

8 Conclusion

There are two different attitudes toward learning from others. One is the dogmatic attitude of transplanting everything, whether or not it is suited to our conditions. This is no good. The other attitude is to use our heads and learn those things which suit our conditions; that is, to absorb whatever experience is useful to us. That is the attitude we should adopt.

Mao Zedong, 1968¹

This book has examined one of the significant but overlooked chapters in the history of foreign assistance: China's foreign aid. While foreign policy specialists have explored the reasons China gives foreign aid and offered broad descriptions of China's foreign aid program, detailed analyses of China's actual assistance efforts, their outcomes, and the reasons for those outcomes are almost nonexistent. One aim of this book has been to close that gap, providing an historical account of one major aspect of China's aid: the effort to export its green revolution to Africa. Another aim has been to generate insights into one of the central problems in the study of foreign aid: why is aid in Africa so often ineffective? What influences the outcome of foreign aid efforts?

In Chapter 2, I discussed a number of different factors thought to be crucial in determining the outcome of efforts to improve farming practices, boost agricultural output and increase productivity in rural Africa. Economists and technical specialists (who tend to dominate in this field) generally blamed the often troubled outcomes of projects on problems with the appropriateness of the technology introduced, poor economic incentives, or organization and management failures. Conversely, social scientists (predominantly anthropologists) whose voice has increasingly been heard in project evaluations, tended to put the blame on planners' ignorance of local social and cultural dynamics. Since the early 1980s, these domestic factors have been narrowed even further to place the lion's share of the blame for the failure of development interventions of all kinds on an unfriendly policy environment, hence the overwhelming emphasis on structural adjustment and economic liberalization during the 1980s and 1990s.

After visiting China's project sites in West Africa, surveying project farmers, interviewing government officials and Chinese, and calculating

the costs and benefits of growing rice with Chinese methods, I found that these traditional explanations, while providing many insights into the outcomes of projects like those of China's, remained incomplete. In particular, they tended to ignore the influence of weak domestic institutions, low capacity, and anti-development states in Africa. This has been partially remedied in the increased attention now being given by development practitioners to political issues: participation, accountability, transparency, and the rule of law, signalled by the World Bank's assertion in 1989 that Africa's development problems were rooted in a fundamental crisis of governance.² However, although these factors are now becoming fairly standard in the academic literature on development (even that written by economists), it is still rare to find project documents that explicitly consider political factors such as corruption, poor leadership, and other abuses of power, despite several decades of reviews that have pointed to the 'political gap' in donor-funded analyses.³ Clearly, domestic political considerations influence the implementation of all projects, and this was certainly the case for China's projects in West Africa.

West African governments took China's blueprint designs and remoulded them to suit their own political needs for patronage, for votes, or for more centralized control. The decision to support irrigated rice instead of millet, sorghum or other possible crops was itself a political decision of African governments, who were concerned with ensuring stable supplies of a politically important food staple. Even more fundamentally, domestic political instability – coups in The Gambia, civil war in Liberia and Sierra Leone – put the sustainability of China's and all donors' efforts in question.

In addition, traditional explanations, focused as they are on domestic factors, miss a prior and central question: how and why did the Chinese, as donors, make the choices they made in designing and implementing their program of agricultural aid? Aid projects and programs are not conceived in a vacuum. China's domestic politics and ideology shaped the specific content and strategies of its foreign aid, just as they shape other aspects of foreign economic policy. This is clearly true of aid in general, as a particularly fine, new book by David Lumsdaine points out.⁴ Lumsdaine analyzes the ways in which 'moral vision' – domestic ideas about justice, and attitudes about poverty held in the US and Europe – shaped the international aid regime after World War II. China has never been a part of the aid regime, and indeed, Lumsdaine's book makes no mention of China's role as a donor.⁵ Yet despite the different 'rules' that guide aid decisions in China, it is clear that there as well, domestic ideas influenced foreign aid choices, and those choices, in turn, influenced the outcome of China's foreign aid.

