



Why African countries are interested in building agricultural partnerships with China: lessons from Rwanda and Uganda

Isaac Lawther

School of Environment, Resources and Sustainability, University of Waterloo, Waterloo, Canada

ABSTRACT

Ten years ago, China and several African countries began to develop agricultural training centres, and opened the door for a cascade of optimism and pessimism on why China is interested in developing agricultural partnerships in Africa. Seldom has the appeal of such partnerships for African countries been explored, hence limiting our capacity to fully understand the dynamics of Sino–African agricultural relations. This article addresses the issue by examining why some African countries are interested in partnering with China in agricultural development. This article is based on 44 interviews that were conducted in 2015 at the Sino–African agricultural training centres in Rwanda and Uganda. I argue that Rwanda and Uganda seek to partner with China, as China can offer intermediary agricultural technologies that enable these respective countries to implement aspects of their domestic agricultural development plans. The article also provides reason to challenge the existing optimistic and pessimistic conventions about Sino–African agricultural affairs.

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Introduction

In 2006, delegates from China and 48 African countries met in Beijing to discuss a new set of commitments in economic and developmental cooperation. It was the third time Chinese and African leaders gathered for the Forum on China–Africa Cooperation (FOCAC). Of all the arrangements that were made during the summit, the proposal that spurred one of the liveliest debates among observers was an agreement between 14 African countries and China to jointly develop agricultural training parks in Africa.¹ However, the attention that the demonstration centres gained was to be expected. Since the mid-1990s, tensions have been mounting about how China will feed its growing population,² and the FOCAC agricultural parks sparked a renaissance in this debate. Some of the world's highest yield gaps are spread across the African continent, and the agricultural parks that were designed at the summit took form in 2007 and 2008 – at the same time that there was a spike in global food prices. Many commentators came to understand China's agricultural ambitions in Africa as a reaction to this price shock.³ Following the summit, some observers began discussing China's role in African agricultural development vis-à-vis claims that emerging and developed

economies were rushing to acquire farmland in the Global South to secure their own food supplies.⁴ In the years following the FOCAC summit, it appeared that the longstanding question of 'Who will feed China'⁵ had been answered: Africa would.

The critique that China was orchestrating a foray into African agricultural sectors gained public traction, but Sino–African specialists challenged this assessment.⁶ Long-term observers of Sino–African affairs were quick to fact-check claims that China was grabbing land, and argued that there is no evidence of a coherent plan on behalf of Chinese policymakers to take advantage of African countries' rural sectors, and very little evidence to suggest China was engaging in nefarious 'land grabbing' behaviour.⁷ This alternate narrative on Sino–African agricultural engagement focused primarily on proving that China is not grabbing land in Africa, and aimed to show that China's impact on the rural sectors across the African continent is much smaller than is often reported.

As a result of these exchanges, the dialogue on Sino–African agricultural relations has focused almost entirely on making, or refuting, claims about what China seeks to gain from Africa, but what it is that African countries can gain from China has largely been ignored. The aim of this paper, therefore, is to examine this topic, and re-orient the conversation to understand Sino–African partnerships as a part of African countries' agricultural development plans. Specifically, this paper asks: Why is it that African countries are keen to collaborate with China in their own agricultural development? It is important to ask this question to fully comprehend the dynamics of Chinese and African affairs. Recent research has explored the contribution that Chinese programmes make to African agricultural initiatives,⁸ but it has not explicitly considered the value of these contributions from the African perspective. Furthermore, this article considers this question in the context of the theoretical backgrounds that have been most prominent in the literature on Sino–African rural engagement. It provides new analysis that will enable us to better understand Chinese and African agricultural partnerships, and unpack how these articulations can be situated in the global food system.

The article begins by exploring the differing theoretical backgrounds that have led to divisions in the debate, and examines why it is that African perspectives have been overlooked. It examines the agricultural policies in Rwanda and Uganda, and unpacks how the demonstration centres contribute to Rwanda and Uganda's respective agricultural development plans. The article draws on a data set of 44 formal and semi-formal interviews that were conducted in Rwanda and Uganda between February and June 2015 to gain insight into the demonstration centres from the perspective of those that host them.⁹ Interviews were conducted with Rwandan and Ugandan decision makers who coordinated the implementation and management of the demonstration centres, as well as with Rwandan and Ugandan researchers, technicians, and assistants who worked alongside the Chinese agricultural technicians at the centres. A number of entrepreneurs, agricultural technicians, and farmers who had been trained at the centres, or associated with the centres, were also interviewed for this study.

This paper argues that Chinese agricultural techniques are perceived as valuable by the institutions that host them, as the demonstration centres introduce intermediary agricultural technologies that are easy to adopt to rural African environments. By exploring the partnerships from the host country perspective, the article also arrives at a number of conclusions about the benefits that the Chinese companies receive from running the centres, and questions to what end the new technologies are valuable. The article concludes by arguing the

ways in which these findings can better inform the polarised debate on Sino–African agricultural relations.

Theoretical lenses on Sino–African affairs

The most pronounced discussions on Sino–African agricultural affairs stem from two different disciplines: critical food studies, and studies on Chinese foreign politics. Critical food scholars have largely been pessimistic about China’s role in rural Africa, while a more optimistic lens has emerged from conversations on Chinese foreign politics. Indeed, the tendency for observations on Sino–African affairs to be optimistic or pessimistic has been discussed before.¹⁰ However, the expression of optimism and pessimism as it relates to Sino–African rural engagement is unique, and neither lens has explicitly considered the impetus for African countries to partner with China. The following section unpacks the dialogues between critical food scholars and analysts of Chinese and African relations.

