as other informed people. The literature review and writing of this report was conducted by Mark Curtis (www.curtisresearch.org). In-country research was undertaken by Prosper Ngowi (Tanzania), Auckland Kuteya (Zambia) and Irene Kharono (Uganda).

While the report overall covers Brazilian and Indian investment in Africa, as well as Chinese, it was decided to focus the country case studies on the latter only. Project funding allowed for three such studies and it was considered that undertaking a case study on each country would provide no general lessons, whereas covering three Chinese investments would be more likely to highlight the diversity of investments and impacts.

1. INVESTMENTS IN AFRICAN AGRICULTURE

This section reviews the extent and types of Chinese, Brazilian and Indian investments in agriculture in Africa.

1.1 Chinese Investments

According to the Chinese government, China's total (not just agriculture) direct investment in Africa increased from US\$1.4 billion to US\$2.5 billion during 2009-12 and its FDI stocks rose from US\$9.3 billion to US\$21.2 billion. Yet most of this investment is in mining, finance and construction, with agriculture comprising only a small proportion. Figures for agricultural investments vary widely according to different sources:

- Chinese government figures from 2013 are that FDI in African agriculture stood at \$82 million in 2012, a figure which had risen from \$30 million in 2009.
- More recent figures from the Chinese government are that China has invested over \$700 million in agriculture in Africa (over an unspecified time period).
- Another estimate is that the value of (approved) Chinese investment in farming in Africa was somewhere between \$172 million and \$488.5 million in 2012.

Still different figures are given by the China Global Investment Tracker, managed by the American Enterprise Institute and Heritage Foundation. This calculates that during 2011-15, Chinese investments in African agriculture amounted to at least \$2.3 billion, mainly by the giant corporation, Sinomach. However, these projects might not strictly be agriculture: although Sinomach sells agricultural machinery, it also provides services and equipment in several other sectors.

In terms of the number of projects, Chinese government figures from 2013 are that China had approved 212 agriculture-related projects (grains, cash crops, animal husbandry, fisheries, forestry, agro-processing and commodity trade) in 37 African countries by March 2013. Of these, 86 were specifically related to farming (production of grains, cash crops or animal husbandry) in 27 African countries. The six countries with the most projects were Zambia, Zimbabwe, Nigeria, Sudan, Mozambique and Tanzania. However, not all these projects are in operation. Bräutigam and Zhang found that of the 16 projects in Zambia (the country with the most approved projects), only eight were in operation. The number of Chinese firms working in African agriculture is small, compared with other sectors. Investments are also still fairly small, with the exception of leasing existing plantations in countries such as Cameroon, Mali and Sierra Leone.

Despite widespread allegations of land grabs, there appears to be no strategic effort by the Chinese government to obtain land in Africa for food security purposes. In Zambia, for example, there are two Chinese state-owned farms and 30 private farms, all of which produce for domestic demand. The largest farm occupies 3,500 hectares but most hold less than 100 hectares, operate on low capital with low levels of mechanisation. In Ghana, a recent study suggests there are four Chinese farms in operation, all quite small in terms of land area and scale of business.

Figures on China's land acquisition in Africa are often exaggerated. In its 2012 research, the International Institute for Sustainable Development discovered only 16 Chinese large-scale agriculture investments in operation in Africa (there were reports of 28 investments but many could not be confirmed). These projects covered a total of 384,000 hectares. The NGO, GRAIN conducted further research in 2015 and produced a list of Chinese agriculture investments abroad; in Africa, it identified 14 known projects covering around 228,000 hectares.

Table 1: Large-scale Chinese investments in African Agriculture

Country	Company	Crops	Area	Summary
Angola	CAMCE / China CAMC	Rice	4500	CAMCE is a subsidiary of the China National Machinery Industry Corporation. In April 2011, the Angolan Press Agency reported that the Angolan government had approved CAMCE's proposed project to construct a rice mill in Longa and establish a 1,500 ha pilot rice farm in the area. China National Development Bank has provided CAMCE with a credit line for the project of around US\$76 million.
Angola	CITIC Construction CAMCE / China CAMC	Soyabeans Maize, wheat	50,000	CITIC Construction Co has leased 20,000 ha for the production of soybeans and wheat in Angola since 2008. In November 2014, the company announced plans to invest US\$5 billion to develop farming operations on 500,000 ha in Angola to produce maize, soybeans and wheat. This was followed, in September 2015, by reports that the company had initiated negotiations with the Angolan government for an additional 30,000 ha to farm in Bie province.

Country	Company	Crops	Area	Summary
Benin	CITIC Construction CAMCE / China CAMC Engineering Co. Ltd	Soyabeans Maize, wheat Rice	50,000	CAMCE is a subsidiary of the China National Machinery Industry Corporation. In April 2011 the Angolan Press Agency reported that the Angolan government had approved CAMCE's proposed project to construct a rice mill in Longa and establish a 1,500 ha pilot rice farm in the area. China National Development Bank has provided CAMCE with a credit line for the project of around US\$76 million.
Benin	La Sucrierie de COMPLANT de Benin S.A / China National Complete Import and Export Corporation Group (COMPLANT)	Cassava, sugar cane	4,800	COMPLANT's controlling shareholder is the State Development & Investment Corporation, the largest state-owned investment holding company in China. The company is involved in a number of construction and infrastructure projects overseas and several agricultural projects. In 2010, COMPLANT and the US\$5-billion China-Africa Development Fund set up ethanol projects in various African countries. COMPLANT proposed the construction of a 4,800 ha sugarcane and cassava venture in Benin, where it is functioning through its subsidiary La Sucrierie de COMPLANT de Benin S.A.
Cameroon	Sino-Cam IKO / Shanxi State Farm Agribusiness Corporation	Rice, maize, fruit, vegetables, cassava	10,000	In 2006, IKO, a subsidiary of Shaanxi Overseas Investment and Development Co, Ltd, signed a US\$120 million investment agreement with the government of Cameroon,

Country	Company	Crops	Area	Summary
Cameroon	Sino-Cam IKO / Shanxi State Farm Agribusiness Corporation	Rice, maize, fruit, vegetables, cassava	10,000	giving it the Nanga-Eboko rice station and a 99 year lease for another 10,000 ha of land -2,000 ha in Nanga-Eboko (close to the rice farm), 4,000 ha in nearby Ndjore District, and 4,000 ha in the west of the country in Santchou. The company began trials of rice and maize, and also plans to grow cassava through its Cameroonian subsidiary Sino-Cam IKO Ltd. Reports suggest, however, that progress on the farms is slow, with the company only cultivating some 100-150 ha of its 10,000 ha. The company is reported to still be awaiting a completed contract from the government.
Cameroon	CMG Global/Sinochem	Oil palm	45,000	Through its Singapore subsidiary GMG Global, the Chinese state oil company Sinochem, acquired a 90% stake in Sud Hévea, a rubber company that was privatised by the Government of Cameroon in 1996. The company controls an area of 45,000 ha for rubber plantations. In May 2013, Sinochem announced that it would be expanding its plantations by 20,000 ha and that it would begin planting oil palm.
DRC	ZTE Energy Corporation	Maize, soyabean, kidney bean, cassava, vegetables	1,046	The company is part of ZTE Corporation, China's largest telecommunications company, and has a 200 hectare oil palm plant nursery and two additional farms of 246 hectares and 600 hectares in the DRC.

Country	Company	Crops	Area	Summary
Madagascar	SUCOMA / China National Complete Import and Export Corporation Group (COMPLANT)	Sugarcane	10,000	COMPLANT has been running three SUCOMA sugar factories since 1997. In 2008, under a twenty-year management contract, it took over the state-owned sugar refinery SUCOCOMA, giving it control over 10,000 ha for sugar-cane production.
Mali	Mali Sugar Conglomerate (MSC) / China Light Industrial Corporation for Foreign Economic and Technical Cooperation (CLETC)	Sugarcane	25,700	In 1996, the Malian government and the China Light Industrial Corporation for Foreign Economic and Technical Cooperation (CLETC) entered into a joint venture to establish the Mali Sugar Conglomerate (MSC), with CLETC holding 60% of the company and the government holding 40%. The Conglomerate took control of two sugar factories and sugar-cane plantations, based in separate locations, on land amounting to 5,7000 ha. In 2009, the Malian government signed a deal with CLETC to establish a new sugar project, in which CLETC was given a 50-year renewable lease on 20,000 ha of lands in the Office du Niger for irrigated sugar-cane production, with a total reported investment of US\$41 million. A separate Sino-Malian Joint Stock Company was set up to oversee this project in June 2009 between CLETC and the Malian government, called N-Sukala S.A. CLETC holds 60% shares in N-Sukala S.A., while the government holds the remaining 40%. The company also began building a new sugar cane processing plant and refinery on the site in 2009, which was completed in 2012. As of 2011, only 4,000 ha of the allotted 20,000 ha had been planted.
Mozambique	Wanbao Africa Agriculture Development, Limitada / Três Fontes Investment, Limited	Rice	21,333	In 2005, China's Hubei State Farm Agribusiness Corp established a rice farm on 1,000 ha of land provided by the Government of Mozambique, in the Ponela section of the Xai-Xai irrigation system. Hubei SFAC subsequently formed Lianfeng Overseas Agricultural Development Co Ltd, to expand its activities in Mozambique and other countries in Africa.

Country	Company	Crops	Area	Summary
Mozambique	Wanbao Africa Agriculture Development, Limitada / Três Fontes Investment, Limited	Rice	21,333	The project did not advance, leading private company Wanbao Grain And Oils Co to take over in 2012, through its Mozambican subsidiary Wanbao Africa Agriculture Development, Limitada (WAADL). The company was given another 333 ha to develop rice, soybeans and other cash crops. In December 2012 it then signed a contract with the Mozambican government to lease 20,000 ha of land for a rice farm in the same area, with a 50-year lease. In 2013, Wanbao Grain and Oils Co sold 95% of its share in WAADL to a Mauritian company called Três Fontes Investment, Limited, 5% of the company remains with the businessman Shungong Chai. The owners of Três Fontes are not known because of company secrecy laws in Mauritius.
Nigeria	Green Agriculture West Africa Ltd	Rice	1,875	The Chinese company Green Agriculture West Africa, a subsidiary of China General Construction (CGC Nigeria Ltd), obtained a 99-year Certificate of Occupancy in March 2006 for 1,875 ha in Warra, Ngaski Local Government Area of Kebbi State. The agreement provides for the state to receive two percent of the total yield from the farm.
Sierra Leone	Magbass Sugar Complex Co Ltd / China National Complete Import and Export Corporation Group (COMPLANT)	Cassava,	1,846	COMPLANT's subsidiary in Sierra Leone, Magbass Sugar Complex Co Ltd (MSC), owns a sugar-refining factory and operates a 1,846 ha sugar plantation.

Country	Company	Crops	Area	Summary
Sierra Leone	Shanghai Construction	Rice, rubber	30,000	In January 2012, Shanghai Construction Investment, subsidiary of Shanghai Construction Group, told AFP that it had signed a MOU with the Government of Sierra Leone for a US\$1.3 billion project to develop rice and rubber production. The project, located in the northern region of Tonkolili, includes the construction of railroads and irrigation, as well as 30,000 ha of land. Sierra Leone's Agriculture Minister Sam Sesay told AFP that the land had already been secured for the project. The current status of the project is unclear.
Zambia	Jilin Province Overseas Agricultural Investment and Development Group Company Limited / Jilin Province Overseas Agricultural Investment and Development Group	Maize, wheat	3,000	In 2014, Zambian government officials announced that Jilin Province Overseas Agricultural Investment and Development Group Company Limited would lease 3,000 ha of land. This was after the deputy governor of Jilin Province, Sui Zhongcheng, visited the region. The current status of the project is unclear but, in August 2015, the Zambia-China Economic and Trade Co-operation Zone (ZCCZ) signed a strategic co-operation agreement with 10 enterprises including Jilin.

Source: GRAIN, Corporations replace peasants as the "vanguard" of China's new food security agenda, 3 November 2015, <https://www.grain.org/article/entries/5330-corporations-replace-peasants-as-the-vanguard-of-china-s-new-food-security-agenda> .

The list in table 1 is not exhaustive. For example, China State Farms Agribusiness Corporation (CSFAC), one of the country's leading agriculture companies which started its first farm in Africa in 1994, says that it operates seven farming projects across Africa, with more than 8,600 hectares of land. Another prominent state level institution, the China National Agricultural Development Group Corporation is also believed to operate seven farms in Africa. The list above refers mainly to investments by medium- or large-scale Chinese firms but there are many smaller Chinese farms in Africa.

These are not state-supported endeavours, but are largely examples of pioneering individuals finding and exploiting market niches. For example, Chinese farmers have established farms on land surrounding major African cities such as Lusaka, Lagos, and Johannesburg with the aim of serving the local market. They can grow vegetables and raise small pigs and chickens for the burgeoning number of Chinese restaurants, the canteens of Chinese companies and the growing Chinese communities across Africa. According to one source, there are over 40 in Zambia alone.

Chinese agricultural investment in Africa is occurring in a variety of crops, including sisal in Tanzania, oil seeds and sugar cane in Ethiopia, cotton and tobacco in Zimbabwe, rice production and agro-processing of cotton, rice and maize in Mozambique, and rice in Cameroon. Some of these investments focus on rehabilitating and expanding previous state-farm aid projects. Some of the farms involve outgrowing (contract farming) arrangements whereby Chinese companies contract African producers to provide certain crops while providing the inputs, training and guaranteed market for them to do so.

These investments are often complemented and supported by aid efforts of which two key related areas stand out – **agricultural technology demonstration centres and training**.

It is not clear exactly how many agricultural technology demonstration centres China has established in Africa. The government stated in 2013 that it had set up 15 since 2006. In December 2015, it stated it has built 25. They are run by quasi-private companies on behalf of the Chinese state, involving the transfer of knowledge, seeds and mechanised farming equipment through intensive training courses aimed at farmers. The Centres are constructed and started by Chinese agro-industry enterprises and have the support of the Chinese foreign aid budget for the first years.