China's rice projects introduced a significant change into the farming practices of rural people in The Gambia and Sierra Leone, and demonstrated the feasibility, if not the profitability, of large-scale, mechanized rice production in Liberia. Yet all of these projects were plagued by problems that affected their ultimate sustainability. The most successful outcomes were in The Gambia, where the Chinese developed 112 small-scale village level irrigation systems, totalling around 1021 hectares, and to double-crop after the Chinese left. However, most of these households failed systems declined in some years to 36 per cent of the area, all of which affected the financial sustainability of China's exported green revolution. Some 15 per cent of the land was abandoned within five years because of technical problems. In Sierra Leone, the Chinese developed five new agrotechnical stations with extension areas, a total of 1270 hectares. They built 40.5 kilometers of feeder roads, established a training center, and trained more than 700 agrotechnicians in rice cultivation methods. Although in The Gambia, government officials in rice cultivation to limit the autonomy of the Chinese team and integrate them with the Ministry of Agriculture's programs, top leadership in Sierra Leone did not support Ministry officials' efforts to better integrate the Chinese into the Ministry's work. After the Chinese left, yields dropped sharply and the extension areas in Sierra Leone fared better than the stations themselves. Although yields there also declined, many farmers were pleased by the new farming system that they took on the task of expanding their acreage, without the assistance of the government.

The Chinese began their project in Liberia, as in the other two countries, by taking over Taiwan's abandoned rice program, locating Chinese teams at a number of medium-sized, village-based irrigation systems. Within a few years, however, the shape of China's project changed radically. The Chinese centralized their personnel and efforts at a single location, Kpatawee, assisting the Liberian government's long-standing desire to obtain a centralized, state-owned supply of rice. The original farm included 160 hectares of upland and 13 hectares of irrigated rice; it was later expanded to include an additional 142 hectares of upland cultivation. Although government production at Kpatawee was interrupted in 1989 when civil war broke out in Liberia, it was already clear that Kpatawee farms that already occupied most of the choice land in Bong County, and

that surrounding farmers had gained little but occasional employment opportunities from the mechanization-intensive cultivation system introduced by the Chinese.

The traditional approaches to evaluating development all offered useful insights into these outcomes, yet they all have shortcomings. For the most part, these approaches assume a 'neutral' donor and host, ignoring the fact that choice of technology, attitudes about economic incentives, and approaches to institution building are all deeply affected by the political contexts, values, and ideologies present in the donor's home environment, as well as in each African country. When the impact of politics and ideas are factored into the more traditional explanations, it becomes clear why the Chinese made the choices they did in deciding what their green revolution package of technology and practices would contain, and why their projects, subject to the exigencies of domestic political strategies in these three African states, had such different levels of effectiveness.

TECHNOLOGY, POLITICS, AND IDEAS

The innovations introduced by the Chinese were clearly an attempt to apply China's own rural solutions to West African agricultural needs. This was particularly the case during the Maoist period. The irrigation systems constructed by the Chinese conformed closely to those observed by delegations in China, even to the extent of a high and costly ratio of canals to land. The Chinese also introduced some of their own improved seeds and a number of labor-intensive and high-management techniques in order to establish the high yields and multiple cropping indices by which they judged success. Although high-yielding varieties do require extra management and are susceptible to disease, one of the surprising outcomes of China's green revolution exports was the widespread popularity of several high yielding Chinese seed varieties (CCA and Aiwu in particular). Despite the considerable maintenance they required, they were widely appreciated and spread through informal networks to non-project farmers.

Chinese projects also promoted self-reliance; they emphasized local materials, recycling, and frugality before these became important themes in assistance from other donors. Yet when other donors were emphasizing manual cultivation as the only sustainable (and economical) option, China's projects emphasized agricultural mechanization with power tillers and small tractors, technologies that countered in practice China's oft-stated goal of helping to build African countries' self-reliance.⁶

As Constance Anthony has pointed out, politics help explain why technically inappropriate choices were made, but Anthony's study of the green revolution and the introduction of mechanization in East Africa largely discounts the importance of ideas and assumptions that, along with interests, also shape the choice of technology.⁷ China's own domestic ideology influenced most of the technical choices on these projects, and ultimately, outcomes. For example, China's promotion of power tillers and tractors in countries where their economic efficiency was, at best, unproven, and where other donors were only willing to support manual cultivation, was a clear reflection of China's own agricultural mechanization goals, and Mao's conviction that mechanization was China's 'way out' of underdevelopment, in spite of its relatively higher cost in labor abundant regions. While the Chinese experimented with animal traction in The Gambia and Sierra Leone, it was not actively promoted to farmers, in keeping with China's (and Mao's) view that animal traction was backward. Ironically, West Africans may have learned greater self-reliance through the failure of the Chinese example. 'Power tillers make people lazy,' said one Sierra Leonean. 'We must use means that are available within the country.'