China’s ability to feed its growing population has been topical in critical food circles since the early 1990s.¹¹ Following the 2007–2008 food-price crisis, food systems scholars began to speculate that China was grabbing land overseas to secure food resources. One of the seminal discussions in critical food studies about land grabbing was written by a non-governmental organisation (NGO) called GRAIN.¹² GRAIN argued that there were two main reasons why land was being purchased overseas: for financial gain, and to offshore food production. The GRAIN report, among others,¹³ was the first wave of news and literature written about land grabbing in the wake of the 2007–2008 food price crisis, and Chinese demonstration centres were often featured in the reporting.¹⁴

The content of the GRAIN report focused on capitalist and market-based incentives that had led some countries – including China – to grab land. This narrative played well with food regime theory, which is one of the most widely used analytical tools for studying the international relations of the global food system. Land grabbing was quickly incorporated into the food regime theorist’s account of the post-food-crisis global food system.¹⁵ Food regime theory argues that the global food system is controlled by corporations – and to a lesser extent states – that use capitalism and globally liberalised markets to construct a global food order that places them at the top.¹⁶ Given that food regime theory projects its assumptions onto the *global* food economy, it sees these provisions as omnipresent; hence, it has a tendency to assume that emerging powers’ (i.e. China’s) motives to participate in a more globalised food economy are based on aspirations for power.¹⁷

The discussion on land grabbing led many critical food studies scholars to voice pessimism about the role of foreign states in African rural sectors. Not only did the land grabbing narrative contribute to the development of food regime theory, but a number of analysts began to couch the concept within broader conversations on global agrarian change, and argued that grabbing land to secure food resources was one of the key reasons that land-poor/resource-rich countries – such as China – were investing in Africa.¹⁸ Consequently, many theoretical approaches within the discipline of critical food studies found themselves situated against a theoretical backdrop that understood Chinese involvement in African rural sectors as a product of its quest for power, as a scramble for land in the wake of a food crisis, or both. Ultimately, these assumptions led critical analysts of the global food economy to be highly pessimistic about China’s interest in rural Africa, and to understand the relationship as one that would solidify Africa’s position in the global food system as a continent to plunder.

Alternatively, a more optimistic version of Sino–African agricultural engagement emerged in the mid-1990s through explorations of Chinese agricultural aid in Africa, and scholarship on Sino–African affairs.¹⁹ However, it was not until land grabbing gained traction in the radical food studies literature that optimistic discussions on Sino–African rural affairs became more prominent, and the optimism was often produced by refuting pessimistic claims.²⁰ The optimistic lens has largely been concerned with challenging assertions that China’s engagement with Africa is opportunistic. One of the central tenets of the optimistic argument is that China’s agricultural developments in Africa do not aim to grow food for Chinese markets, but sell their produce to local markets and encourage local development.²¹ This position has been used to argue that Chinese engagements across rural Africa are largely benevolent, or benign, and that they do not constitute land grabs.

Much of the scholarship that analyses Sino–African affairs has been highly China-centred, in that it focuses on China’s intentions in Africa, or explores the outcomes of Sino–African engagement from the Chinese perspective.²² As Alden outlines, optimistic analysis casts China as a development partner, and argues that China’s interest in Africa is part of a long-term commitment to build cooperative relationships across the developing world.²³ Many China–Africa analysts suggest that China’s impetus to ally with Africa is based on its history of identifying with developing countries,²⁴ and argue that African countries can learn from the methods that China pursued in its own agricultural development.²⁵

It is at this juncture that the narrative which produces optimism begins to conflict on theoretical grounds with pessimistic lenses of analysis. China’s domestic agricultural development is often seen as a success, based on the grounds that much of China’s agricultural sector has been able to reduce labour inputs, and adopt capital-intensive and industrial modes of production.²⁶ The reasoning goes that increasing productivity through capital inputs and industrialisation was good for China’s agricultural development, and, therefore, it will be good for African countries as well. However, critical food scholars explicitly challenge this modality of agricultural development by arguing that capital expansion in an agricultural sector can undermine the autonomy of the state to pursue national development goals, and exacerbate rural inequality.²⁷ Therefore, the same reasons that lead many China–Africa scholars to look favourably on China’s role in African rural sectors are irreconcilable with how critical food scholars see the relationship. Optimistic analysts see the extensions of agricultural technologies that spurred economic development within China to Africa as innately good, while critical analysts see this very same development as intrinsically bad.

A consequence of the back and forth between these varying lenses of analysis is that the conversation has mainly been concerned with unpacking China’s interest in developing partnerships with African countries. The debate has neglected to consider the reasons that African countries seek partnerships with China. Brautigam and Zhang note that African countries have appeared as passive bystanders in the dialogue, but the authors do not unpack the African rationale for partnering with China.²⁸ Conversely, pessimists assert that China’s role in rural Africa is re-affirming colonial-style divisions of labour, but such an argument depends on an assumption that African countries do not have the agency to act in their own interest. The absence of African voices limits our understanding of the modern dynamics of African development, and does not enable us to explore how emerging and established powers fit into African development agendas. Therefore, it is important to examine African development policies, and the place for China within those policies, in order to formulate a complete understanding of Sino–African rural affairs.

Agricultural policy in Rwanda and Uganda, and the Sino–African agricultural demonstration centres

The theory behind China's impetus to develop joint agricultural initiatives with African countries is a point of continued debate. However, by focussing on the specifics of Rwanda and Uganda's agricultural development plans, we can begin to see that Chinese and African rural engagement is as geared towards assisting African countries achieve their domestic development goals as it is about China pursuing its foreign policy agenda. Rwanda and Uganda have designed their agricultural policies in accordance with the Comprehensive Africa Agricultural Development Plan (CAADP), an initiative born out of the African Union's New Plan for African Development (NEPAD). The CAADP assists partner states to develop agricultural plans that will increase economic growth in their agricultural sectors, and align with the CAADP's four development pillars, which are: promote production and sustainable land use; improve infrastructure to increase market access and trade related capacities; increase food supply; and research and disseminate new technologies, innovation, and training.²⁹

Both Rwanda and Uganda coordinate much of their agricultural development through the research and extension arms of their respective agricultural ministries. The research arm of the Ministry of Agriculture in Rwanda (MINAGRI) is the Rwanda Agriculture Board (RAB), which is responsible for implementing agricultural initiatives. The National Agricultural Research Organization (NARO) is the apex research institution in Uganda that disseminates agricultural research, and trains farmers how to adopt new technologies. NARO is affiliated with the Ugandan Ministry of Agriculture, Animal Industries, and Fisheries (MAAIF).