Table 2: Select Chinese-aided agricultural technology: demonstration centres in Africa

Country	Major focus of the centre
Benin	Crop cultivation demonstration and farming technology training
Cameroon	Research, technology demonstration and training on agricultural technology
Republic of Congo	Crop cultivation demonstration and training
Ethiopia	Horticultural plants cultivation and livestock farming technology, demonstration and training
Liberia	Rice and corn cultivation technology transfer, training, development of plant varieties
Mozambique	Soya bean and corn cultivation and processing, demonstration and training
Rwanda	Rice, juncao, mulberry cultivation, soil and water conservation, technology demonstration and training
South Africa	Research, technology demonstration and training on freshwater aquaculture
Sudan	Crop cultivation and irrigation technology, demonstration and training
Tanzania	Crop cultivation demonstration, development of improved plant varieties, training
Togo	Research and training on agricultural technology
Uganda	Agriculture technology demonstration, technology transfer and training
Zambia	Agriculture technology demonstration and training
Zimbabwe	Corn cultivation technology transfer and training

Source, MOFCOM, 2010, in Fantu Cheru et al, 'Catalysing an Agricultural Revolution in Africa: What Role for Foreign Direct Investment?', in Fantu Cheru and Renu Modi (eds), *Agricultural Development and Food Security in Africa: The impact of Chinese, Indian and Brazilian Investments*, Zed, 2013, p.29, <https://www.diva-portal.org/smash/get/diva2:617151/FULLTEXT01.pdf>

As considered in section 3 below, these centres appear to be closely associated with the promotion and supply of Chinese equipment and technology, especially hybrid seeds and agro-chemicals, from which Chinese agribusiness is likely to benefit.

According to the government, China has helped train over 5,000 Africans in agricultural technology and management, and has provided practical agricultural guidance and training through trilateral agreements with a dozen African countries. This training encompasses: agricultural economy, agricultural planning, agricultural management, crop cultivation, animal husbandry and veterinary, aquaculture, processing of agricultural products, agricultural machinery to agricultural engineering. China is also sending agricultural experts to Africa who have been stationed in government departments, universities, research institutes, demonstration centres and other technical and training facilities. Chinese senior agricultural experts have worked in 33 African countries helping governments formulate agricultural development plans.

Chinese sources suggest that it has conducted over 100 joint research and demonstration projects with African countries. In Mozambique, at least 100 Chinese agricultural experts are reported to be stationed in several research stations to increase crop yield and otherwise improve the performance of the agricultural sector. One of China's most extensive engagements has been in Ethiopia, where the Chinese government has supported an agricultural vocational education project involving 14 Ethiopian agricultural colleges. Over 300 teachers have been sent to Ethiopia where the programme is credited with producing more than 60,000 graduates and has helped Ethiopia establish a complete agricultural vocational education system covering subjects such as crop cultivation, animal husbandry, veterinary, agricultural machinery, and development of natural resources.

The amount of Chinese agricultural aid is not known precisely since China does not publish systematic statistics and its programmes are not systematically evaluated. According to China's State Council, by the end of 2009 China had 142 agricultural aid projects in Africa. But the Chinese white paper on aid from 2011 - the first significant disclosure of aid data from Beijing - stated that (only) 4 per cent of concessional loans in 2009 (which comprised 29 per cent of all Chinese aid) went to agriculture globally. It stated that Chinese aid to agriculture focuses on 'building farms, agro-technology demonstration centres, and experiment and promotion stations of agro-technology; constructing farmland irrigation and water conservation projects; supplying agricultural machinery and implements, farm produce processing equipment and related agricultural materials; dispatching agro-technicians and senior agricultural experts to pass on agricultural production technologies and provide consultations on rural development, and training agricultural personnel for recipient countries'. Of 221 agricultural projects listed globally, 35 were farms, 47 agro-technology experiment and promotion stations, 11 animal husbandry projects, 15 fisheries projects, 47 farmland irrigation and water-conservancy projects, and 66 other types of projects. A large proportion of the projects are focused on the provision of technology, especially tractors and machinery, hybrid seeds, and fertilizer.

The 2013 China-Africa Economic and Trade Cooperation white paper, underlines the importance of cooperation in agriculture, while the 2011 white paper on aid lists agricultural development as a priority area for aid. The Beijing Action Plan (2012-2015) commits China to a number of policies including supporting the Comprehensive African Agricultural Development Programme (CAADP) to promote a 'growth-oriented' agricultural agenda for Africa, sending teams to train African agricultural technicians and support agricultural vocational education, building more agriculture demonstration centres, providing technical support for grain planting, storage and processing, and promoting a US\$20 billion credit line for infrastructure, agriculture, manufacturing and African SMEs. The Chinese Ministry of Agriculture has also signed a Memorandum of Understanding with NEPAD to promote agricultural trade, investment and research activities.

China has established various mechanisms for promoting agricultural investment in Africa. At least 23 government ministries, along with banks and companies, are involved in agriculture in Africa. The Ministry of Commerce (MOFCOM) plays a central role and coordinates with the Ministry of Agriculture and Ministry of Science and Technology in promoting agriculture programmes, which are then implemented by Chinese institutes, state owned enterprises and private firms, often through competitive bidding processes. Agriculture was included in China's 'going global' programme in 2005, when the Ministry of Finance announced the establishment of special funds to promote foreign investment. Financing for agricultural projects often comes from the China Development Bank and the Export Import Bank of China in the form of commercial development finance and export credit.

The Ministry of Agriculture and the China Development Bank signed an agreement in 2006 to work together in five areas, including developing projects using overseas land and water. China's Export Import Bank signed an agreement with the Ministry of Agriculture in 2008 to promote overseas investment in agriculture using export seller's credits and investment loans. The China-Africa Development Fund was established in 2006 to promote the development of China-Africa commercial ties, and has opened four regional offices in Africa. In June 2010 China's top state-owned agribusiness group, China National Agricultural Development Corporation Group and the China-Africa Development Fund set up a joint venture - China -Africa Agriculture Investment Co. Ltd (CAAIC) – with funds of 1 billion yuan (\$161 million), intended to promote China's farming, fishing, animal husbandry, livestock, and agro-processing and marketing investments in Africa. China's 12th five year plan (2011–15) also encouraged Chinese firms to build productive capacity in developing countries with comparative advantage in agriculture, as part of the 'going global' strategy.

1.2 Brazilian Investments

Despite the avowed interest of the Brazilian government in agricultural development in Africa, very few private Brazilian firms have invested and Brazilian investments and trade in Africa are much smaller than China. Like China, the most significant Brazilian investments in Africa are in petroleum, mining and construction. Brazilian agribusiness still prefers to continue investing within lucrative markets in Brazil and in neighbouring South American countries, rather than focusing new efforts in Africa. However, agriculture features more strongly in Brazil's development cooperation in Africa.

Brazil's National Development Bank (BNDES) is the principal source of financing to African governments and Brazilian companies and has developed several mechanisms to finance foreign investments, notably a credit line for Brazilian firms in 2003. Financing has been focused on Angola and Mozambique and on large companies such as the state-owned oil company Petrobras, mining firm Vale and leading construction firms in the infrastructure, minerals and petroleum sectors. The main Brazilian investment interest in agriculture has been in sugarcane/ethanol.

Brazil is the world's leading biofuels exporter and the second largest producer, after the US, and Africa represents a good venue for producing ethanol, given its climatic conditions and extensive land area. The Africa office of Embrapa, Brazil's leading agricultural research institute, has forged a large number of bilateral biofuel cooperation agreements with African countries, such as Angola, the Democratic Republic of Congo, Ghana, Kenya, Mozambique, Nigeria, Senegal, Sudan, Uganda and Zambia. Projects involve technology transfer and training, enabling countries to develop their own biofuel industries and reduce their dependence on oil. The BNDES has also signed a MoU with the African Development Bank and with NEPAD to explore collaboration in bioenergy. Petrobras has also actively sought to invest in ethanol infrastructure projects, primarily in Mozambique.

Brazilian companies, backed by the BNDES, are promoting sugarcane/ethanol projects in various countries, for example:

- In Angola, Brazilian corporation Odebrecht has set up a plant in collaboration with the Angolan state-owned oil company, Sonangol, to produce ethanol and contribute to electricity supply
- In Ghana, the BNDES is providing a \$300 million loan to Northern Sugar Resources to build a sugar cane complex for the production of ethanol, involving Brazilian company Constran in building the ethanol plant.
- In Sudan, the Kenana Sugar Company contracted the Brazilian company Dedini, supported by Brazilian finance, to build an ethanol plant to complement its long established sugar complex.

These African investments are part of Brazil's efforts to create a global ethanol market which was a central plank of Brazil's geo-political programme during the first decade of the millennium, under President Lula, and was presented as a development strategy, a key to energy security, and a contribution to reducing greenhouse gas emissions. Yet despite much activity, actual Brazilian biofuel development in Africa is largely still in its infancy, due to limited capacity, food security concerns and inadequate infrastructure.

Aside from ethanol, Brazil's engagement in African agriculture tends to be through specific bilateral or trilateral projects (often involving 'Northern' donors) mostly run by Embrapa. An especially controversial project, launched by Brazil and Japan, is Prosavana in Mozambique, which aims to transfer Brazilian agricultural experience and technology to African savanna areas (see section 3). Brazilian development cooperation with Africa plays a more important role than actual investment, but is still at a low level.

In 2009, for example, it was estimated that Brazil's total development cooperation programme (not just in Africa) amounted to just US\$362 million, or around 0.02 per cent of Brazil's national income. (However, this figure excluded debt relief, food and aid export credits; the latter is an especially large component of Brazilian 'aid' and typically consists of loans on concessional terms to finance the acquisition of Brazilian goods and services and hence promote Brazilian exports.) Around a quarter of Brazil's technical cooperation spending in Africa was devoted to agriculture during 2003-10. Although Brazil does have small agricultural cooperation programmes in several countries, the five Portuguese-speaking African countries remain its main partners, with Mozambique being the largest.

Mozambique also hosts the largest number of researchers from Embrapa in Africa. There are more than 20 Brazilian institutions involved in technical cooperation in agriculture in Africa. Several African countries, including Ethiopia, Ghana, Benin, the Democratic Republic of Congo, Guinea and Kenya have signed technical cooperation agreements and have begun implementing joint projects with Embrapa. Brazil has also provided technical assistance and technology transfers to the cotton sector in Benin, Burkina Faso, Chad and with the aim of increasing productivity. The establishment of an Embrapa office in Ghana in 2008 appeared to point to a new phase in Brazil's engagement with African agriculture. However, with a technical staff of just one Brazilian in Accra and a dearth of offices in other African states, with the exception of Mozambique Embrapa initiatives on the ground do not match the rhetoric.

EMBRAPA has a particular focus on collaboration with the Forum for Agricultural Research in Africa (FARA), also based in Ghana, which dates back to a 2010 Memorandum of Understanding to promote joint work. One flagship programme is the Africa-Brazil Agricultural Innovation Market Place, which aims to spur agricultural innovation and development in Africa drawing on Brazilian expertise, which has supported over 60 research projects in Africa. Hailed as a model for South-South cooperation, the Marketplace matches African and Brazilian researchers to work jointly on projects to improve Africa's agriculture, including rehabilitation of pastures, natural resource management and production of clean energy, where Brazil has a proven edge. Embrapa and FARA also aim to establish centers for sustainable agriculture in some African countries.

Brazilian engagement in African agriculture takes a diversity of forms, including large-scale agribusiness investments, promotion of low-carbon agricultural technologies, support for smallholder production (with new subsidised technologies promoting agricultural mechanisation and input industries) and food production programmes linked to school feeding programmes. Two key programmes are the Food Acquisition Programme and More Food Africa:

The **Food Acquisition Programme** in Africa (which is based on Brazil's Programa de Aquisição de Alimentos, PAA) was launched in 2012 jointly by the Brazilian Government, the FAO, the World Food Programme (WFP) and the UK's Department for International Development (DFID). Government bodies purchase food from smallholder producers at set prices to boost food security and local economic development, with the goal of strengthening local food production and supplying school meals for children. PAA Africa is currently carried out in five small-scale projects in Ethiopia, Malawi, Mozambique, Niger and Senegal.

More Food Africa (*Mais Alimentos*) is a Brazilian credit programme aiming to promote exports of agricultural equipment to Africa and is Brazil's most prominent technology transfer cooperation project. Led by the Ministry of Agrarian Development (MDA), the programme provides family farmers with credit on preferential terms to purchase (at subsidised prices) a variety of agricultural equipment and machinery. In addition, technical assistance is provided to transfer skills. The More Food programme has provided over US\$2 billion in credit through over 100,000 contracts. A main feature of the programme is the export of tractors. For example, the Brazilian Chamber of Exports (CAMEX) authorised a line of credit worth US\$640 million during 2011-2012 for the export of equipment and machinery, principally tractors; by 2012, five African countries were involved in this scheme – Kenya, Ghana, Zimbabwe, Mozambique and Senegal – and were negotiating the import of tractors.

Brazilian agricultural policy in Africa is noteworthy for promoting two distinct, and sometimes contradictory, models. The first promotes capital-intensive, large-scale farming for the production ethanol and soya, backed by the Ministry of Agriculture, which supports agribusiness, and sometimes by Embrapa. The second, promoted by the Ministry of Agrarian Development, promotes programmes providing technical support and credit for family farmers. Despite the large number of government institutions involved in agriculture cooperation, there is little institutional direction or coordination. One analyst notes:

'What emerges is a cooperation framework that lacks a unified or coherent policy direction and in practice is shaped by the agendas, experiences and indeed imaginaries of the various institutions and individuals, from Presidential visions to the practices of those delivering technical cooperation on the ground.'

On the other hand, the unstructured institutional basis for engagement allows for diversity to emerge, and change to occur, often in ad hoc fashion.

1.3 Indian Investments

Indian investment in Africa focuses on a few key sectors: energy resource extraction, manufacturing, financial services, and infrastructure development, in addition to agriculture. Private companies are the main vehicle for Indian investments in African agriculture. Indian agribusiness companies are notably involved in selling modern farm technology, such as irrigation pumps, tractors and harvesters such as Kirloskar Brothers Limited, Jain Irrigation Systems, Tata Group, Mahindra and Mahindra and Sonalika International. Other Indian companies have invested in large-scale farms or plantations, notably in Ethiopia, several of which have been accused of being land grabs (see section 3). These large-scale investors include Karuturi Global, Ruchi, Verdanta Harvests, Varun International, Uttam Sucrotech, ACIL Cotton Industries, Neha International, Sannati, and BHO Bioproducts.