In turn, domestic political considerations help explain why African leaders welcomed some of the Chinese technical choices. African leaders agreed with Chinese planners that mechanization was 'more modern' than manual cultivation, and thus, something they wanted to encourage. But in addition, foreign aid involves resources that can be used for patronage purposes, and African leaders appreciated the patronage opportunities provided both through mechanization (in Sierra Leone and Liberia, local elites and the army kept the Chinese busy with their demands for gratuitous plowing services) and through the placement of well-equipped agrotechnical stations in politically important regions.

ECONOMICS, POLITICS, AND IDEAS

Most foreign aid efforts are evaluated primarily through the lens of economic analysis, as countless studies of foreign aid make clear. The oft-cited study commissioned by member governments of the World Bank and the IMF, *Does Aid Work?* (1994), highlights the rates of return of projects in its conclusion that the outcome of agricultural projects has, on the whole, been 'broadly positive.'⁸ The authors' confidence in rates of return as a reliable indicator is not broadly shared outside of the World Bank. As one critic, Gene Ellis, remarked about the use of cost-benefit analysis at

the appraisal stage: 'the internal rates of return are limited only by the audacity of the proposal team.'⁹ A recent study of the political economy of evaluation echoed these concerns in its finding that the tools used by aid agencies (cost-benefit analysis among them) are 'ill-suited' for effective evaluation.¹⁰

Still, as part of an array of evaluation techniques, cost-benefit analysis can provide suggestive insights into the impact of foreign aid. Agricultural projects can be evaluated at a financial level, using existing prices with accompanying distortions (if they exist) and assessing the profitability of China's package of green revolution techniques to private farmers. They can also be evaluated at an economic level, taking into account the distortions produced by a government's agricultural and trade policy framework. While the first approach ought to be able to shed light on the specific outcomes of the introduction of one or another set of practices and inputs, the second approach can suggest how sustainable those outcomes are, measuring the extent to which they depend on subsidies or other government interventions. With so many West African governments having attempted policy liberalization under structural adjustment programs, prices should be less distorted now than they were when the Chinese first began working in West Africa. Nevertheless, economic analysis of China's projects suggests that getting prices right was likely to be insufficient for sustaining agricultural production.

Government price policies affected the incentives West African farmers faced in deciding whether to grow rice or another crop, whether to sell rice and consume cassava or vice versa, or whether to leave the countryside and migrate to the cities. The impact of paddy prices on the quantity of marketed rice in several of these countries is well documented. In Sierra Leone, as mentioned earlier, when the price of paddy was doubled in the mid-1970s, the country became briefly self-sufficient in rice. Liberia experienced a similar jump in marketed output in the early 1980s when the paddy price was increased by 50 per cent. In these cases, policies did temporarily reduce the need for imports, but given that marketed output did not increase on a permanent basis, it is clear that prices alone did not stimulate additional production, at least in a sustainable manner. Prices needed to be accompanied by improvements in agricultural institutions.

After structural adjustment liberalized prices in West Africa, growing rice with Chinese techniques was still profitable for many farmers when compared with returns to growing rice with other techniques, or daily wage labor. Profits were generally highest for techniques that mirrored the

high management, high input model demonstrated by the Chinese: these techniques had the highest yields. Yet almost no farmers adopted this model. Part of the explanation lies in seasonally varying opportunity costs of time spent growing rice. In some areas, such as The Gambia, farmers' reluctance to double-crop can be explained by the fact that land-extensive, labor-saving alternative rainy season crops: sorghum, millet, and groundnuts, gave higher returns to a day's labor than did irrigated rice in the rainy season. Only during the dry season, with few alternative activities, did irrigated rice become a priority, and an alternative to seasonal migration. This meant, however, that the maintenance and overhead costs for an irrigation system designed for two seasons' use became too expensive for a single season. While farmers would continue using a system for which development was a sunk cost, irrigated rice was unlikely to be diffused widely, and farmers were unlikely to construct new irrigation systems without government subsidies. Furthermore, in Sierra Leone and The Gambia, farmers had more difficulty purchasing critical inputs for rice cultivation once the liberalization required under structural adjustment removed subsidies and a series of devaluations raised the local cost of inputs and brought the financial cost of production closer to the economic cost.

As in China during the Maoist period, planners and technicians on these projects paid little attention to the economics of production. Political pressures to set up successful demonstration farms led to intensive Chinese management which the host countries found difficult to replicate or continue. This reflected the Chinese tendency to channel inputs to models such as Dazhai, and then hold them up as examples, despite the fact that those trying to imitate the model did not have access to special government treatment.