Rwanda has had an agricultural development plan in place since 2004, called the Strategic Plan for the Transformation of Agriculture (SPTA), which it updates every five years, and which was designed to accomplish domestic agricultural development goals, along with those outlined by the African Union and the CAADP.³⁰ Now in its third phase, the SPTA III outlines that technical training in the agricultural sector is key to development, and it has suggested that the Rwandan agricultural sector should orient itself towards exporting high-value goods to local markets, and inviting investment to help the sector transition from one of subsistence to a fully monetized, commercial agricultural sector.³¹ As the Government of Rwanda (GoR) moves towards accomplishing this goal it aims to work with international donors. The GoR typically courts investors and establishes development initiatives, which it then encourages the private sector to manage.³²

In 2005, and under the direction of the agricultural development that had been outlined in SPTA I, MINAGRI began a dialogue with Lin Zhanxi, a professor from Fujian Agriculture and Forestry University (FAFU). Dr. Lin had a patented method of growing mushrooms called JUNCAO, as well as patents on a number of upland rice varieties.³³ Upland rice differs from paddy rice in that it can be grown on rain-fed hillsides, and does not need to be grown in supersaturated soil, as is the case with most paddy varieties. It is not a variety that is specific to FAFU, as upland varieties are available from a number of sources. For example, the National Crops Resources Research Institute (NACRRI) in Uganda has a programme in place to adopt New Rice for Africa (NERICA) upland varieties in the Masaka region of Uganda.³⁴ However, Rwanda sought to partner with FAFU, as the patent was relatively cheap (US\$120,000).³⁵ The programme would include training by Chinese technicians, and FAFU technicians could introduce multiple new crops and techniques.³⁶

The arrangement between FAFU and MINAGRI was the precursor to the Chinese demonstration centre. The original agricultural technology transfer of JUNCAO and upland rice was carried out by two technicians who were stationed at a house that was provided by the GoR in Kabuye (an area 20 minutes north of Kigali).³⁷ The agreement to expand the project into one of the FOCAC demonstration centres was then negotiated a year later at the 2006 summit.³⁸ However, the original demonstration outlined by FAFU and MINAGRI continued as planned, while the Ministry of Foreign Affairs in Rwanda and the trade and industry attaché of the Chinese embassy negotiated the specifics of developing the demonstration centre.³⁹ In this respect, Rwanda's use of Chinese agricultural techniques was the product of Rwanda approaching China, and expanding a development that was already in place under the auspices of FOCAC. The successful use of the patent between 2006 and 2008 indicated to China that Rwanda was a promising place to initiate an agricultural development project.

Uganda has an agricultural development plan that is very similar to Rwanda's SPTA, called The Agricultural Sector Development Plan and Investment Strategy (DSIP). Much like the SPTA, the DSIP is updated every five years, and attuned to the broader development initiatives of the CAADP.⁴⁰ The decision to place an agricultural development centre in Uganda was the result of MAAIF seeking agricultural partnerships that would introduce new technologies to farmers under the direction of the DSIP, as Uganda's National Development Plan aims to transform 'Ugandan society from a peasant to a modern and prosperous country within 30 years.'⁴¹ According to Uganda's agricultural development strategy, a central aim is to partner with investors who can facilitate the access to and availability of scientific and technologically advanced inputs for the agricultural sector, and assist farmers to move up the value chain.⁴² The Ugandan delegation that visited China brought this sentiment with them to the FOCAC summit.⁴³ According to a senior staff member at NARO who was close to the negotiations, the idea of receiving a grant from China for agricultural development was at the request of the Ugandan government:

Of course it was at the request of African countries because we were the recipient ... African countries requested, and China implemented them, these are grants [not loans].⁴⁴

The Ugandan delegation did not, however, go to the FOCAC summit in 2006 with the intention to partner with China in aquacultural development. Following the meetings in 2006, a Chinese delegation began to work with MAAIF, and explored a number of different institutions within NARO as potential partners to host the Chinese demonstrations centre.⁴⁵ Among them were livestock (National Livestock Resources Research Institute [NaLIRRI]), crops (NaCRRI), and fisheries (National Fisheries Resources Research Institute [NaFIRRI]). When discussing why it was that the Chinese delegation chose to partner with NaFIRRI, the former Commissioner of Fisheries said that it was based purely on data. The Chinese delegation had found that NaFIRRI and the ARDC were well organised, and had a proven track record of managing loans and grants – they had successfully done so with numerous international aid agencies.⁴⁶ In addition, building an aquacultural demonstration centre was still in accordance with Uganda's National Development plan. MAAIF's mandate is to better regulate open-water fisheries, and encourage the adoption of pond-based aquaculture as well as open-water caged fish farming. The main avenue that Uganda is pursuing to increase aquacultural fish production is through the training of farmers at four demonstration parks throughout the country.⁴⁷ The Chinese centre was essentially an addition to this existing plan. A Chinese company called Huaqioa Fenghuang Fisheries Ltd. was assigned to operate

the demonstration centre, and the decision to host a Chinese demonstration was supported by many of the researchers who worked at ARDC at the time.⁴⁸

In Rwanda, the protocols stipulate that the China–Rwanda Agriculture Technology Demonstration Centre (RATDC) would focus on mulberry planting and silkworm rearing (sericulture), JUNCAO mushroom cultivation, soil and water conservation, and the introduction of new rice varieties. Alternatively, the main aspects of the project at the Uganda–China Friendship Agricultural Technology Demonstration Centre (UATDC) involved the construction of office buildings, residences for Chinese technicians, a hatchery, and a feed factory; rehabilitating existing fishponds; introducing new fish species; and demonstrating open-water caged fish farming techniques offsite from the ARDC in a city called Jinja. These facilities were used to train Ugandan fish farmers, and provide income to the centre for its operation and maintenance.⁴⁹

In sum, both the RATDC and the UATDC were designed to fulfil existing development plans in Rwanda and Uganda. In both cases, the centres were negotiated between Chinese delegates and the respective ministries in Rwanda and Uganda. In addition, the Rwandan and Ugandan ministries sought to articulate with China in agricultural development, as they are mandated by their respective development plans and the CAADP to partner with international donors.