Table 3: A Sample of Indian Companies Investing in Agricultural Land in Africa

Karuturi Agro Products Plc/Karuturi Global	Ethiopia	Acquired 100,000 ha in Gambella region for growing palm, cereal and pulses, with conditional option to acquire another 200,000 ha.
Ruchi Soya	Ethiopia	Acquired a 25-year lease for soyabean and processing unit on 152,649 ha in Gambella and Benishangul Gumaz states
Verdanta Harvests Plc	Ethiopia	Acquired a 50-year lease for 5,000 ha in the Gambella region for a tea and spice plantation
Chadha Agro Plc	Ethiopia	Acquired up to 100,000 ha in Guji Zone in Oromia regional state for a sugar development project
Varun International	Madagascar	Subsidiary Varun Agriculture Sarl leased or purchased 232,000 ha to grow rice, corn and pulses
Uttam Sucrotech	Ethiopia	Won a \$100-million contract to expand the Wonji-Shoa sugar factory
McLeod Russel India	Uganda	Purchased tea plantations worth \$25 million, including Uganda's Rwenzori Tea Investments
ACIL Cotton Industries	Congo and Ethiopia	Plans to invest nearly \$15 million (Rs 68 crore) for land leases to start contract farming pulses and coffee in Congo and Ethiopia
Sannati Agro Farm Enterprise Pvt. Ltd	Ethiopia	Acquired a 25-year lease on 10,000 ha in Dimi District, Gambela region, for cultivation of rice, pulses and cereals
Jay Shree Tea & Industries	Rwanda, Uganda	Acquired two tea plantations in Rwanda and one in Uganda

ACIL Cotton Industries	Congo and Ethiopia	Announced plans in January 2011 to invest nearly \$15 million (Rs 68 crore) to start contract farming of crops like pulses and coffee in Brazil, Congo and Ethiopia.
BHO Bio Products Plc	Ethiopia	Acquired 27,000 ha to grow cereal, pulses and edible oil crops

Source: Oxfam India, *Indian Private Agro-Investments in Zambia: A Case Study*, May 2014, p.14, <http://policy-practice.oxfam.org.uk/publications/indian-private-agro-investments-in-zambia-a-case-study-346618>.

Indian' companies' investments, especially in African land, have been explicitly promoted by several government policies. In 2008, the Indian Ministry of External Affairs suggested supporting the purchase of overseas land for cultivation with policy incentives, including lifting restrictions on outward foreign investment and facilitating access to credit for such investments. A government committee recommended that Indian companies be encouraged to buy land in other countries for producing at least 2 million tonnes of pulses and 5 million tonnes of edible oil for 15-20 years. The government has since promoted investments by signing new international trade and investment agreements with African countries and by government reforms to make it easier for Indian companies to undertake larger overseas investments, enabling them to raise higher amounts of capital in international markets and providing risk guarantees and other protection for investments abroad.

A key government policy is to provide lines of credit (LOCs) to foreign countries from India's Export-Import Bank (Exim Bank) as part of India's expanded foreign aid programmes, which are used by countries to purchase Indian goods and services. LOCs, which are soft loans, have been signed with around 40 African countries, amounting to around \$1.2 billion for agriculture-related projects during 2003-12. The largest line of credit approved by Exim Bank outside the Indian subcontinent was a \$640 million loan to Ethiopia for its Tindaho sugar project, part of a controversial sugar expansion in Ethiopia. Other LOCs have been provided to develop maize, rice, wheat, cotton and coffee production, among others, in Africa. In October 2015, Prime Minister Narendra Modi said that India had committed \$7.4 billion in concessional credit and \$1.2 billion in grants to cooperation mechanisms with Africa (not just to agriculture) since 2008.

Indian officials say that Indian companies could help Africa's agriculture sector in several ways such as in: farm mechanisation; agro-processing and storage; investments in employee training and development; setting up of agro parks in Africa; and setting up of horticulture industries, floriculture units and contract farming. However, India is promoting only limited agricultural cooperation programmes whose precise figures are not known. India has been providing technical assistance to develop the cotton sector in Benin, Burkina Faso, Chad and Mali (the so-called Cotton 4) and also in Nigeria, Uganda and Malawi.

Increasing investment and cooperation, including in agriculture, are promoted through the Indo Africa Forum Summits held by India's Ministry of External Affairs. The Department of Agricultural Research & Education under the Ministry of Agriculture is providing agricultural training to a small number of African students and scientists while farm experts from the Indian Council of Agricultural Research have visited Africa to promote exchanges on improving their agricultural practices. The leading Indian industry body, the Confederation of Indian Industry (CII), is working with more than 18 African countries to promote capacity building with farmers in seeds, soil testing, growing and marketing of crops and livestock management. CII also has a programme to invite African farmers to Farmers' Field Schools in India.

2. CASE STUDIES: THREE CHINESE INVESTMENTS

2.1 The China Agricultural Technology Demonstration Centre in Zambia

The Zambia Agricultural Technology Demonstration Centre was officially commissioned in May 2008 and became operational in 2012. Managed by the Jilin Agricultural University (JAU) and situated in Chongwe district near Lusaka, the Centre occupies an area of 120 hectares of which 75 hectares is under irrigation. JAU collaborates with the University of Zambia (UNZA) through the School of Agricultural Sciences and the Ministry of Agriculture through the Department of Agriculture. All the professional staff are Chinese nationals.

The overall objective of the ZATDC is to improve the capacity and expertise of Ministry of Agriculture Staff, university/college students and small-scale farmers in order to increase crop productivity and production through trainings and demonstrations.

The Centre has conducted around 38 training sessions since becoming operational in 2012, and has trained a total of 718 people. Among the topics covered have been farm machinery and mechanization, storage and processing of farm produce, soil fertility management, conservation tillage, soybean production, field crop and vegetable production, fruit tree growing, food processing/preservation and livestock rearing/production. Participants are selected by the Ministry of Agriculture through the district offices. During training, the Centre provides meals, accommodation, resource personnel and all the training materials while the transport cost for participants to and from the Centre is borne by either farmers themselves or the Department of Agriculture, in most cases the latter. At the end of the training beneficiaries are issued with certificates of completion.

The main training focus of the Centre is on mushroom production. The Centre provides a platform for training and supporting smallholder farming households in mushroom production and seeks to establish the largest mushroom production base in Central and Southern Africa. There are several reasons advanced by the Centre staff for this focus:

- The mild climate in Zambia with annual average temperatures of about 20°C is conducive for mushroom production.
- Zambia has abundant raw materials which are suitable for mushroom cultivation, such as sawdust, wheat stalks and cotton seed which are available at cheap prices.
- Zambia is well-linked to other regional countries and can easily export mushrooms.
- Mushrooms are nutritious, healthy and tasty and enjoyed by most Zambians
- The anticipation is that mushroom industry has a huge development potential which can help create more jobs and promote economic development.

Mushroom production seems to be an extension of the JAU's core business. Interviews with key stakeholders showed that the mushroom training programmes came from JAU and not from consultation with farmers. Mushroom production is not widely practiced in the area and the Centre's focus on this has clearly not come from small-scale farmers; mushrooms are grown by perhaps less than 1 per cent of local farmers. The government provides little support to mushroom production and has not identified it as a priority. It is not clear whether national development initiatives like the National Agricultural Investment Plan (NAIP) are considered when designing the Centre's training programmes. Mushroom is not among the important crops identified in the NAIP. The NAIP, part of the Comprehensive Africa Agriculture Development Programme (CAADP) to which Zambia has committed itself, seeks to identify and prioritize key investment and policy changes in Zambia that are critical to enhancing the desired agricultural productivity growth.

Perceptions of the Centre

Research in Zambia mainly involved interviews with Ministry of Agriculture staff in the Department of Agriculture, staff from UNZA's School of Agricultural Sciences and business centre, staff from the Centre, staff from the Ministry of Agriculture based in Chongwe district and small-scale farmers that have been trained by the Centre.

Most interviewees said that the training offered by the Centre was valuable. However, there are a number of problems with the process. Ministry of Agriculture staff from the headquarters in Lusaka said that the involvement of district field staff during the formulation of work plans makes it possible to design training programmes that are appropriate for small-scale farmers.

However, by contrast, Ministry staff based in Chongwe district said they are not consulted, and that their counterparts at national headquarters do not involve them in course planning and design. District agriculture staff receive directives or requests from national Ministry staff to send lists of small-scale farmers to participate in specified training courses. The research found no evidence that small-scale farmers are consulted on what trainings they would like to attend; instead they are just told by their camp extension officers to prepare to attend trainings that have already been arranged.

Trainings are attended by interested individual farmers, and selection is not based on whether farmers are members of a particular cooperative or represent large numbers of farmers. Thus it is not at all clear how or whether farmers being trained will pass on their knowledge to other farmers. Small-scale farmers could be represented at the Centre by a cooperative federation which is likely to be best suited to negotiate and speak on behalf of farmers. There is currently no such cooperative on the board of the Centre.

The district agriculture staff said their wish is to be involved in the planning and design of the course programmes so that they help to identify knowledge gaps which could be filled by these trainings. They suggested that training programmes in vegetable production, food processing and preservation, broilers, layers and village chicken rearing would be especially useful. They also pointed out that much of what was covered in the training programmes they already know from their college and previous in-house courses. The district agricultural staff also level felt that coordination is lacking between them and the Centre. They said they do not have a clear idea what the Centre does despite being situated in their district, and are ignorant of the full complement of training courses available except those for which they are invited to attend. More often than not, district agricultural staff are usually called to participate in unplanned programmes which affects their office budgets in terms of providing transport funds to the invited farmers.

Due to somewhat uncoordinated programmes, district agricultural staff said they have not been able to take follow-up measures to see how the trained farmers have utilized the skills acquired from the Centre. They said that funding for monitoring and evaluation is not provided. They also bemoaned the limited capacity and poor lodging at the Centre.

Small-scale farmers

So far, the Chongwe district agricultural office has sent three groups of participants to attend trainings at the Centre at different times. Eleven small-scale farmers from Chalimbana agricultural camp together with their camp officer were trained in mushroom production, while three women farmers from Lukoshi agricultural camp received training in food processing and preservation. Nearly all these farmers cultivate less than two hectares of land.

The farmers from Chalimbana said that mushroom production was not their priority need although they appreciated having been introduced to it and many were now growing mushrooms on their land. However, they faced problems when it came to marketing their mushrooms. Their quality was considered inferior by the large chain stores which prefer buying from large-scale, commercial producers. Also, no follow-ups have been made by the trainers to assess the farmers' progress. They were happy to receive a certificate for having completed the course but also highlighted the need to improve the lodging at the Centre.

Training in food processing and preservation was of interest to women farmers from Lukoshi agricultural camp, especially the introduction of citric acid in jam-making instead of lemon juice, since citric acid can be easily purchased and stored.

However, the women were not able to complete the project due to the lack of local raw materials (mangoes and tomatoes); the training did not take place during the season when fruit is easily available. Serious droughts have also affected the area for two consecutive seasons. Another challenge faced by the farmers was finding a market for their jam; they ended up sharing it among themselves at a minimal fee to recover the costs.

Of the 718 people trained so far, only 42 are women, the research found. This is a low proportion indicating that the Centre has no particular focus on women farmers. Yet women comprise around 65 per cent of smallholder farmers in Zambia, are the main producers of food and manage, either independently or jointly, around 60 per cent of the land under maize production. Some informants said that the Centre's focus on training programmes such as mushroom production, food processing and preservation and village chicken rearing were especially appropriate for women, and attendance at these training sessions was dominated by women. However, women are disadvantaged in attending the Centre's training programmes since participants usually have to foot their own travel costs.

The Centre has introduced several Chinese maize and other crop varieties which are undergoing testing and subsequent release by the Seed Control and Certification Institute. It also promotes the extensive use of chemical fertilizers and other agro-chemicals supplied largely by Omnia Fertilizer Zambia Limited, one of the country's largest fertilizer supply companies. The Centre produces commercial crops, predominantly maize, on 75 ha under irrigation and uses a lot of chemical fertilizers. ZATDC is, however, also promoting the use of organic fertilizer as a way of promoting agro-ecology/sustainable methods, as witnessed in its farm demonstrations, which use chicken manure, compost, cow and goat droppings including green-manure and other soil amendments. This is promoted on small plots for small-scale farmers' adjacent to the commercial plot growing maize. Thus Centre's focus is on encouraging commercial farmers to use chemical fertilizer and for small-scale farmers to be supported in using organic methods. Other commercial field crops grown include soya beans and wheat.

Stakeholders interviewed felt that the Centre could benefit small-scale farmers more if it conducted more farm demonstrations at farmers' fields and undertook more training. It does not appear that the Centre is well-known in the area or country and does little to publicise its activities. Information about training programmes may not reach the provinces and Ministry staff often do not inform their subordinates due to logistics problems. Thus the Centre's potential to train small-scale farmers on appropriate farming methods – while limited owing to its limited size and budget – may not be fully utilized.

The research concluded that the Centre and Ministry of Agriculture should:

- Increase the Centre's publicity work so that farmers and the agricultural staff at district level are aware of the training programmes on offer.
- Conduct follow ups after trainings to evaluate impact and assess progress among the beneficiaries.
- Involve small-scale farmers and their representatives in the design and implementation of training programmes and ensure that these are focused on the identified priority needs of small-scale farmers.
- Focus training sessions primarily on small-scale farmers and ensure that women small-scale farmers, who constitute most farmers in Zambia, are prioritised.
- Provide transparency on the Centre's budget.
- Increase the Centre's focus on promoting and demonstrating agro-ecology/sustainable methods of small-scale food production.
- Base the Centre's activities firmly on the priorities outlined in Zambia's National Agricultural Investment Plan

2.2. The Osukuru fertilizer project in Uganda

The Guangzhou Dongsong Energy Group, a private Chinese company with assets of over \$1 billion, is promoting a US\$620 million project to build a fertilizer plant and conduct phosphate mining in eastern Uganda. The project is located in the Osukuru hills of Tororo district and encompasses five villages - Aburi-Opedede, Aburi C, Aburi B and Aburi in Osukuru sub-county and Abur-Rubongi in Rubongi subcounty, Tororo district. The project covers 26 square kilometres and could displace up to 1,500 households; some 122 have already been relocated. The project is expected to employ around 1,000 people and produce 300,000 tonnes of phosphate fertilizer annually - enough to supply Uganda, Kenya, Tanzania and Rwanda. The phosphates deposit in the project is reportedly the second largest in Africa.