A political overlay to an economic analysis also helps us to understand why governments in West Africa would push so vigorously for the introduction of intensive rice cultivation on the Asian model, when economic analysis shows that without government subsidies, traditional crops – sorghum, millet, traditional swamp rice – are all generally more profitable for the average African farmer than the laborious cultivation of Asian irrigated rice. As Robert Bates has argued, agricultural projects provide governments with a number of politically valuable resources.¹¹ To the extent the government can control part of the production, as in Liberia, rice projects can produce political goods that can be allocated to supporters. Mechanization services and even road construction can also be targeted to supporters, or offered to the army, as in Sierra Leone. Finally, since rice is a highly political crop in West Africa, rice projects become a way to

reward supporters, such as Mandinka farmers in The Gambia. Leaders also expect that increased domestic rice production, subsidized with foreign aid, will help guard against the periodic rice shortages that all three countries have faced, and that in Liberia ultimately brought down the Tolbert government.

With enough time to move up the learning curve, availability of inputs, and technical assistance to solve specific pest and disease problems, local farmers could raise their skill levels and productivity to Asian levels, the levels the Chinese assumed when they introduced these techniques. For those West African farmers who do not move up the learning curve, irrigated rice is unlikely to be an economically attractive choice due in part to its heavy labor requirement (although this may change as wages remain stagnant in West Africa). Yet moving up the learning curve requires the support of technical assistants and extension agents, better infrastructure to lower the costs of moving grain to markets, and effective research establishments, few of which presently exist in Africa.¹²

INSTITUTIONS, POLITICS, AND IDEAS

Structural adjustment programs designed to allow a greater role for markets have had little success in most African countries. There are many reasons for this, but most analysts agree that markets in Africa are relatively less well-developed than elsewhere, and that markets and private sector actors still require effective supporting institutions in order to function well, institutions that austerity policies do more to break down than to build.¹³ Institutional development is a very long term process; in agriculture, decades may be required to institutionalize research and extension capacity.¹⁴ It is also a process that is very sensitive to local politics, particularly the ability and desire of leaders to establish rules and organizations with accountability and predictability.

The Chinese introduced institutionally-demanding agricultural innovations into environments with particularly weak institutions. This paradox also explains part of the problematic outcomes of China's foreign aid. Green revolution technologies required farmers to have accurate information about fertilizer applications, pesticide use, and proper cultivation practices. Timing was very important, particularly regarding land preparation (in The Gambia, cold temperatures can damage rice if planted too close to the winter season), but also with regard to the availability of irrigation water. Inadequate supporting infrastructure made mechanization a

short-lived option. In short, China's innovations assumed the existence of either a strong state or well-functioning private irrigation associations and markets in order to supply technical information, fertilizers, pesticides and other inputs, maintain pumps, regulate water usage, and devise strategies for combating recurring problems with endemic diseases. In the absence of either strong states or well-working private sectors, the Chinese chose substitutes. They transferred some of their own agricultural institutions, through their projects, and they linked their projects, temporarily, to institutions in China.

In Liberia and Sierra Leone, this choice amounted to 'bypassing' existing institutions. Projects established without strong attachments or linkages between their own efforts and preexisting (generally, governmental) institutions may work well in the short run, but do little to build long-term capacity. For example, the simple commune or brigade level research systems established early on in Sierra Leone and which so resembled agrotechnical centers in rural China, sent all of their research reports directly to their home base in China rather than linking their work with the research institutes already present in Sierra Leone. Agricultural inputs such as fertilizers and agrochemicals generally came from China, or were procured independently by the Chinese, and in Liberia and Sierra Leone, only the Chinese knew how to order spare parts for their agricultural machinery. When the Chinese left, farmers suffered an almost immediate and profound drop in institutional support. Only in The Gambia did the government, headed by a democratically-elected president dependent for support on keeping the loyalty of a majority of rural farmers, make a successful effort to eventually bring the Chinese under the umbrella of the ministry's overall rice program, integrating their work more closely with that of the ministry's.