The ease of adopting Chinese agricultural technologies

Based on the preceding section of this paper, we can see that both Rwanda and Uganda pursued partnerships with China in agricultural development, and did so according to their respective national agricultural development plans. But what is it about China specifically that makes it a desirable partner? This question was posed directly to all participants who were interviewed for this study. The response from participants to this question was uniform across Rwanda and Uganda, and among farmers, research technicians, ministerial workers staff, and ministers: China's agricultural technology is affordable and easy to adapt to rural African environments. The Director General (DG) of RAB at the time of research, who oversaw the RATDC and liaised with FAFU, expressed this sentiment most succinctly. When explaining why African countries in general were keen to approach China at the 2006 summit to develop agricultural centres, the DG said:

It was realized at that time [2006] that China has a comparative advantage in terms of cheap and affordable [agricultural] technology ... So, this area has been identified as a key partnership area where China can invest and support the African continent in terms of boosting and supporting agricultural development.⁵⁰

Within the DG's response is a key finding that warrants more attention. The DG said that China has a 'comparative advantage' in cheap and affordable agricultural technology. One needs to ask: compared to what, or whom? Undoubtedly, the reference is made to Western agricultural techniques and assistance, as was reiterated by many other participants. For example, one senior official at RAB's southern research zone suggested that the harvesting machines used by FAFU were appropriate for Rwanda's land tenure system.⁵¹ The small Chinese rice harvesters used at the centre were cheap, and could be manufactured within Rwanda. However, the senior official at RAB said jokingly that when harvesting machines are bought from Europe or the US, they typically require hundreds of litres of fuel, and come equipped with gimmicks that are unnecessary for Rwandan farmers.⁵² Another participant

who worked with a private mushroom-producing firm said, 'Whatever your budget, you can get what you need from China'.⁵³

The reason why African delegations were keen to build agricultural partnerships with China in 2006 was further echoed by the Principal Fisheries Officer at MAAIF. He said that when the Ugandan delegation went to the FOCAC summit in 2006, their goal was to 'access [China's] technology because of its easiness to adopt ... That was our goal as the Ministry, to get Chinese technology in Uganda'.⁵⁴ The Principal Fisheries Officer negotiated the agreement alongside the Director of Research at ARDC, and both argued that Chinese techniques are easy for African countries to adopt because fish farming in China was a tradition, even a lifestyle, whereas in the West it was more technically focussed.⁵⁵ This was made particularly clear at the ARDC, which had hosted a United States Agency for International Development (USAID) project just before the Chinese project was constructed. The USAID had trained farmers to use hormone treatments to encourage size-specific competition among young fish, which was a technique that was too expensive and complex for many farmers to adopt, and used a variety of grading equipment for sorting fish that was inaccessible to most Ugandan fish farmers.⁵⁶

Alternatively, many technicians at the centre explained that Chinese techniques in fish farming were just a few steps away from the existing practices of Ugandan fish farmers⁵⁷: for example, using earthen ponds instead of tanks, and not using any form of automation (i.e. oxygen sensors, denitrifiers, or complex grading systems). One technician in Uganda who worked closely with the Chinese at the centre said:

[W]hen it comes to the Chinese interventions, they're kind of bridging the gap between those very highly advanced technologies, which I would say are technologies from the Western world, and the very local technologies, or Asian technologies, or what we have here.⁵⁸

Another researcher at ARDC added that Fenghuang Fisheries had shown that it is possible to produce large quantities of fish with the simple facilities introduced by the Chinese donors.⁵⁹ In addition to the contribution that Fenghuang Fisheries made at ARDC, many technicians and researchers from NaFIRRI stated that the caged fish farming was the most successful component of the demonstration. The station head at ARDC said that he would give the demonstration in caged fish farming an 'A+', and not simply because the methods that Fenghuang Fisheries demonstrated had been easy for farmers to adopt. Rather, there had been a sharp increase in caged fish farmers from the Jinja region coming to ARDC to purchase feed and fingerlings for their caged farms – something that he attributed directly to the Chinese demonstrations, and this participant suggested it indicated that the industry itself was growing as a result of the demonstrations.⁶⁰ Another researcher working at ARDC reported that prior to Fenghuang Fisheries' demonstration of caged fish farming, many people had thought that caged fish farming involved 'supersonic' science, but now that they saw how possible caged farming was they had started to speak about the possibility of exporting more fish.⁶¹

The agricultural technologies demonstrated at the RATDC were particularly valuable in the mushroom subsector. In Rwanda, the introduction of the JUNCAO method of growing mushrooms had been part and parcel of spurring the development of a number of private mushroom enterprises. Numerous stakeholders such as the Chief Executive Officer (CEO) of one of Rwanda's largest mushroom- and mushroom tube-producing companies, a member of a women's mushroom cooperative, and an entrepreneur who was producing mushroom tubes all noted that China played an integral and necessary role in developing the mushroom

sector in Rwanda.⁶² This does not mean that JUNCAO is the only method of producing mushrooms. For example, some mushroom producers in Rwanda suggested that they had adjusted their methods of tube production in such a way that it would no longer constitute the JUNCAO method.⁶³ However, the response from participants was unanimous that the demonstration centre had in some way helped them, or continued to help them, in their mushroom-growing enterprises.