Guangzhou, a company which has interests in hydropower, mining, construction and real estate, signed a memorandum of understanding with the Uganda Investment Authority in 2013 following a meeting between President Museveni and Chinese President Xi Jinping earlier that year. The company began exploration activity in 2013 and the project was launched in August 2014. Guangzhou signed a mining agreement with the Ugandan government in December 2014, making the project one of the largest foreign investments in Uganda. Media reports suggest that the company expects to begin manufacturing fertilizers in 2016. While some media articles suggest that construction of the fertilizer production plant has started, this was not the impression given in research undertaken in November 2015. Construction is, however, currently ongoing for an office block and accommodation.

According to a December 2015 press release by the Ministry of Energy and Mineral Development, the project has received finance amounting to \$240 million from the Industrial and Commercial Bank of China and the Standard Bank Group. It is unclear where further financing will come from.

How much might Uganda earn?

This question is unclear as the Mineral Agreement signed between the company and government has not been made public and different estimates have been circulating. When launching the project in August 2014, President Museveni said its turnover would be \$350 million as year. The following month, the Uganda government was reported as claiming that the project would 'generate' \$350 million a year. Reports in China Daily state that, according to the company, the project will generate an annual net profit of \$81 million. President Museveni claims that earnings from this investment alongside money earned from oil will be used to create sustainable wealth for Uganda through investment in infrastructure development, agriculture and human capital development.

The government stated in December 2015 that it has 'put in place a favourable fiscal regime' for the project. It has, for example, exempted the company from paying value added tax and import duty during the construction phase of the project.

The government states that it has given Guangzhou a mining lease for 21 years, renewable for a further 15 years. In addition to a phosphate plant, the project also involves a sulfuric acid plant, a steel plant and a power plant. The fertilizer plant is reported to have capacity to produce at least 300,000 tonnes of phosphate fertilizer a year, while the steel mill is expected to produce 300,000 tons of steel a year.

Social and economic impacts

People affected by the project are overwhelmingly subsistence farmers who have small holdings of around two acres and use simple farming tools such as hoes and pangas. The economy of Tororo is dependent on agriculture, which employs 80 per cent of the population.

The Economic and Social Impact Assessment (ESIA), dated April 2014, points to a number of serious potential project impacts. It states that ‘the major impact is the loss of crops and the land itself. Being a fertile area, the persons affected are likely to become more vulnerable as they will lose their source of income’. Indeed, it states that ‘the land acquisition activities are likely to affect a huge number of people, their expectations are high and they look at the company with a lot of mistrust’.

The ESIA also notes that:

‘On the whole, local leaders and community members are receptive towards the project hoping to get social, economic, gender, public health and environmental benefits... However, on the other hand, there are fears of negative impacts especially uncertainties over land matters and pollution’.

The ESIA adds that:

‘The socio-economic characteristics of community members suggest that most are vulnerable to social and economic changes... Residents are likely to be susceptible to the negative impacts that may emerge after or during the implementation [of] the project activities’.

For these reasons, the ESIA states that mitigation measures need to be implemented diligently.

The first phase of the project involved the company acquiring 600 acres of land, where mining areas have been secured in Aburi-Opedede and Aburi Rubongi. Some 122 households were compensated and relocated - 19 households in Aburi-Opedede village and 103 households in Aburi Rubongi. This acquisition of land was preceded by a survey and Area Land Committees being put in place in the affected sub counties (Osukuru and Rubongi). The survey states that a total of 1,500 households are to be relocated by the project, involving 900 from Osukuru Sub County and 600 from Rubongi. Interviews suggest that displacements may actually be greater than this, as the project expands.

The project paid compensation according to government standards. While the precise figures could not be ascertained, community members interviewed reported payments to have been between Shs 30-35 million per acre (approximately \$10,000 per acre). Other assets on the land such as houses, trees and crops were also considered for compensation, though it is not known what was paid for these. Interviewees also mentioned a ‘disturbance allowance’ of Shs 500,000 (around \$150) for attending consultation meetings in Tororo. Guangzhou’s Assistant Area Manager said that compensation was done using government valuers and included crops, trees, houses, fences, land and all immovable property. She also said that, prior to resettlement, communities had been sensitized by a team that included district and central government officials with an inter-ministerial committee that was chaired by the minister for energy and mineral development.

Compensation has benefited those that were long sighted, with some people using the money to start businesses, others to buy livestock like cows and goats, others land in urban/peri urban areas and some to construct units for renting. Others bought motorcycles for transport businesses (boda boda) and cars. The relocated people visited were all staying in decent permanent houses that they had constructed using funds from compensation.

Very few of those relocated bought rural land; most opted for small plots in urban and peri urban areas. Probably over 90 per cent of people relocated are no longer relying on agriculture as their source of livelihood, since most did not acquire land large enough to produce food to sustain their households. Thus they moved away from agriculture as their main source of livelihood, a great shift that required considering alternative options and the possible implications. However, the relocation process did not involve adequate preparation on this and did not provide training on alternative sources of livelihood or financial literacy training and business skills, as is sometimes undertaken in some relocation processes.

Thus most people moved in ignorance, without ensuring a reliable source of income to sustain them in future. This has meant that most people have spent their compensation money and now have no alternative livelihood. Some are now smashing stones for survival, working on other people’s farms or working in a local cement factory earning Shs 3,000-4,500 (approximately \$1). Some others have taken to artisanal mining of rocks in the area being taken over by the investor, in the absence of having adequate land for farming.

Lack of livelihoods

Most relocated families bought small plots of land amounting to a quarter to half an acre, which is too little to grow enough food to sustain their families. One woman who was relocated previously had four acres of land but now has half an acre. Previously, each season gave her harvests of about 4 bags of maize, 3 bags of cassava and one bag of beans which would sustain her till the next harvest. Now, she relies on buying food due to support from one of her sons working in Kampala who sends here money. Two of her sons at home have to hire land for growing food.

Another woman, who was resettled from Aburi Rubongi, worries about the future for her children. She has 10 children to educate but keeping them in school and feeding them is now a challenge. The land she had before was big enough for livestock farming from which she would sell cows, but she can no longer keep animals on the smaller land she now has. Her family now sometimes sleeps hungry.

Community members interviewed also said they were in effect made to sign documents to relocate in an intimidating atmosphere amidst heavy police deployment. Those who could not read were not helped to do and neither was it explained to them what they were signing. Many people said they thought they were giving up their lands for 21 years and would then get their land back, but now know that they have given it up completely. Those relocated also expressed dismay at having agreed to the government survey on the condition that they would be given land titles to use to negotiate with the investor; but these land titles have never been provided. The Area Land Committees have decided to take this issue to court.

The relocation process has also led to changes in the local land market as other nearby communities learned about more people requiring land. The demand for land raised the price, making it difficult for those resettling to acquire the same amount of land that they had vacated. A further major problem is that the sub counties earmarked for the project are the most fertile in the district and have traditionally been its food basket; thus the relocation process has reduced land available for agricultural activity. Agricultural activity in the area has been reduced even further due to the prospect of future relocation. Those due to be relocated have stopped planting long term crops, like cassava, a staple food in the area that takes 1.5 - 2 years to mature. This is resulting in cassava shortages and increases in prices.

Since many more people will be relocated, the project will have an even greater impact on the livelihoods of the people of the area. The families to be relocated fear losing fertile land and are unsure if they can secure alternative land that is equally fertile. Some people said that while their current land provides 10 bags of maize, other land is likely to provide only 5-7 bags. Many people are faced with a choice of either finding farm land that is not as fertile as what they had, or a complete exit from farming.

As with many other relocation processes in Africa and other developing countries, the impact on local livelihoods can be profound, and the solution is not simply to provide adequate compensation. The fundamental changes being wrought by the project for people currently relying on farming requires capacity building interventions on alternative livelihood options which have not been incorporated in the resettlement process. Community members interviewed mentioned that, given what they have seen of the situation of those relocated, they are opposed to relocation and do not want the company to acquire their land.

The government and company have recently said that around 1,200 local people would get jobs although the ESIA mentions 1,000. However, the ESIA also states that 'most community members are likely to be employed as casual labourers and mainly in the construction phase'. Thus the project may not contribute greatly to large-scale employment in the area. Media reports have noted that the phosphate factory is expected to employ about 100 Chinese workers.

The community members interviewed recognised that Guangzhou pays more than some other local employers – around Shs 8,000 (about \$2) per day compared to \$1 a day offered in local cement industries. However, community members noted that the company appears to prefer hiring Ugandans from other districts and so were critical of the limited employment opportunities.

The jobs and local spending by the company are also likely to stimulate other local business and employment opportunities. Fertilizer production is expected to promote improved roads within the vicinity of the factory and mining area, markets for local products, and the development of local services businesses. The government has said that the company will promote corporate social responsibility (CSR) by investing in schools, hospitals and other public welfare projects. However, our research found no evidence of CSR projects having yet been promoted. While some people in the community hope that roads will improve in the area, the ESIA states: 'a number of access roads will be constructed to support the sector, however, these will mainly be used by the company to transport their products'.

Guangzhou was, however, reported by community members to have installed a water tap outside their office which the neighbouring households in the village where their offices are located (Aburi 'C' village) were allowed to use, enabling some households to access safe water. The company is also reported to have offered 20 scholarships a year to Ugandan students to train in China in oil and gas production, management, agriculture, engineering, and mining among other areas.

Uganda's fertilizer policy environment

One of the rationales for the project is to develop Uganda's own production of fertilizers for export in the region, and increase the use of fertilizer by Uganda's farmers. Uganda currently imports all its fertilizer, at great cost. LV Weidong, the president of Guangzhou, has also said that the project would provide affordable fertilizers to Uganda's farmers, which would improve productivity and income.

The government has long considered the production of phosphate fertilizers to be a national development priority. It has developed a National Fertilizer Subsector Development Strategy and Investment plan, whose goal is to increase farm level fertilizer use from the current national average of 1 to 50 kgs of nutrients per hectare per year by 2019. The strategy identifies four priority actions: increasing demand and use of fertilizers; enhancing supply and distribution of quality fertilizers; creating a conducive fertilizer business environment; and generating and appropriately managing fertilizer knowledge. Fertilizer use in Uganda is low, at around 5 per cent of the level in neighbouring Kenya and 12 per cent of Ethiopian consumption.

Yet promoting fertilizer is increasingly controversial in light of the costs involved for farmers, especially smallholder farmers, and the environmental impact. Soils and the environment are polluted by the use of chemicals. Some 30-80 per cent of nitrogen applied to farmland as fertilizer escapes to contaminate water systems and the atmosphere. In developing countries, vast areas of cropland, grassland and forest have been lost or degraded due to over-intensive cultivation and excessive use of chemical fertilizer. Some estimates are that, in Uganda 45 per cent of the farming land has lost its soil fertility due to poor practices and other environmental degradation factors. Chemical-intensive farming is also a major contributor to climate change. Nitrous oxide (N₂O) is released mainly by using nitrogen fertilizers in soils while carbon dioxide (CO₂) is emitted in the production of fertilizer (among other ways).

For small farmers to benefit from the increased availability of fertilizers requires good extension services to advise and train farmers on the optimal use of fertilizers.

However, due to large cutbacks in spending on extension services in Uganda in recent years, it is now likely that few extension workers in Uganda now have much expert knowledge on fertilizer application. Farmers have been left with little guidance on appropriate agriculture practices, a major challenge in the face of declining soil fertility and crop productivity. Interviews with district environment and agriculture staff in Tororo and literature reviews revealed that government is not providing farmers with timely and relevant extension services as on, for example, when to plant, the most appropriate seedlings, how to plant, and on the appropriate use of organic fertilizers and manure as opposed to the chemical fertilizers.

One key danger represented by the project is that, if it does succeed in increasing the availability of fertilizer to farmers, that this will lock Uganda into a dependency on them and distract the country from promoting agro-ecological farming that is likely to benefit smallholder farmers more.

The research concluded that the government and company should:

- publish the Mineral Agreement for the project, showing its fiscal and other terms
- publish details on how much Uganda can be expected to earn from the project
- support those already relocated by providing training on financial literacy and business skills to enable them to establish alternative livelihoods
- ensure that any future resettlement promotes the free, prior and informed consent of all those affected and provides training on financial literacy and business skills to enable people to establish alternative livelihoods

Further independent research should be undertaken on the previous relocation process to establish how agreements came about and how fair these were and to provide lessons learned for future resettlement

The government of Uganda should also:

- invest more in ensuring that its extension service is able to provide good advice to farmers on the use of fertilizer.
- However, it should not see increasing use of chemical fertilizer as a priority for smallholder farmers; instead, it should prioritise and invest more in agro-ecological farming.

2.3 A Chinese sisal farm in Tanzania

The aim of this research was to critically appraise a Chinese sisal farm in Morogoro District, in terms of its development impacts and to assess whether the investment optimally contributes to local economic development and the welfare of the people in the locality. It finds that the company generally has positive local impacts, especially in creating employment, stimulating local economic development and through some voluntary community development initiatives. At the same time, however, many workers also complain of low wages and poor housing conditions.

The sisal farm, located in Kilosa district and Rudewa township, is owned by the Chinese government's China National Agricultural Development Group which established the China Africa Agriculture Investment Company (CAAIC). The farm is therefore known as CAAIC Tanzania or the CAAIC sisal farm. It is known as the Rudewa and Kisangata Estates: the Rudewa Estate has a total land area of 2,892 hectares of which 1,218 hectares are planted with sisal. The Kisangata Estate amounts to 3,060 hectares, of which 530 hectares are planted with sisal, with much of the rest being foothills/swamp land. The major business of the estate is sisal plantation, processing the sisal to fibre and selling (exporting) the fibre in bales of about 200 kilogrammes. The farm has produced around 14,000 tonnes of sisal during 2000-15. Around half of the farm's sisal fibres are exported – mainly to China with some to Saudi Arabia – while the remaining half is sold in Tanzania for local processing.

In terms of farm management, Chinese occupy positions of Board Chairman, Managing Director and project managers for Kisangata and Rudewa estates, while the highest management position held by a Tanzania is the Finance and Administration Manager. The farm employs 414 people, of whom 128 people are in permanent positions and 286 are casual workers. They carry out a series of physical tasks ranging from harvesting, transport, processing (decortication), sun drying, polishing, threading, and warehousing, and are mostly paid on a piece meal basis.

The provision of 414 direct jobs is significant in this rural area, which is probably generating many more jobs (The rule of thumb is that for every one direct employee, there are normally three indirect employees; this implies that 414 employees are creating about 1,242 indirect employees). In Rudewa, these would include people employed in shops, market stalls, bars, farms, gardens, food vending etc who serve the direct employees as well as people employed by the permanent employees themselves (such as house girls and boys and workers in the employees' businesses). Thus the farm might provide employment for around 1,656 in total. According to the Finance and Administration Manager, the company pays a total of about Tshs 500 million to low cadre workers who spend most of the money in the nearby villages.

Workers have a trade union which is affiliated to the Tanzania Plantation and Agricultural Workers Union (TPAWU). However, working conditions were reported to be poor, especially for those lower down the scale. They complained about various issues, notably low wages and their complaints not being heard and acted upon by management. Workers especially complained about living in camps of very poor quality with cracks, no electricity, very small (two bedrooms for family and single room for singles) and some with dilapidated toilets.

It was explained by the management that the challenges related to the camps have been noted and that \$800,000 has been set aside to construct new houses for these workers.

The research found that the farm pays a low rate but which is more than the government's minimum wage. Wages are paid on contract between TPAWU and the estate, and casual workers are paid Tshs 120,000 per month (\$55) which is above the government's minimum wage of Tshs 100,000 per month (\$46). Wages are based on participatory negotiations every two years. TPAWU is represented by its members (two each from each sisal farm representing the 34 farms in Tanzania). When there is agreement in negotiations, the agreements are signed and registered with the labour commissioner.

The company's current level of investment is \$12 million. It had a turnover of Tshs 3.4 billion in 2014, from which it made profits of Tshs 140 million. The company pays various taxes, including the Skills Development Levy (SDL), corporate tax and Value Added Tax (VAT) to the central government, and licenses and the service levy to Kilosa District Council. The company stated that it paid Tshs 360 million (about \$165,000) in taxes in 2015 and Tshs 32 million in 2013.

The company said it spent Tshs 71.1 million in 2014 and Tshs 66.2 million in 2013 on community development projects at Peapea village. The village leadership approached the company to request for bricks to construct a small village office. The company instead built a huge modern office and training centre where villagers are trained on various best agricultural practices and entrepreneurship. Professors from China often visit the centre to provide their expertise. Some agricultural groups have formed which are able to receive credit as an answer to the problem of limited access to finance; this is supporting some entrepreneurial activities in the area. Villagers have also been trained on the use of sisal by-products to make local mattresses. However, the company has not, as far as is known, provided anything to the other three villages surrounding the farm - Rudewa Buyuni, Rudewa Batini and Rudewa Gongoni.

Our research found that the local community, especially in Peapea village that has been supported by the farm, was generally happy with the presence of the company, and regard it as contributing to local economic development. The incomes earned by company employees and the indirect jobs being created are stimulating local economic activity. However, most purchases by the company are not made in Rudewa but in bigger towns such as Morogoro and cities such as Dar Es Salaam. Therefore there is little contribution of the company to local businesses by way of its procurement spending.

The research concluded that the company should:

- Revise its pay scales upwards
- Ensure that workers are provided with adequate housing
- Do more to procure the maximum of the company's procurement spending locally, in order to support local businesses more
- Set a website to provide key information on company activities

2.4 Concluding comments on the case studies

The three case studies highlight the diversity of Chinese agricultural investments in Africa. They also highlight varying impacts. In the case of the agricultural technology demonstration in Zambia, the training provided is welcomed by local farmers but smallholders and District agricultural staff play little or no role in the design of programmes and the centre's focus on mushroom production does not appear to stem from government priorities. Despite women constituting the majority of Zambia farmers, the centre has no focus on supporting them.

The impact on smallholder farmers is also ambivalent in the case of the Osukuru fertilizer project. While reasonable compensation has been paid to those relocated, this was not accompanied by a process to help people develop future livelihoods. The project's overall impacts are also unclear due to a lack of transparency – full project details have not been made public, making it impossible to judge what the actual financial and other benefits for the country might be. Without improved extension services being provided to farmers, it is unlikely that smallholders may truly benefit even from the increased fertilizer production that the project is meant to bring.

By contrast, the sisal farm in Tanzania generally has positive local impacts and is welcomed by the local community, providing important local job opportunities and stimulating the local economy. Here, though, there remain issues of labour rates and working conditions.

Overall, it can be concluded that transparency is key. Little has been known about the first two of these projects until now (whereas the sisal farm has been the subject of some previous investigations) and it is vital for public authorities to insist that all agricultural investments are opened up to public scrutiny. At the same time, these authorities also need to ensure that local people, notably smallholder farmers – and even more notably, women smallholder farmers – are fully consulted on new projects and play a key role in their design. Promoting the concept of free, prior and informed consent is vital in these cases.

3. Impact, opportunities and concerns.

Few independent evaluations have been conducted of Chinese, Brazilian and Indian investment programmes in Africa, making them hard to assess properly. However, a review of the literature points to four main areas of concern, several of which reinforce the concerns highlighted in the case studies in the previous section:

- Land grabs and large-scale investments
- The transfer of technology
- The promotion of agribusiness interests, notably in hybrid seeds, agro-chemicals and ethanol
- Alignment with the interests of African governments and smallholder farmers

3.1 Land grabs and large-scale investments

There have been widespread concerns that China, Brazil and India are involved in land grabs in Africa. As noted above, some reports have exaggerated the amount of land to be used in projects while several whole proposed projects have failed to materialise. Thus land grabs are not a generalized feature of Brazilian, Chinese and Indian investment in African agriculture. However, several current large-scale land investments do raise major concerns, notably with Brazil (in Mozambique and Ghana) and India (in Ethiopia) but also with China, and some of these investments can be regarded as land grabs.

Brazil

As regards Brazil, it is the **Prosavana project** that has become the most controversial and widely discussed. Initiated in 2011, Prosavana is aimed at increasing production in the Nacala corridor, a 14.5 million hectare area in central and northern Mozambique, some of which land has agricultural potential similar to Brazil's savannah. In the first phase of the project, the Brazilian government's agricultural research agency, Embrapa, is training extension workers and staff at Mozambique's Institute for Agricultural Research, with as many as 16 Embrapa specialised research units involved.

The programme will then involve an integrated agro-industrial strategy for developing the Nacala corridor, in which private agribusiness firms will play key roles. There are currently no confirmed Brazilian (or other major) investments in the project but the expectation is that these will emerge. ProSavana is targeting a region whose principal strategic economic importance is as an export corridor for the output of Brazilian mining operations in landlocked Tete Province, where Brazil's giant mining company, Vale, has a major coal project.

Opposition to Prosavana has been widespread and led by organisations such as the União Nacional dos Camponeses (UNAC), the most important local farmers' organisation, and Justiça Ambiental (JA), the Mozambican chapter of Friends of the Earth, which argue that this project will benefit only the big agricultural companies rather than small-scale farmers, who may simply end up as employees of large-scale projects. In 2013, a group of NGOs criticised Prosavana for starting 'quick impact projects' without an Environmental Impact Assessment Study ever having been carried out, publicly discussed and approved, despite the fact that this is an essential requirement of Mozambican legislation in projects of this size. The NGOs fear is that export monoculture farming of maize, soybean, cassava, cotton, sugar cane, etc., controlled by multinational corporations and multilateral financial institutions, will destroy family farming systems:

'ProSavana is a tool for creating optimal conditions for multinational corporations to enter the country, which will inevitably rob rural families of their autonomy and disrupt the small-scale food production systems, which could cause the emergence of landless families and increased food insecurity'.

The NGOs called on the Mozambican government to promote an inclusive and democratic dialogue on the project.

While the Mozambican government is strongly backing the project in a triangular partnership including Japan and Brazil, it was in reality the partnership between the latter two which initially proposed the project; Mozambique was subsequently identified as the third party and beneficiary.

Another controversial Brazilian investment in Mozambique, also in the Nacala Corridor, is by AgroMoz, although there are very few sources of information. AgroMoz has set up a soybean production operation over 3,000 hectares and involves a partnership between Grupo Américo Amorim of Portugal, a holding company of Portugal's richest man (Américo Amorim), and Intelec, in which the former president of Mozambique, Aramando Guebuza, has interests; the Pinesso Group of Brazil, which operates large farms in Brazil and Sudan, handles the agricultural operations, but it is not clear if it also owns a share in the company. Reports note that over 1,000 farmers were removed from their lands by the company in 2012, given minimal compensation (ranging from \$65-200) and now find themselves without adequate farming land. One report also notes that, after beginning soybean production, the company started aerial spraying of pesticides, which caused respiratory problems for families living nearby and the loss of some crops.

In Ghana, the Brazil Agro Business Group has since 2008 been operating a rice project in the Volta Region in a lease covering 5,000 ha, of which some 500 ha have been developed with irrigation facilities. Research by Kojo Amanor notes that the company has developed an effective system of irrigation based on creating canals with simple equipment and manpower that utilises contour gravitation with minimum pumping of water. The major innovation that the project claims to have introduced is a system of germinating rice within sacks that are soaked in water before they are transplanted, which enables rice to be harvested in 110 days or three times a year in Ghana. The company claims to achieve a yield of about 5 tonnes per hectare per year and employs 160 workers.

However, the company is also involved in disputes with neighbouring communities over this land. It acquired the 5,000 ha from Biofuel Africa, a Norwegian company involved in jatropha cultivation, but some local people dispute the company's right to this land and have made claims to it. Around 600 farmers reportedly lost their land to make way for the rice farm and the case is now in court. Some people claim they are now forced to seek employment with the company, as a result of a lack of viable alternatives, and claim that the working conditions and pay at the company are unsatisfactory.

India

Indian companies' acquisition of agricultural land is even more controversial, at least in Ethiopia, where most Indian agricultural investment has been concentrated. The Ethiopian Government leased at least one million hectares of land for agricultural investments during 2005-12, in which the main investors are Ethiopian but 9 of 31 approved projects are by Indian investors, more than from any other foreign country. Other estimates are that Indian companies have acquired over 600,000 ha of land in the country to grow palm oil, cereals, and pulses, as outlined in the following table.

Table 4: Large-scale Indian private investments in Ethiopia

Company	Size in ha	Crops	Land Lease Rate
Karaturi Global	300,000(100,000 in the first phase, 200,000 in second phase)	Palm Oil, cereals, pulses	20 birr/ha for 50 years
Emami Biotech	100,000	jatropha and edible oil seeds	
S&P Energy Solutions	50,000	Biofuels, edible oil crops	143.4 birr/ha for 50 years
Shapoorii Pallonii	50,000		
Amidha	28,000	Sugar	
BHO Agro Plc	27,000	Cereals, pulses, edible oils	111 birr/ha for 50 years
CLC Industries	25,000	Cotton	665.85 birr/ha for 50 years
Ruchi Soya	25,000	Soya beans	111 bir/ha 25 years
Sannati Agro Farm Enterprises	10,000	Rice, cereals, pulses	158 birr/ha for 25 years
Whitefield Cotton Farm	10,000	Cotton	158 birr/ha for 25 years
Vedanta Harvests	3,012	Tea and allied crops	111 birr/ha for 25 years
Total	628,012		

Source: 'FAQs on Indian Agriculture Investments in Ethiopia', undated, <http://www.oaklandinstitute.org/faqs-indian-agriculture-investments-ethiopia>

Large-scale land deals in Ethiopia are portrayed by the government and investors as a win-win, modernising agriculture, bringing new technologies and creating employment. But research by the Oakland Institute finds that most investments are producing non-food export crops. Worse still, some of the investments are taking place in areas in which the Ethiopian government is using its villagisation programme to forcibly relocate around 1.5 million indigenous people from their homes, farms and grazing lands to make way for agricultural plantations. In addition, Indian investments generally take place in regions where the government offers extra tax incentives, which can deprive the country of valuable earnings. Many of the investment contracts have clauses stating that they will enjoy special investment privileges, such as exemptions from taxation and import duties on capital goods. Indian companies are also afforded legal protection against nationalisation of their investments and other benefits under a bilateral investment treaty signed between Ethiopia and India in 2007.

Fieldwork by Dessalegn Rammato in Gambella and Bako woredas on Indian companies including Karituri, Ruchi, BHO, Sannati, Lucky Exports, found that these projects pay very low wages and hold local employees in low esteem, often treating them disrespectfully. The research also found that some projects use poor farming practices, in part because of lack of knowledge of local conditions, about which management is unwilling to seek information from employees or other knowledgeable people in the community. Moreover, the study noted:

‘The most visible outcome at present is the reconcentration of land in the hands of a small group of domestic moneyed elites, foreign capitalists and state bureaucrats. In a way, the programme of land investment will return the country to the time of the imperial regime, when a minority of propertied elements – landed nobility, local gentry and urban bourgeoisie – owned the greater portion of the country’s agricultural land’.

The contract agreements with the companies place few obligations on investment projects. There are no provisions in the contracts aimed at meeting the food security needs of the country. On the contrary, investors are free to choose what crops to grow and where to market them and are not obliged to supply the local or national market: indeed, they are encouraged to export most or all of their products. Rick Rowden, who has reviewed the contracts made public by the Ethiopian authorities, notes that the contracts’ terms suggest that the Indian companies are being given everything and being asked for very little in return that would benefit Ethiopian small scale farmers or workers or would safeguard the environment. There are virtually no limits on groundwater use or environmental pollution, or obligations relating to labour, wages or working conditions, transfers of technology or purchases of local goods or services.