Some fish farmers in Uganda had similar experiences, suggesting that caged fish farming might exist in Uganda had not it been for the intervention and demonstrations by Fenghuang Fisheries, but it would not have been operating at its current scale.⁶⁴ Not only did the physical demonstration centres assist local farmers, the mere presence of Chinese firms was functioning as a point of access for farming materials in both Rwanda and Uganda. The ability to purchase materials from China via the demonstration centres was seen by many participants as the most useful aspect of the demonstrations.⁶⁵ Indeed, many of the techniques and technologies introduced through the RATDC and the UATDC were effective and easy to adopt, and contributed to the broader agricultural development goals of Rwanda and Uganda.

Development goals and agency in Chinese and African rural partnerships

Within the findings of the previous section are a number of key issues for scholars of food studies and Sino–African specialists to consider. Both Rwanda and Uganda outline in their respective development plans that they aim to guide their agricultural sectors to become more productive, but also more input intensive and trade oriented. Rwanda and Uganda are ultimately able to achieve these goals through a combination of their own initiatives, and by building partnerships with international donors – China being one of them.

Critical food scholars may see Rwanda and Uganda's methods of agricultural development as an affront to rural livelihoods, and cause for continued caution towards Chinese and African rural relations. For example, Akram Lodhi suggests that the global agrarian question of the third food regime is 'whether capitalism is transforming farming and agriculture, and if so, how.'⁶⁶ Akram Lodhi argues that land grabbing and the extension of foreign agricultural technologies are most emblematic of how global capitalism is transforming rural livelihoods. Though the Sino–African demonstration centres in Rwanda and Uganda do not necessarily grab land in the conventional sense, they are still nodes of extending industrially oriented modes of agricultural production. So long as Rwanda and Uganda continue to encourage technological intensification in their rural sectors, many donors – including China – will seek to enable this transition.

This article has found that Rwanda and Uganda have the ability to articulate with a number of international donors, and select their partners based on the specific contributions that each one can make. Indeed, the active role that Rwanda and Uganda played in choosing to partner with China could be considered an expression of agency, as Brautigam and Zhang note.⁶⁷ Albeit, one ought question who the agents that design Rwanda and Uganda's development paths are, and what ideological underpinnings lead to the respective development policies. NEPAD, for example, has been widely criticised for subscribing to neoliberal modes of development, supporting the continuation of structural adjustment policies, and overlooking the significant role that the state can play in agricultural development.⁶⁸ The CAADP is a NEPAD initiative, and the CAADP's pillars of trade, infrastructure development to increase

market access, and foreign technology transfers, should all be considered in light of Cheru and Calais's (2010) criticisms of NEPAD.⁶⁹ The shortcomings of the CAADP are subsequently handed over to Rwanda and Uganda to implement through their own domestic policies such as the SPTA and DSIP. The demonstration centres, therefore, do not provide alternative models of development, or present an avenue for farmers to determine their own agricultural trajectories. Rather, they provide alternate technologies that assist Rwanda and Uganda to further articulate with adjusted agricultural economies that are oriented towards trade and mechanisation – a system which has a poor track record of serving the interests of small-scale farmers.⁷⁰ The Chinese contribution, therefore, is not modelled to produce new forms of development; it is designed to produce more accessible avenues towards existing development models.

It should also be noted that Rwanda and Uganda have identified that China is able to introduce 'technologies' that are appropriate for their rural sectors, but the agricultural sectors in Rwanda and Uganda are not a homogeneous collection of 'farmers' that benefit equally from these contributions. The majority of Chinese technology transfers in Rwanda and Uganda such as mushroom growing, aquaculture, sericulture, and the demonstration of Chinese rice harvesters were, by and large, suited to medium-sized farmers and entrepreneurs. Based on the experience in Rwanda and Uganda, it would not appear as though China is a strong partner for small-scale or subsistence farmers. However, this may not be the fault of the Chinese partners, but rather a flaw in the top-down policymaking process in Rwanda and Uganda.

The discontinuity of the top-down approach to policymaking was made apparent in many ways while researching for this article. For example, FAFU had experimented with two new rice varieties, called Jinshan 1 and Jinshan 28, at the RATDC with the ultimate goal of incorporating these varieties into a MINAGRI programme called the Crop Intensification Program (CIP).⁷¹ The CIP encourages farmers to consolidate their landholdings, and those that demonstrate they have coordinated their holdings with other local farmers are given access to higher yielding crop varieties and fertilisers.⁷² RAB and FAFU had run trials on Jinshan 1 and Jinshan 28 – both of which are high-yielding short-grain varieties. However, the RATDC did not have any records of who had been a part of the rice trainings. Only one farmer who had been a part of the Jinshan trial was available to participate in this study, and none of the Rwandan technicians at the RATDC or RAB had been able to test the rice.⁷³ This was seen as a considerable issue because Rwandans tend to prefer long-grain varieties.⁷⁴ Following the trials of Jinshan 1 and Jinshan 28, the rice had been harvested by FAFU, and taken to the RATDC.⁷⁵ However, the farmer who participated in this study had managed to take a small quantity of Jinshan 28 for himself, and along with three other farmers in his cooperative he was running his own trial to see if the seed was worth adopting.⁷⁶ Without a process that allows growers to assess the marketability of new crops, it is uncertain whether or not these new varieties will actually be to the benefit of farmers.