Neither are investors obliged to provide social services to local communities or to invest in basic infrastructure. In addition, many of the land deals were conducted and property transferred without consultation or consent, meaning that the entire investment process lacks transparency and accountability. Neither are investors generally promoting technology transfer; the projects are operated using a high level of technology, but this is not transferable to or affordable for smallholders. Dessalegn Rammato notes that:

‘It is thus paradoxical that the government of one of the most vulnerable countries in the world is handing out vast land and water resources to foreign investors to help the food security efforts of their home countries, or to gain profits for their companies, without adequately safeguarding or taking into account the food security needs of its own people’.

India - and China - are also involved in the Ethiopian government’s controversial expansion of its sugar sector, in which the government is building no less than 10 new sugar facilities across the country. Human Rights Watch has documented the possible impacts of these expansion plans. In the Lower Omo Valley of southern Ethiopia, the government is building a massive hydroelectric dam, known as Gibe III, on the Omo River in order to promote large scale irrigated agriculture for sugar production. Human Rights Watch notes that this is threatening the delicate ecosystem and way of life of the 200,000 people from eight indigenous groups who rely on the 760 kilometre-long Omo River for growing crops and replenishing grazing lands. Its research suggests that

‘Ethiopia’s government is forcing indigenous residents of the Lower Omo from their ancestral lands, using harassment, violence, and arbitrary arrests, to make way for large-scale irrigation schemes linked to Gibe III... There is a real risk that the livelihoods of 500,000 people may be endangered, tens of thousands will be forcibly displaced, and that the region will witness increased inter-ethnic conflict as communities compete for scarce resources.’

While government sources indicate that the sugar plantations will create more than 150,000 full-time and part-time jobs, existing residents will be resettled and will need to find alternative livelihoods.

Both India and China are helping to finance these projects. India’s Exim bank, a government financial institution, has provided a \$640 million line of credit to the Ethiopian government for this sugar expansion – a credit line that commits Ethiopia to import 75 per cent of the goods and services, such as consultancy services, from India. The Industrial and Commercial Bank of China (ICBC) approved a loan worth \$500 million for the Gibe III Dam in 2010 while in 2012, the China Development Bank signed a memorandum of understanding with the Ethiopia Sugar Corporation for another loan of \$500 million for the construction of sugar factories in the Lower Omo Valley.

Indian agricultural investments have also been the subject of criticism in other countries, although much less so than in Ethiopia. In 2012, for example, the Kenya Revenue Authority determined that Karuturi Global, a company which had previously acquired large areas of land in Ethiopia, and which had once been producing close to a million roses a year at its Naivasha farm for the European market, failed to pay US\$20 million worth of taxes due to transfer mispricing related to its Naivasha operation.

In 2013, the company was taken to court in Kenya for failing to pay its creditors. Some 3,000 unpaid workers went on strike. In early 2014, the Kenyan courts determined that Karuturi was bankrupt and put the flower farm in receivership.

China

Chinese investors are involved in several projects which have been the subject of recent critical reports.

In 2009, the Malian government signed a deal with China Light Industrial Corporation for Foreign Economic and Technical Co-operation (CLETC) to establish a new sugar project - called New Complexe Sucrier Du Kala Superieur SA (N'Sukala) - on 20,000 ha of land in the Office du Niger region. The plant was completed in 2012, but some reports suggest that construction started before the Economic and Social Impact Assessment was completed or villagers notified of the agreement.

Some farmers who lost land have reportedly not yet been given compensation. Prior to clearing, the land was used for grazing, firewood collection, and dry cereal cropping.

In Nigeria, a company called Green Agriculture West Africa Ltd (GAWA), grows 400 ha of rice, conducts research and breeding for hybrid rice and promotes an outgrower programme in Warra, Ngaski Local Government Area of Kebbi State. The company was formed by China Geo-Engineering Construction Overseas Corporation Nigeria, a Chinese engineering contractor operating in 10 African countries. Reports suggest that a number of farmers (ranging from 1,000 to 5,000, according to different sources) have been displaced by GAWA's operations while being paid minimal or no compensation. Many farmers have reportedly been forced to migrate to alternative farmlands in neighbouring Niger state where they produce much less than on their previous land. One of the affected farmers, Malam Shehu Yauri, told a Nigerian journalist: 'Government did not consult us before taking the decision to lease out our farmland and the government at that time neither provided alternative farmland nor paid adequate compensation to us'.

One Chinese investment that has been the subject of some case study fieldwork is that by the Wanbao Africa Agriculture Development Ltd in Xai-Xai district of southern Mozambique. The Hubei Gaza Friendship Farm was established in 2007 and has been managed by Wanbao since 2011, after the company received a concession of 20,000 ha for 50 years. As of 2014, Wanbao was reported to be using around 7,000 ha to grow rice and maize. According to its 2013 annual report, the China Development Bank considers Wanbao to be China's largest agribusiness project in Africa. By the end of 2013, the Bank had disbursed \$20 million for this project and in 2013, a further \$10 million was granted through the Fund for Cooperation between China and the Portuguese-speaking countries. Reports suggest that Wanbao has implemented an extensive irrigation system with channels, roads, bridges and ploughed land which previously was mainly wasteland, and employs 1,340 people, of which 500 are Chinese. Mozambican authorities maintain that the project positively benefits local livelihoods by creating employment, facilitating technology transfer and increasing agricultural productivity.

But some other reports suggest that the project is in effect a land grab and serves only the needs of elites and Chinese investors, failing to benefit local populations. An NGO based in Xai-Xai, FONGA, has been quoted as saying that thousands of farmers have been displaced by the project (figures vary wildly, from 80,000 to 38,000 to 1,000 families). Research for the Ecologist in 2013 found that the project had had a 'massive social impact, causing displacement and restrictions over a huge area, affecting not only Xai-Xai city itself, but a great number of villages whose inhabitants are all subsistence farmers'. Farmers had lost land on which they depend for their livelihoods while land given in concession to Wanbao was provided at the derisory sum of \$1 per hectare on a 50-year lease, with the option to renew for another 50 years. Consultation was minimal, and people were basically informed of what was going to happen, without having a say, according to the Ecologist. Furthermore, the project was found to have not been subject to the required Environmental Impact Assessment, despite being operational for over four years.

FONGA has also voiced concern that the project's water usage would be likely to contribute to drought in the Lower Limpopo Valley. Wanbao was also accused of failing to transfer agricultural technology and knowledge to the local farmers, instead providing farmer training at unaffordable prices and of not respecting local labour laws by paying salaries below the minimum wage, terminating contracts unilaterally and without explanation and obliging workers to work extra hours without being paid. The project has given rise to tensions and conflict. In August 2013, for example, a group of around 400 local farmers armed with blunt weapons took to the streets to protest against the Chinese project, bringing Wanbao's activities to a halt. Police intervened to break up the demonstrations.

Another Chinese project subject to critical analysis is the Hanhe Farm, a small operation located in the Nakaseke Administrative District of Uganda, which is the first private Chinese land-based agriculture enterprise in Uganda. Research for Johns Hopkins University concluded that:

'The research findings demonstrate how the political and economic interests of international and national elite converge through formal and informal networks to access resources in violation of local communities' social and ecological rights. It highlights governance failures that precipitate ecological destruction, entrench power imbalances, and promote marginalization of local communities'.

The research noted that the Hanhe Farm covers 400 acres and employed 21 staff as of 2014, and is managed by Hanhe International Company, which is owned by Qiu Lijun, said to be a member of the Chinese Parliament. The farm sits on public land which, before its establishment, was used by the community for grazing, fishing, harvesting of reeds for making mats and roofing houses, and for harvesting clay soil for brick making. In 2004, a wealthy Ugandan private investor acquired the lease for the land, promising to compensate existing tenants but research by Josh Maiyo found that only half of the occupants were actually compensated. Complaints from local residents have also focused on potential environmental degradation arising from the farm's activities, such as excavation, digging of drainage trenches, and diversion of the river.

Community residents have expressed fears that these activities could reduce the volume of water available for farming and pastoralism. Research also found that the farm had been operating for almost three years without the mandatory wetland user permit, which was issued only in 2013. The farm was also required to carry out an Environmental Impact Assessment but this has also not been done. Interviews showed that lease permits for the land were completed without consent from the local District Land Board, which is mandated to oversee the administration of public land within its jurisdiction.

3.2 Promoting agribusiness: hybrid seeds, chemicals and ethanol

There can be little doubt that Brazilian, Indian and Chinese investment and cooperation programmes are substantially about promoting agribusiness interests. While this may sometimes dovetail with the needs of African smallholder farmers, there is surely no guarantee of this, and therefore a number of concerns arise.

China's agricultural technology centres promote Chinese technology in Africa, notably seeds and agro-chemicals, the introduction of Chinese companies to Africa and more trade opportunities. In particular, **hybrid seeds** are being heavily pushed by China through the Centres. It is claimed that these are benefitting farmers by demonstrating large yield increases. For example, the China-DAC study team note that in Tanzania, with intensive use of fertilizers and access to water, yields on some Chinese hybrid rice varieties promoted through the Tanzanian Centre have reached 12 tonnes per hectare as compared to 4.5 tonnes using local varieties (with average rice production in Tanzania being about 2 tonnes per hectare).

Hybrid seed varieties (produced by cross-pollinating plants) are regularly touted as a solution to Africa's food productivity 'problem'. Yet hybrid seeds, which are often produced and patented by agribusiness corporations, are often expensive for small farmers and can lock them into a requirement to purchase seeds every year. Hybrids may offer yield advantages, but do not always, and only do so in the right conditions, such as when coupled with continuous use of chemical fertiliser (which also has to be purchased), irrigation, larger areas of land and mono-cropping – thus they are suited to the kind of large-scale, high-tech, plantation-style agriculture that is associated with the Green Revolution.

A positive alternative to a focus on patented/hybrid seed is to promote seed saving and indigenous public seed banks, but this is not a priority area for Brazilian, Chinese or Indian investment or cooperation projects. A recent study notes that Brazil is alone among the three countries in experimenting with non-profit driven models of seed sector development. But even this is limited to just one project. In 2011, the Brazilian government backed a knowledge sharing initiative between Brazilian civil society groups and Mozambican and South African farmers which helped implement seed banks for family farmers, explicitly using indigenous seeds. Otherwise, Brazil has, like China and India, promoted market-led seed systems in Africa.

Seeds are big business for Chinese, Brazilian and Indian firms. In 2012, China climbed to 10th place in the international seed trade with US\$251 million worth of exports; Brazil was 14th with sales of US\$165 million and India 26th with exports worth US\$67 million. China maintains a strong comparative advantage in hybrid rice seed technology, but heavy competition in home markets is driving producers overseas.

Thus Chinese seed companies are seeking new markets in Africa, where they have so far made few inroads compared to major US multinationals that are gaining control over existing African seed companies. Expanding markets for hybrid rice are a key interest of growing Chinese agribusiness in Africa. In recent years, China has established numerous overseas hybrid rice programmes around the world, as part of its international cooperation, and these activities are almost always led by private Chinese seed companies. Countries where China operates hybrid rice training programmes include Cameroon, Guinea-Bissau, Liberia, Madagascar, Mali, Mozambique, Nigeria, Sierra Leone, Tanzania and Uganda.

It is unclear how many Chinese seed companies are currently operating in Africa but they are now increasingly marketing themselves through China's agricultural technology demonstration centres in Africa. The Centres promote companies' seeds within their own training programmes and set up stalls in local agricultural trade fairs. In a recent online article, the company Chongqing Zhongyi Seed Co. Ltd praised the Tanzanian Centre in a trade fair where its rice and maize seeds were on sale next to examples of the produce from the Centre's demonstration farm, using Zhongyi's seeds. The article concluded by saying that these Centres are proving to be invaluable vehicles for Chinese companies' fulfilment of the 'going out' policy into foreign markets.

Promotion of Chinese hybrid rice has been shown to be inappropriate in some countries. For example, in Mozambique, China is pouring considerable resources into increasing the output of rice, even though rice is not a significant part of the typical diet in Mozambique. A study of the Tanzanian Centre by the US-based International Food Policy Research Institute (IFPRI) found that Tanzanian farmers regard the fertilizer and pesticides which accompany hybrid rice production as too expensive and do not care for the taste of Chinese rice.

As regards India, the Indian media has reported that several of its hybrid seed producers are also looking at aggressively expanding to Africa and East Asia, mostly by buying out local firms. This is driven by a lack of new market opportunities in India. The National Seed Association of India is partnering with the Syngenta Foundation India – linked to giant seed corporation, Syngenta - in the India Africa Seeds Bridge project, which aims to provide African farmers with 'better' seeds and finds new markets for Indian seed companies. Africa and India are running seed trials in Senegal for commercial cultivation; once approved, the trial data will be used for automatic approval for release of millet and sorghum varieties in 15 West African countries.

The promotion of patented seeds in Africa includes genetic modification (GM), although the extent of this is unclear. For example, the Chinese government is providing \$1 million worth of funding for a crop molecular laboratory at Egerton University in Kenya involving China's Nanjing Agricultural University. It aims to train 500 crop technologists, scientists and small-scale farmers every year but its main focus will reportedly be on genetically-modified organisms (GMOs), including gene cloning, molecular crop genetics and improvement of tissue culture.

'The lab can be used for developing genetically modified foods once we start the operations and receive clearance from National Biosafety Authority', a senior figure at Egerton University has been quoted as saying.

In 2013, India hosted a biotechnology conference with African and Indian ministers, heads of biotechnology organisations, seed industry representatives, officials and scientists, to explore future cooperation in biotechnology, among other areas. Proposals that emerged from the meeting included agreement on setting up laboratory standards for seeds and other sources of genetic materials such as plant tissues; establishing seed incubator facilities for private-sector entrepreneurs in Africa; and building Africa's capacity for seed research. A former director general of Nigeria's National Biotechnology Development Agency said that Nigerian biotechnologists were meeting India's agriculture ministry and seed company associations to build links with partners who could help Nigeria's mission to grow genetically modified cotton, based on India's success in the sector.

India is especially promoting Bt cotton. Indian firm the Lucky Group, in collaboration with the Agricultural Research Corporation of Sudan, has undertaken trial projects involving Bt cotton in Sudan. India's second-largest Bt cotton seed producer Kaveri Seed is reported as considering investments in Africa while policy makers from Burkina Faso have gone on a study tour of Indian Bt cotton farms .

Finding new markets for agro-chemical exports is also a priority for Chinese agribusiness. Chinese companies are now the largest producers of glyphosates in the world, and have largely captured the African market. China has been promoting various trade fairs in Africa seeking to sell more chemicals. In September 2015, for example, the China International Agrochemicals and Crop Protection Exhibition Africa Summit was held in Kenya, and enabled over 20 Chinese agro-chemical companies to present their products. Kenya's Pest Control Products Board had by 2014 approved the registration of 1,272 pest control products, of which around 284 (22 per cent) were produced by Chinese companies. In Ghana, over 90 per cent of agrochemicals marketed by agro-dealers originate from Chinese companies; one company, Wynca Sunshine, has established an assembly plant on the outskirts of Kumasi. Other Chinese companies have also established fertilizer plants in Ghana. Sinochem Group, one of China's four state oil companies and China's biggest agricultural inputs company (fertilizer, seed and agrochemicals), says it is 'committed to becoming China's largest and world-leading comprehensive service provider for agro-inputs'.

China's interest in exporting more chemicals to Africa poses challenges to both environmental sustainability and the farming model in Africa. China's own experience is hardly a good model. Its intensive agricultural practices increased food production and massively reduced poverty in rural areas, but this was achieved only at the cost of the heavy depletion of water and soil, partly through massive use of chemical fertilizer and pesticides. Some salient figures on this issue show that Africa should surely reject a heavy focus on increases in chemical fertilizer and pesticide use and instead prioritise promoting sustainable agriculture:

- Land degradation in China now affects 37 per cent of the country's territory ; if this process continues, crop output in north-eastern China could fall by as much as 40 per cent over the next 50 years .
- A study by Greenpeace found that, in two chemical-intensive farming locations in northern China, nearly half the amount of nitrogen fertilizer applied by farmers leached into the environment.
- Government figures show that Chinese agriculture is responsible for 57 per cent of nitrogen pollutants and 67 per cent of the phosphorous pollutants in water and that the Yangtze, Yellow and Pearl Rivers carry nearly a million tonnes of dissolved chemical nitrogen annually.
- A 2001 study estimated that the impacts of pesticides in rice farming in China causes costs of \$1.4 billion each year both in health costs to farmers and the adverse impacts on biodiversity.

Environmental concerns were not a significant part of China's dialogue with Africa until recently. In 2013, China's Ministry of Commerce and the Ministry of Environmental Protection issued voluntary guidelines that encourage companies investing overseas to follow local environmental laws, assess the environmental risks of their projects, minimize the impact on local heritage, manage waste, comply with international standards, and draft plans for handling emergencies. In 2012, the China Petroleum and Chemical Corporation (SINOPEC), which has been active in Africa, issued what was announced as the first white paper on environmental protection by a Chinese enterprise.

Brazil's primary interest in African agricultural investments has been ethanol, but little information is available in the public domain to assess the impacts of these projects. There are some exceptions, however, which highlight both positive and negative impacts. For example, the ProCana project in Mozambique was until its collapse promoted by a British firm over 30,000 hectares and involved the Brazilian company Dedini as the contractor to build the sugar/ethanol factory. This project involved displacement of local communities, the lack of actual availability of supposedly 'available' land, and an asymmetry in negotiating power between company and community even when following formal consultation procedures.

The ethanol project in **Angola** also highlights ambiguities. In March 2014, the Brazilian government notified Odebrecht, a prominent Brazilian multinational, of allegations of slave labour conditions in its sugar and ethanol operations in Angola's Malanje Province, 427kms east of Luanda. These accusations were related to the construction of a biofuel plant for Biocom (Companhia de Bioenergia de Angola), a biofuel company that is reportedly 40 per cent owned by Odebrecht and 40 per cent by Angolan company Cochans SA, which is controlled by an adviser to President Dos Santos. The company denied the slave labour allegations. But in June 2014, a Brazilian prosecutor filed a lawsuit against Odebrecht in Brazil, seeking compensation for the workers and payment of a fine. In September 2015, the court convicted Odebrecht and ordered the company to pay 50 million reais (\$13 million) in damages. Some 60 Brazilians and Angolans were found to be working under slave labour conditions. The court ruled that Odebrecht improperly lured Brazilian labourers to jobs in Angola where they were forced to work without proper visas in unsanitary work camps. Their passports were confiscated and their ability to leave the work camps was blocked by armed guards, even on rest days.

In the Biocom project, Brazilian expertise in agricultural practices, genetics and industrial equipment comprise the main elements of the technology transfer, and the project also promotes water and waste management (including recycling) and fertilizer use efficiency. Most of the technology being transferred to BioCom is already in the public domain, but some private technology is also being transferred. The project may well reduce Angola's 100 per cent dependence on sugar imports, enable exports of ethanol to European markets and create rural industrial jobs, with the ancillary social and economic benefits that entails for rural areas. However, research by Rafael Vaisman found that although 500 jobs may be created, the local population may not benefit since they lack the necessary skills. In terms of land, some interviewees feared that the expansion of the large-scale monoculture of sugar cane would reduce land available for smallholder farmers. The study recommended that local people should be more involved in project design, the use of local labour should be maximised and the company should invest in local social and environmental development.

3.3 Appropriate technology?

Technology transfer is a key feature of many Chinese, Brazilian and Indian investment and cooperation programmes in Africa. While these projects usually come with no 'policy conditionality', they are, however, normally heavily 'tied' to buying and using equipment and technology, not to mention contract workers, from these countries. Too few studies have been conducted to adequately assess the appropriateness of this technology transfer. Some projects may well be beneficial, enabling farmers to access equipment more cheaply than elsewhere, and perhaps especially useful when accompanied by technical assistance. However, the information that is available does not provide strong evidence that the technology being transferred, or the process by which it is transferred, is generally in tune with the major needs of Africa's smallholder farmers. On the contrary, much evidence and analysis is highly critical. As one recent study argues:

'The present policy environment, which is aimed at attracting FDI into Africa, is not designed to promote links between high technology based large scale commercial agriculture and the smallholder sector. The overemphasis on industrial agriculture is altering systems of land management, and this will have huge social and environmental ramifications and will further marginalise small scale farmers, herders and minority groups'.

Indian companies such as Jain and Kirloskar are selling water management and irrigation technology, while other established companies, such as Tata Group, Sonalika International, Mahindra and Mahindra, and Angelique International Limited, supply farm tractors, water pumps and irrigation technology. But there is 'little evidence to suggest that expensive infrastructure built to service large-scale commercial farming is directly benefiting small-scale farmers who cultivate at the subsistence level'.

Lines of credit provided by India are tied to the purchase of Indian goods and services. For example, the Indian Export-Import Bank (Exim Bank) extended two lines of credit to Malawi in 2008 and 2010, principally for cotton processing, at low interest rates (believed to be around 2 per cent per year). The loan financed exports from India and was indeed used to buy equipment from Indian companies, notably tractors, seed and fertilizer drilling machines and sprayers. But this deal received considerable criticism in Malawi for involving inadequate follow up for maintenance of the equipment, a lack of coordination with existing projects (for instance, irrigation pumps supplied through the credit scheme did not fit the required technology of other large donor projects), and fraud (regarding the allocation of contracts to particular firms).

Similar concerns about the appropriateness of technology have been raised in Brazil's flagship programme – **More Food Africa**, which focuses on improving farmers' access to equipment, machinery and agricultural technologies and is meant to be targeted at small and medium farmers. Sales of tractors by Brazilian firms have been a particular feature of this programme; in 2009, over 17,000 tractors were sold under the programme, making it lucrative for Brazilian agribusiness. But while More Food Africa is creating demand for Brazilian equipment, it is questionable whether it is really of benefit to African smallholder farming, which takes on place on small plots of land with use but not ownership rights, where farming is often the responsibility of women and where there is very little in the way of technical assistance. For example:

- The Brazilian government loaned the Ghanaian government US\$98 million for the acquisition of tractors which were envisaged to be suitable for farms with holdings of 20-60 hectares – this is much larger than smallholder farm plots and suitable only for wealthy farmers or for farmer associations, which are poorly developed among smallholders.

- The government of Zimbabwe was also loaned US\$98million in 2011 under the More Food Africa programme. A recent study notes that ‘considering the average size of small farms in Zimbabwe and their potential, the Brazilian model of supporting family farms through the More Food programme may not be easily transferable’. Zimbabwean farms tend to be around 2 ha in size and most are located in areas of low rainfall with frequent crop failures. Due to little land and low production, land preparation is carried out by animal draught power rather than tractors. ‘Most beneficiaries of the More Food for Africa programme could be drawn from high potential resettlement areas’ where wealthier farmers with larger land sizes live.

China’s agricultural technology demonstration centres also present a mixed picture, although so few independent studies have been undertaken it is hard to reach firm conclusions. On the positive side, several of the centres claim to be promoting big yield increases. The Centre in Tanzania, for example, claims that, using a Chinese rice variety and technology, it can produce 8 to 10 metric tons of rice per hectare, compared with 2 to 4.5 tonnes in local production, and that it produces 1-2 more tonnes of maize per hectare than is locally produced. Material from the FAO on the South-South Cooperation Programme between China and the FAO also claims various successes in bilateral agriculture projects, outlined in the following table.

Table 5: FAO material on the impact of China’s south-south cooperation projects

Country	Input from China	Impacts
Ethiopia	30 Chinese experts and technicians were sent to provide assistance on crop production, aquaculture, horticulture, livestock and agribusiness.	The Chinese team successfully introduced 52 new techniques, 8 new crop varieties and 31 pieces of agricultural equipment and tools. Demonstrations on various crop plantations, production methodologies and practical technologies were performed to enrich the crop varieties and promote their growth. As a result, millet production reached 5,451 kg/ha (a 365.9 per cent increase) and the yield of sweet potatoes increased to 429 kg/ha.

Country	Input from China	Impacts
Liberia	24 Chinese experts and technician were deployed to provide technical assistance in crop production, aquaculture, horticulture and livestock.	92 new agricultural techniques, 27 plant varieties and five pieces of agricultural equipment and tools have been introduced. The new methods and varieties have demonstrated quick results in improving food crops, livestock and fisheries. The team of Chinese experts implemented dry-bed rice nurseries and parachute transplanting techniques. The promotion of these practices reduced labour intensity by five times the usual amount, improved work efficiency and increased yields to 8.25 tonnes/ha. In one instance, the yield of Chinese hybrid rice was 300 percent more than that of local rice varieties.
Malawi	8 Chinese experts and technicians were deployed to Malawi to provide technical support in livestock and aquaculture.	The project successfully introduced 106 new agricultural techniques, 60 new plant varieties and six pieces of agricultural equipment and tools. Pig production, boar castration, dairy cow management and Hyaline layer husbandry technologies were introduced and taught. Advice regarding the use of a concentrated formula for lactating cows resulted in an increase in milk yield of over 20 per cent.
Mali	17 Chinese experts and technicians provided support to crop production, aquaculture and irrigation.	The project successfully introduced 13 new technologies, 28 crop varieties and three pieces of agricultural equipment and tools. The Chinese hybrid rice variety was introduced through a trial process in order to compare it with the local variety in Mali. After a series of experiments on all aspects that could affect the production rate, the Chinese hybrid rice proved to be better with yields reaching 6,000 kg/ha
Nigeria	574 Chinese experts and technicians provided technical assistance on crop production, aquaculture, horticulture, livestock and agribusiness.	Highly effective rice production technologies have been introduced and resulted in significant increases in rice production, from 1 tonne/ha up to 3.5 tonnes/ha. The Chinese cage fish farming technology has been adopted by at least 5,000 fishing families in various regions.

However, these Centres, and Chinese investment and cooperation programmes in Africa generally, appear to be much more focused on technology transfer than on capacity building. A recent study consisting of interviews with Chinese officials notes that, although many Chinese experts now go to Africa, local people do not gain enough knowledge to carry on the work that they start. When consultants leave, the local people do not have the capacity to decide and implement new projects. Thus although the Centres can successfully demonstrate new farming approaches, scaling up these demonstrations is difficult since often basic conditions are not in place, such as governance, infrastructure, irrigation, market structure, and land tenure.

This concern about the sustainability of China's technology transfer is echoed by Li Jiali of the Foreign Economic Cooperation Center of China's Ministry of Agriculture. He notes that a major problem is with 'promotion after demonstration':

'At present, China's agricultural technologies in Africa are merely within the scope of demonstration and small-scale promotion. The Chinese experts in agriculture and technicians taught the farmers the relevant techniques in a scattered way, which could not play a significant driving role in agricultural development in Africa. The promotion and application of the production technologies need a perfect technical promoting system as well as powerful and vigorous support and promotion by the state, and thus the said technologies can be disseminated to the farmers. However, the majority of the African countries have weak infrastructure, and the agricultural technology promoting system is unsound even do not exist. How to promote and apply the said techniques on a large scale has remained a difficult problem up to now'.

An equally deep problem with China's technology transfer mentioned by Jiali is that it is not being adequately assessed. Jiali notes that while Western countries and international organisations have evaluation processes in place, 'the Chinese Government has not formulated a set of systematic, standardized and scientific project assessment system for the said projects such as agricultural technical demonstration center, etc., and guaranteed the effective management, objectiveness of the achievements and convincing evaluation' [sic].

China's technology centre in Mozambique

One rare case study of a Chinese agricultural technology demonstration centre has been undertaken by Sérgio Chichava and Natalia N. Fingeremann, in the district of Boane in Mozambique. The Centre, locally known as the Centro de Investigação e Transferencia de Tecnologia Agrárias do Umbeluzi (CITTAU), was announced in 2007 and completed in 2011, at an estimated cost of US\$6 million. The first training course on Chinese agricultural technology organised by CITTAU took place in June 2012 and aimed to educate local producers on vegetable production, agricultural machinery operation, animal nutrition, rice and maize production, processing and management. Chinese and Mozambican experts conducted the course, involving 34 local producers from the South of the country.