Naturally, there are a number of benefits that the Chinese donors gain from the demonstration centres as well. According to previous studies, officials at the Chinese Ministry of Agriculture were concerned that the demonstration centres that had been implemented in other countries struggled to support themselves after the Chinese technicians left.⁷⁷ In light of this, it was decided that the demonstration centres should be run by Chinese businesses under a profit-oriented model.⁷⁸ In the Rwandan protocols of the demonstration centre, the final phase of the project is referred to as a joint-venture phase, that commences after

the initial three years of funding from China. The joint-venture phase is supposed to last for 10 years, and in the Rwandan protocols it is outlined as follows:

[F]acilitate [the joint venture] to purchase or lease lands required, and provide to it preferential accepted policies on land, investment, tariff, tax, trade, foreign exchange control and other aspects.⁷⁹

The conditions in Uganda are very similar. The second-last article of the agreements says that the Ugandan Government will:

support the Chinese enterprise to develop the market-oriented operation for the sustainable development of the centre, the Uganda government shall provide another land free of charge for production (or lease/sale the land in favourable conditions), and provide facilities and preferential policies of the investment in their market-oriented activities.⁸⁰

Previous studies have argued that the joint-venture phase is an important aspect of the Chinese development model because it encourages the sustainability of Chinese aid projects.⁸¹ However, the 'joint-venture phase' of the demonstration centres is problematic because it functions as a clear window of opportunity for Chinese firms to access local markets with preferential treatment. These protocols also provide a very weak framework for the transitional phase of the centres, and they do not outline any incentive for the Chinese firms that operate the centres to partner with local firms or institutions. Consequently, over half of all participants interviewed for this study referred to an 'element of secrecy' among the Chinese technicians that staffed the centres.⁸² For example, in Rwanda, FAFU technicians were hesitant to teach RAB staff or people who participated in trainings at the centre how to make mushroom spawn, which is an integral part of mushroom seed production,⁸³ and the overwhelming majority of tube producers in Rwanda purchase their spawn from the RATDC.⁸⁴ Holding a monopoly on spawn production was lucrative, and at the time of research, the spawn sales were one of the key sources of revenue for the RATDC. RAB's own mushroom technology officer who had a permanent placement at the RATDC had not been trained by FAFU in spawn production.⁸⁵ There were a handful of people in Rwanda who knew how to produce spawn; however, a professor at the University of Burundi had trained the majority of these people.⁸⁶ One RAB technician who had worked closely with the FAFU technicians said that broad growth within the mushroom sector hinged on training more people in spawn production.⁸⁷ There is a clear business incentive for the Chinese technicians to withhold some information about mushroom spawn production.

The UATDC faced a similar problem with fish feed production. Many technicians from ARDC had a rough idea of how Fenghuang Fisheries had been mixing their feed, but the specifics of how all the components were combined to make feed pellets had not been made clear to the ARDC technicians – though this was partly due to the fact that all the ingredients came from China, and were written in Chinese characters.⁸⁸ At the UATDC, not only was Fenghuang Fisheries not forthcoming about the specifics of their feed production, they would not share information about the costs of production with technicians at the ARDC. This made it very difficult for ARDC technicians to gain an understanding of the economics behind running a larger aquaculture operation; consequently, ARDC staff could not share this information with people who had come to the centre for training, which made it very difficult to train farmers in how to operate a successful fish farm.

Withholding the financial information was, in fact, a breach of the protocols of engagement, which clearly stated that 'the Chinese executive enterprise is duty bound to provide the financial report of the project to the government of Uganda at regular intervals.'⁸⁹ The

possibility that the joint-venture phase of the FOCAC demonstration centres could create tension following the China-funded period does not, however, go completely unforeseen in the existing literature. Li et al. note that without the oversight of a clearly defined regulatory mechanism, there is no guarantee that the independent Chinese companies would have any reason to cooperate directly with local institutions during the joint-venture phase of the centres.⁹⁰ They also forecast that this could be a major source of criticism of the centres.⁹¹ The vague protocol of how the centres concluded was the most common grievance among Ugandan researchers at ARDC. It has been noted in other studies on Chinese ATDC that they have resulted in the creation of commercial inroads for Chinese agricultural inputs.⁹²

As the protocols stand, if the Chinese firms and institutions that operate the demonstration centres find the operation to be profitable, then there is no strong mandate for them to share the infrastructure of the demonstration centre with their African counterparts. The argument that China is not grabbing land in Africa to offshore its food production appears to be true, based on the findings in this study. However, China does use aid as way of entering African agricultural sectors so that Chinese companies can gain preferential access to local markets. Tugendhat and Alemu suggest that the existence of a direct link between Chinese development cooperation with Africa and commercial interests is moot.⁹³ However, based on the findings in this study it is apparent that there are indeed direct links between China's development cooperation and its commercial interests - in the case of the RATDC and UATDC these interests are one and the same.

Conclusion

Sino-African agricultural demonstrations carry with them a number of risks and benefits for both China and the African countries that host them. African countries are keen to articulate with China because China has affordable agricultural technologies that are easy to adapt to rural African environments. Rwanda and Uganda had the benefit of receiving agricultural technologies that assisted in the development of nascent agricultural subsectors: notably mushrooms in Rwanda, and caged fish farming in Uganda. Prior to the FOCAC summit in 2006, the agricultural ministries in Rwanda and Uganda were familiar with the comparative advantage of Chinese agricultural technologies. They were keen to find ways to access those technologies, as they had the potential to contribute to agricultural initiatives that the respective ministries had already designed.

In partnering with China, Rwanda and Uganda are offered intermediary technologies that allow them to pursue more productive – but also more input-intensive – modes of agricultural production. The majority of these technologies are best suited to mid-sized farmers and entrepreneurs. This article confirms that Chinese demonstration farms in Africa produce food for local markets. However, FOCAC demonstration centres enable Chinese firms to enter African markets and pursue their own commercial interests. While there is no indication that China aims to transform rural Africa into an offshore breadbasket, rural Africa is a place where Chinese firms could be looking to establish a larger commercial presence, and the protocols of the agricultural demonstration centres allow Chinese companies to do so on their own terms. It would not appear China is articulating with Africa to access food resources; rather, based on the protocols of the demonstration centres in Rwanda and Uganda, it appears China is looking to access new markets to establish a business presence.