Apart from agricultural activities, CITTAU has increased local populations' production rates of biogas production using organic and animal wastes. Tests of the adaptability to the local agro-climatic conditions of Chinese seed varieties of pepper, cabbage, eggplant, cauliflower, sweet corn, turnip and cabbage have also been undertaken, alongside tests comparing productivity with Mozambican seed varieties. CITTAU also provides a platform for Chinese companies to enter the agriculture industry in Mozambique; these companies use the centre's seeds, techniques and technology, which are based on the research in Mozambique.

The Centre has been asked to test more local varieties of seeds but the study found that most of the seed and animal varieties tested at CITTAU were Chinese, leading the Mozambican Agriculture Minister to express his frustration in a public newspaper. The Minister said that among 18 Mozambican seed varieties selected for testing, only one was tested by CITTAU. Equally, CITTAU tested only one Mozambican maize seed variety.

The study also found that no Mozambican agencies were involved in any aspect of CITTAU's management, but were reduced to mere 'spectators.' Staff from the Ministry of Science and Technology at CITTAU were not working on agriculture or technology transfer but only on bureaucratic tasks like facilitating visas and working permits for Chinese experts, assisting Chinese imports of equipment and seeds, and coordinating events like the graduation ceremonies of the training courses. The only Mozambicans who work closely and daily with the Chinese agricultural experts were the seasonal workers, who lack agricultural technical expertise. CITTAU's main work, to complete tests of seed varieties' adaptability to Mozambican conditions, is done entirely by Chinese staff. While the project is supposed to last for 10 years, after the first three years, Mozambican staff are meant to replace the Chinese employees. But the Mozambican government claims it needs more financial help from China. Chichava and Fingeremann conclude by noting that 'it is difficult to see how the locals will replicate the Chinese agricultural model since they are not involved in day-to-day management of the Centre'.

Too often local contexts in Africa are not taken sufficiently into account in projects involving technology transfer. The appropriateness of technology depends not just on its availability and the ability to use that technology, but on the complex enabling environment that governs its availability and use. For technology to be effective requires appropriate infrastructure, information systems, research and extension systems, as well as markets appropriate for the products it is aimed at generating. The involvement of producers themselves, through dialogue and a role in policy design for farmers groups, is pivotal in ensuring appropriate technology transfer. Yet it is not at all clear that farmers are participating in any meaningful way in the design of programmes at the Chinese technology centres. And it is equally unclear whether there is any real effort to target smallholder farmers, and to assess what impact this is having.

3.4 Alignment with African government priorities and the needs of small farmers?

African Governments have clearly welcomed Chinese, Brazilian and Indian agricultural investment and have habitually requested cooperation in agriculture. Governments have often seen these Southern actors as providing a positive alternative to Western donors who often impose policy conditionality in their lending. However, when it comes to the specifics of individual projects, Chinese, Brazilian and Indian agricultural investment does not regularly appear to be strategically managed or aligned with African policy priorities.

For example, in several countries, it is not at all clear how the Chinese agricultural technology centres are integrated into wider policy-making. For example, the China-DAC study team noted in regard to its investigation in Tanzania that:

'The Chinese agricultural demonstration centre is an addition to several other national and international interventions aimed at advancing agricultural research but the government's strategy to integrate these different resources into a mutually reinforcing package is not apparent. In such a context, there is a risk of overlap and of repeating previous mistakes'.

Thus it concluded:

'Currently, it is not clear how the agricultural demonstration centre's operations are conceived and integrated into Tanzania's own systems, nor how the centre aims to become commercially viable within three years. Integrating the centre into the network of existing research and extension structures should be explored'.

The case study on Zambia above notes that China's agricultural technology demonstration there has a focus on mushroom production. Yet mushrooms are grown by perhaps less than 1 per cent of local farmers and the government provides little support to mushroom production and has not identified it as a priority. It is not clear whether national development initiatives like the National Agricultural Investment Plan (NAIP) are considered when designing the Centre's training programmes.

A related problem is that Chinese, Brazilian and Indian cooperation programmes are often not integrated into broader donor relations with African governments. For example, in Malawi, there is virtually no coordination between the three countries and the main international donors in agriculture and food security policy. Similarly, Ethiopia, Brazil and China are not formal members of the main government/donor group – known as the Rural Economic Development and Food Security Sector Working Group, established in 2008 – which reviews agricultural sector policies. Although the Ethiopian government carefully manages and coordinates aid to be in line with its national Growth and Transformation Plan, and promotes harmonisation and alignment with Western donors through the Ethiopian High Level Forum, Brazil and China are currently not engaged in these coordination platforms, but work instead on a bilateral basis.

Even some very large agricultural projects pursued in Africa by Brazil, China and India, do not owe their genesis to African demands. For example, as noted above, it is striking that the idea for ProSavana in Mozambique – Brazil's largest agricultural commitment in Africa - did not originate inside Mozambique but emerged at an international forum, as part of a discussion between Brazil and Japan. A more general problem appears to be (on the limited evidence available) that many investment and cooperation programmes have tended to involve African actors only at the margins, if at all. Lila Buckley, a China researcher at the International Institute for Environment and Development in the UK, who has undertaken considerable research on Chinese cooperation programmes, notes that:

'Despite rhetoric of mutual benefit on both sides, thus far, China has generally taken the lead in agriculture project design and implementation with only passive participation from African partners. This has led to frustrations on both sides, project failures, and unexpected consequences on the ground'.

But the biggest problem –related to the above - is the failure to systematically involve African smallholder farmers in investment and cooperation projects, which can be as much a failure of African government as of the designers of Chinese, Brazilian and Indian projects. For example, Mozambican analyst Sergio Chichava, who has done much research on Chinese and Brazilian projects in his country, notes:

'Both countries frame the agricultural development models they seek to share with Mozambique as based on their own successful development experience. The self-affirming nature of these narratives means that both Chinese and Brazilians tend to believe that they have much to teach and little to learn. This contradicts the discourse of "mutual learning" that is common among advocates of South-South cooperation'.

Chichava concludes that few Brazilian agricultural development cooperation practitioners recognise that they may have something to learn from Mozambican farmers or agricultural researchers. And on the government side, the country's policy elites share with both Brazil and China a tendency to emphasise technologically-driven modernisation as the key to the future of agricultural development in the country.

In Angola, there are seven Chinese farms (owned by Angolan interests) supported by a \$1.5 billion preferential loan to Angola's agriculture sector from the China Development Bank. All seven farms are comprehensive agro-industrial projects with a range of activities including farm construction, irrigation facilities, grain drying and storage and processing facilities. The size of each farm varies from 1,500 to 12,000 ha and the credit from the China Development Bank is around US\$100m for each farm. This focus on big projects is problematic. Writing for Johns Hopkins University Zhou Jinyan concludes that:

‘Currently, Angola’s needs and Chinese financing are not well aligned. Ninety percent of the arable land in Angola is cultivated by smallholder farmers. Thus, what Angola really needs is knowledge transfer on how to develop one or two hectares of farmland. However, China’s engagement, especially through comprehensive farm contracting projects, focuses primarily on large-scale, Angolan state-owned farms. It is unclear if Angolan employees can apply the technology and lessons they learn from big farms to their daily small-scale farming activities’.

The China-DAC study group’s investigation in Zimbabwe inferred that China’s agricultural technology centre there was also insufficiently focused on smallholder farmers. It noted that, although the Centre is usefully starting activities to transfer water-saving and conservation agricultural technology, it ‘needs to ensure that this work addresses the problems and responds to the needs of smallholders across the country as well those of the large-scale commercial farms in the vicinity of the demonstration centre’.

The apparent failure to systematically target and involve smallholder farmers in projects is compounded by the **distinct lack of transparency** in such programmes, especially in Chinese projects. This is a big problem in itself, meaning that scrutiny of projects by civil society groups and others becomes difficult or impossible. And a related broader failing, also noted above, is to systematically evaluate projects and judge whether they are successful in reaching their goals. Although China has trained thousands of Africans, Li Jiali of the Foreign Economic Cooperation Center of China’s Ministry of Agriculture notes:

‘The Chinese Government has yet to form a China-based tracking and assessment management mechanism to scientifically evaluate the improvement and revision conducted by the trainees to their future work, the relevancy of the contents of training, as well as the effectiveness and applicability of the training results’.

The conclusion is that Chinese, Brazilian and Indian agricultural investments are poorly focused on smallholder farmers, despite some exceptions, and appear far more geared to large-scale farming. The section above on land grabs suggests that local farmers affected by large-scale projects have often been ignored or marginalised. When it comes to promoting agricultural technologies, this study finds that there is usually no evidence that smallholders are involved in the design of priorities or projects, or that they are even the main intended beneficiaries of programmes.

It is also not the case that the programmes prioritising hybrid seeds, fertilizer and ethanol have derived from African smallholder needs. Rather, they have flowed from Chinese, Brazilian and Indian priorities, often related to agribusiness interests. This is not to say that there are not some efforts to engage smallholder farmers in some projects, notably some development cooperation programmes, but these appear more ad hoc than strategic. Compounding these problems is the lack of transparency in projects and the failure to systematically evaluate them against whatever objectives may have been set.

RECOMMENDATIONS

We believe that African governments, investors from China, Brazil and India, African organisations and NGOs should promote the following policies to improve Chinese, Brazilian and Indian agricultural investments in Africa.

Transparency

Chinese, Brazilian and Indian investment and cooperation projects need to be much more transparent. These governments, along with the host African governments, should:

- provide a publicly-accessible detailed **annual report** of all their cooperation projects in Africa, with information on funding and beneficiaries. They should report details on their aid programmes to the OECD’s Development Assistance Committee, alongside other donors.
- require private companies involved in large-scale investments in Africa to provide at least **minimum publicly-available information** giving details on these investments. African government themselves should similarly demand such transparency from companies investing in their countries.

Since there are few if any independent evaluations of Chinese, Brazilian and Indian cooperation programmes, the larger programmes of these countries, at least, should be subject to systematic review and evaluation.

Large-scale land investments

In order to prevent land grabs, the Chinese, Brazilian and Indian governments – and African governments - should commit to adhering to the Voluntary Guidelines on the Responsible Governance of Tenure, the foremost set of global principles for promoting secure tenure rights and equitable access to land.

In particular, there is a need to ensure that large-scale Chinese, Brazilian and Indian agriculture investments obtain the free, prior and informed consent of those affected by projects and that adequate Environmental and Social Impact Assessments are undertaken before projects commence.

A number of specific large-scale investments need to be addressed by governments to ensure they primarily benefit smallholder farmers and do not undermine them. The Brazilian government should particularly address the Prosavana and Agromoz investments in Mozambique and the Brazil Agro Business Group in Ghana; the Indian government should address all agricultural investments in Ethiopia by private Indian companies; the Chinese government should address the projects in Mali (CLETC), Nigeria (Green Agriculture West Africa) and Mozambique (Wanbao) highlighted in this report.

India should address its loan programme to the government of Ethiopia’s expansion of the sugar sector and ensure that it is not contributing to human rights abuses.

Seeds

African governments and organisations should conduct research on the Chinese promotion of **hybrid seeds** in Africa, assessing whether and how these are likely to benefit smallholder farmers, the problems associated with them, and consider alternatives such as promoting local seed-saving and public seed banks.

In their cooperation programmes, China, Brazil and India should promote projects supporting local seed-saving and public seed banks.

More research by NGOs could be undertaken on the impact of Chinese hybrid seed programmes in Africa.

GM

More research should be undertaken by African organisations and NGOs on the extent to which India and China are encouraging the promotion of GM seeds in Africa.

Agro-chemicals

More research should be undertaken by African organisations and NGOs on the extent to which Chinese companies are increasingly marketing agro-chemicals (fertilizer and pesticides) in Africa.

Chinese investment and cooperation programmes need to involve much more consideration of the environmental consequences of the use of agro-chemicals. All such programmes should involve an environmental review.

Chinese, Brazilian and Indian investments and cooperation programmes should support the promotion of agro-ecological farming in Africa. Greater funds should go to such projects.

African organisations and NGOs should conduct field research comparing the relative benefits to smallholder farmers of practising agro-ecological farming as opposed to farming using chemicals. Results can be used to inform policy-making to encourage more widespread agro-ecological farming practices.

Ethanol

More research should be undertaken by African organisations and NGOs on the impact of Brazilian ethanol projects in Africa, especially regarding smallholder farmers, on which little research work has so far been undertaken.

Appropriate technology

African governments and organisations should review the appropriateness of Chinese, Indian and Brazilian technology transfer. In particular, assessments need to be made concerning (a) whether technology is sufficiently geared to the needs of smallholder farmers, as opposed to large-scale farming, (b) the involvement of African governments and farmers themselves in the design and implementation of programmes.

China's agricultural technology demonstration centres should be subject to an independent review, assessing how useful they are to African agriculture, especially smallholder farmers, and proposing how they can be better aligned to government agriculture strategies and involve smallholder farmers more in the design and implementation of programmes.

Tied aid/local content

Aid, investment and cooperation projects by Chinese, Brazilian and Indian governments should not be tied to purchasing goods and services from these countries. African organisations should encourage regulations to move away from such tying of aid.

African governments should require Chinese, Brazilian and Indian investors to source many of their inputs (goods, services and labour) locally, rather than relying on foreign suppliers. Thus governments can draw up stronger regulations on local content and also encourage investors themselves to develop their own local content programmes as part of their investments.

Alignment with African priorities

African governments should ensure that Chinese, Brazilian and Indian investment and cooperation programmes are aligned with national interests and integrated into wider policy-making. Aid programmes from these countries should be brought under the general framework of donor/government relations and not stand outside this.

Involvement of smallholder farmers and women farmers

African governments must ensure that smallholder farmers are involved in the design and implementation of investment and cooperation projects by China, Brazil and India. Such participation should be a requirement in all projects, notably large-scale land investments and technology programmes.

Investment and cooperation projects should have a clear gender focus. It should be a requirement of projects that women smallholder farmers – who comprise a large number of farmers in Africa, and the majority in some countries – should be involved in design and implementation.

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