China is a cog in the international system that African governments and agricultural institutions can turn in order to access relevant expertise, and stylised agricultural technologies that are appropriate for their rural sectors. However, the contribution that China makes to African agricultural development does not offer relief from liberal development paradigms. Nonetheless, China is becoming an increasingly powerful node of support for agricultural development, and it is important to understand the nature of this emerging trend. The conclusions reached in this study suggest how theories of Sino–African affairs and their role in the global food system ought to consider the relationship in the future. The RATDC and the UATDC should not be considered agricultural incursions by China into Africa, nor should they be considered simple examples of Chinese and African cooperation. Rather, they are indicative of new partnerships that are a part of a changing global system for which the impacts and implications are only just emerging.

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Note on Contributor

Isaac Lawther recently graduated with a Master’s in Environmental Studies from the School of Environment, Resources and Sustainability at the University of Waterloo. This paper is based on research he conducted for his thesis, titled *Situating Sino–African Agricultural Demonstrations in the Global Food Order; Case Studies from Rwanda and Uganda*. Jennifer Clapp made this project possible by providing funding, and was the supervisor of the thesis. Isaac is currently studying Mandarin Chinese at National Taiwan University, and will begin doctoral studies in the Department of Political Science at the University of Toronto in Fall, 2017.

Notes

1. Initially, 14 centres were agreed upon at the 2006 summit, but this number was later expanded to 23 centres at subsequent FOCAC meetings. Xu et al., “Science, Technology, and the Politics.”
2. Brown, *Who Will Feed China?*; and Smil, *China’s Environmental Crisis*, chapter 5.

3. GRAIN, *SEIZED!*; Lisk, "Land Grabbing," 567; and Zoomers, "Globalization and the Foreignization," 434.
4. Cotula et al., *Land Grab or Development Opportunity?*, 57–8; GRAIN, *SEIZED!*, 2; and Hall, "Land Grabbing in Southern Africa," 194.
5. First asked by Brown, *Who Will Feed China?*
6. Brautigam, *Will Africa Feed China?*
7. Cotula et al., *Land Grab or Development Opportunity?*, 55; also see Brautigam and Tang, "China's Engagement in African Agriculture"; and Buckley, "Chinese Land-Based Interventions in Senegal."
8. Amanor and Chichava, "South–South Cooperation," 21.
9. Twenty-nine of these interviews are quoted directly in this article.
10. Alden, *China in Africa*, 5–6; Buckley, "Chinese Land-Based Interventions in Senegal," 430; Shinn and Eisenmann, *China and Africa*, 10–4; Adem, "Conclusion," 235–239; and Shambaugh, who discusses optimism and pessimism about China's foreign policy more broadly, *China Goes Global*, 311–3.
11. Brown, *Who will feed China?*; and Smil, *China's Environmental Crisis*, chapter 5.
12. Grain, *SEIZED!*
13. Pearce, *Land Grabbers*; Zoomers, "Globalization and the Foreignization."
14. P. Li, "Hopes and Strains"; and National Post, "China Expands Its Farmland"; also see Brautigam and Zhang, "Green Dreams," for a more complete discussion of the influence GRAIN's report had on casting China as a leading land grabber.
15. Bernstein, "Agrarian Political Economy."
16. For examples and more information about food regime theory see Friedmann, "International Regimes of Food"; Friedmann and McMichael, "Agriculture and the State System"; McMichael, "Food Regime Genealogy"; or Pritchard, "Long Hangover."
17. See McMichael, "Land Grab," for an example of the incorporation of land grabbing into food regime theory.
18. Cotula, *Great African Land Grab?*; McMichael, "Food Regime Analysis," 292; Robertson and Pinstrup-Anderson, "Global Land Acquisition," 273.
19. Brautigam, *Chinese Aid and African Development*; Brautigam, "China and the Kpatawee Rice Project"; and Brautigam, "Doing Well by Doing Good."
20. The production of optimism by refuting pessimistic claims is made particularly clear in the title of Brautigam's (2009) book, *The Dragon's Gift: The Real Story of China in Africa*.
21. Brautigam and Zhang, "Green Dreams."
22. Brautigam and Tang, "China's Engagement in African Agriculture"; Buckley, "Chinese Land-Based Interventions in Senegal"; X. Li et al., *Agricultural Development in China and Africa*; Xu et al., "Science, Technology, and the Politics."
23. Alden, *China in Africa*, 5; see also Xu et al., "Science, Technology, and the Politics."
24. Brautigam, *China in Africa*; and Buckley, *Narratives of China–Africa Cooperation*.
25. X. Li et al., *Agricultural Development in China and Africa*.
26. Huang, Otsuka, and Rozelle, "Agriculture in China's Development," 468; Xu and Li, "China's Agricultural and Rural Development," 190; and Xu and Li, "China's Agricultural and Rural Development."
27. An example of this explicit challenge is to a development framework established by Johnston and Mellor in "The Role of Agriculture in Economic Development," which many analysts refer to when measuring the success of China's agricultural development. For references to the Johnston and Mellor framework see Huang, Otsuka, and Rozelle, "Agriculture in China's Development," 468; and Xu and Li, "China's Agricultural and Rural Development," 190. For an explicit challenge to this framework see Friedmann and McMichael, "Agriculture and the State System," 93.
28. Brautigam and Zhang, "Green Dreams."
29. NEPAD, *Comprehensive Africa Agriculture Development Programme*, 12–17.
30. MINAGRI, *Strategic Plan for Agricultural Transformation*, 67.
31. GoR, *Rwanda Vision 2020*, 17.
32. Interview by author with the Minister of State in Charge of Agriculture in Rwanda, 27 March 2015.

33. Lin, *Rwanda JUNCAO*.
34. Personal communication by author with National Crops Resources Research Institute representative, 28 May 2015.
35. Lin, *Rwanda JUNCAO*.
36. Ibid.
37. Lin, *Rwanda JUNCAO*; interview by author with Rwanda Agriculture Technology Demonstration Centre (RATDC) staff member and JUNCAO entrepreneur, 12 March 2015; interview by author with RATDC training assistant, 20 March 2015; and interview by author with RAB mushroom extension officer, 15 April 2015.
38. Interview by author with Director General of RAB, 14 April 2015.
39. Ministry of Foreign Affairs, Rwanda, *Protocol on the Rwanda Agriculture Technology Demonstration Centre*; interview by author with Director General of RAB, 14 April 2015.
40. MAAIF, *Agriculture Sector Development Strategy and Investment Plan*, 1.
41. GoU, *National Development Plan*, 1.
42. Ibid.
43. Interview by author with National Fisheries Resources Research Institute (NaFIRRI) senior personnel, 4 June 2015.
44. Interview by author with NARO senior personnel, 11 June 2015.
45. Interview by author with Aquaculture Research and Development Centre (ARDC) Research Officer, 28 May 2015; interview by author with MAAIF senior personnel, 30 May 2015; interview by author with NaFIRRI senior personnel, 4 June 2015; interview by author with Principal Fisheries Officer at MAAIF, 8 June 2015; and interview by author with NARO senior personnel, 11 June 2015.
46. The Principal Fisheries Officer at MAAIF noted that grants received from the United States Agency for International Development (USAID), The Department for International Development (UK), and the International Development Research Centre (Canada) had all been successful.
47. MAAIF, *Proposed Plan*, 13.
48. Interview by author with ARDC Research Officer, 22 May 2015; interview by author with ARDC Research Officer, 26 May 2015; and interview by author with ARDC Research Officer, 2 June 2015.
49. Ibid.
50. Interview by author with Director General of RAB, 14 April 2015.
51. Interview by author with RAB Senior Research Coordinator, 18 March 2015.
52. The specific reference was to the 'bulldozing' abilities of Western-style harvesters.
53. Interview by author with Manager of Outreach and Training, Kigali Farms, 17 March 2015. This particular participant made this comment in reference to harvesting machines from China.
54. Principal Fisheries Officer at MAAIF.
55. Interview by author with NARO senior personnel, 11 June 2015.
56. Interview by author with fish farmer, Uganda, 16 June 2015.
57. Interview by author with NARO senior personnel, 11 June 2015; interview by author with fish farmer, Uganda, 15 June 2015; interview by author with fish farmer, Uganda, 16 June 2015; and interview by author with fish farmer, Uganda, 17 June 2015.
58. Interview by author with ARDC Research Officer, 22 May 2015.
59. Interview by author with ARDC Senior Research Officer, 26 May 2015.
60. Interview by author with ARDC Research Officer, 22 May 2015.
61. Interview by author with ARDC Research Officer and fish disease specialist, 29 May 2015.
62. Interview by author with CEO of mushroom- and tube-producing company, Rwanda, 16 April 2015; interview by author with mushroom cooperative member in Rwanda by, 24 April 2015; and interview by author with mushroom tube producer in Rwanda, 30 April 2015.
63. Interview by author with CEO of mushroom- and tube-producing company, Rwanda, 16 April 2015; and interview by author with mushroom tube producer in Rwanda, 30 April 2015.
64. Interview by author with Jinja Fisheries Officer, 18 June 2015; and interview by author with Jinja Fishers Association member.
65. Interview by author with fish farmer, Uganda, 15 June 2015; interview by author with fish farmer, 16 June 2015; interview by author with Jinja Fisheries Officer, 18 June 2015.

66. Akram Lodhi, "Contextualizing Land Grabbing," 126.
67. Brautigam and Zhang, "Green Dreams," 1688.
68. Cheru and Calais, "Countering 'New Imperialism,'" 226.
69. Cheru and Calais, "Countering 'New Imperialism,'" 226.
70. Clapp, *Adjustment and Agriculture in Africa*, 12–35; Weis, *Global Food Economy*, 128–60.
71. Interview by author with Director General of RAB, 14 April 2015.
72. Katherisan, *Farm Land Use Consolidation*, 4.
73. Interview by author with RAB staff, Rwanda, 8 April 2015; interview by author with RAB staff, Rwanda, 19 March 2015; interview by author with rice farmer, Rwanda, 7 May 2015.
74. Interview by author with RAB staff, Rwanda, 8 April 2015.
75. Ibid.
76. Interview by author with rice farmer, Rwanda, 7 May 2015.
77. Brautigam, *Dragon's Gift*, 249; X. Li et al., *Agricultural Development in China and Africa*, 233.
78. Ibid.
79. Ministry of Foreign Affairs, Rwanda, *Protocol on the Rwanda Agriculture Technology Demonstration Centre*, 6.
80. GoU, *Protocol on the China–Uganda Friendship*, 6.
81. Brautigam and Zhang, "Green Dreams."
82. Nearly half of all participants interviewed mentioned that 'secrecy' was an issue at the demonstration centres.
83. Interview by author with mushroom technology officer at RAB, 30 March 2015.
84. Interview by author with mushroom producer and entrepreneur, 30 April 2015.
85. Interview by author with mushroom technology officer at RAB, 30 March 2015.
86. Interview by author with CEO of BN Mushroom Producers, 9 April 2015; and interview by author with manager of production at mushroom producing company, 29 April 2015.
87. Interview by author with mushroom technology officer at RAB, 15 April 2015.
88. Interview by author with ARDC Senior Research Officer, 26 May 2015; and interview by author with ARDC Research Officer, 2 June 2015.
89. GoU, *Protocol on the China–Uganda Friendship*, 6.
90. X. Li et al., *Agricultural Development in China and Africa*, 233.
91. Ibid.
92. Amanor and Chichava, "South–South Cooperation," 21.
93. Tugendhat and Alemu, "Chinese Agricultural Training Courses," 73.

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