Furthermore, even in The Gambia, Chinese experts and African officials often had considerable difficulty working together. The norms of work behavior shaped in different cultural settings affected each side's expectations of the proper way for officials and experts to behave. Particularly during the Maoist period, dominant ideas about transparency of information, hierarchy, authority, egalitarianism, and self-reliance shaped the organization of work on China's projects, and the friction that sometimes resulted also affected the institutionalization of Chinese management practices. As in China, women on the African projects took a subordinate role, if they had a role at all. There were no women among the Chinese technicians on any of the agricultural projects I visited. Generally, gender divisions of labor in agriculture were ignored by the Chinese. And although the Chinese encouraged participation of the poor, decisions on their

projects were made in a highly-centralized manner that gave almost no scope to participant decision-making.¹⁵

These institutional features of China's projects were shaped by the dominant ideas in China's own agricultural practices and in the organization of their aid. The very fact that most aid projects were arranged through COMPLANT, the Chinese Complete Plant Export Corporation, suggests that they viewed the construction of irrigation systems and improved farms as turnkey projects that could be constructed, like a factory, and then nearly handed over for the recipient to use. In the process they failed both to effectively transplant their own agricultural institutions and to forge strong links to existing local institutions.

Other strongly held ideas shaped other institutional features of China's aid. During China's Maoist period, when the party line favored rapid development through the mobilization of the politically aware masses ('red'), over the slower, cautious, but scientific approach ('expert'), Chinese technicians transferred research methods such as the variety trials in The Gambia that neglected careful scientific rules in favor of rapid development and dissemination. Other aspects of China's domestic ideas about development were more positive. Training, generally on a group basis, emphasized 'learning by doing,' a reflection of emphases in Maoist China. Both Sierra Leone and Liberia benefited from the Chinese idea that agricultural development should be self-financing, as projects in each country were designed with income-producing components to help meet some of their recurrent costs. At the same time, however, by bringing their foreign aid resources to rural West Africa, the Chinese were in fact contradicting their own domestic experience, providing foreign resources to West Africa, while their own rural areas relied primarily on the 'self-reliant' mobilization of rural savings.

Ideas held by the Chinese explain part of the fate of their projects' institutional initiatives, but domestic politics in West African countries also had an impact. As Krueger and Ruttan have argued, institution-building in agricultural development 'is only marginally amenable to a project logic.'¹⁶ Political commitment and local state capacity are also crucial. The commitment of governments to agricultural development has been a notable feature of the economic success in Asian countries: Japan, Korea, Taiwan, and, recently, China. The commitments of these West African governments to the goals of rice self-sufficiency varied, as evidenced by inadequate budgets, frequent inability to assign counter-parts in a timely manner, and a general neglect of project infrastructure after the departure of the Chinese. The Chinese ability to address these needs varied, possibly reflecting China's own process of learning how to

'do' agricultural projects in West Africa, a process that began with the project established in 1971 in Sierra Leone (China's first). In Sierra Leone, the Chinese operated quite independently, despite the sporadic efforts of ministry officials to reshape their project approach. Several years later, although the Chinese again started out as an independent operation, the Gambians took the initiative in ensuring that assistance from the Chinese met their needs and supplemented an existing program. In Liberia, although the Kpatawee project was implemented fairly independently from the ministry, project managers did actively cooperate with the FAO/IFAD Smallholder Rice Seed Multiplication Project. An initiative of the two projects rather than of the Liberian government, this reflected the greater openness of the post-reform Chinese to outside cooperation, and signalled a growing Chinese concern with the sustainability of their project efforts.

CULTURE, POLITICS, AND IDEAS

Anthropologists have been on the forefront of new approaches to understanding the relationship between culture and politics, and some are beginning to apply their understanding to the experience of foreign aid. A provocative early example of this trend was James Ferguson's 1990 book *The Anti-Politics Machine*.¹⁷ Ferguson's book 'deconstructed' the documents and activities of the multi-donor-funded Thaba-Tseka rural development project in Lesotho, showing how development workers involved with the project operated under a set of ideas that assumed first of all, that those connected with the project (donors, aid workers, local and national government) were disinterested, neutral carriers of technical solutions to technical problems, disregarding the largely political nature of much of the underdevelopment in the Thaba-Tseka region. Attempts like Ferguson's to probe hitherto unexamined aspects of development and foreign aid in Africa highlight the important role of (often unexamined) ideas and assumptions about how development 'should' happen held by those working in development.

Ferguson's book concentrates much more on the impact of unexamined development ideas and assumptions, than on their origins. As they began their experience as donors, Chinese development ideas were deeply influenced both by the Maoist Cultural Revolution, and by many centuries of experience in the intensive cultivation of rice in societies built around the imperatives of land scarcity. Like the donors working in Thaba-Tseka, the Chinese in West Africa worked under the influence of a number of

inappropriate assumptions about the local culture, and this affected the outcomes of their aid. In China, hard agricultural work in two cropping seasons has been necessary for survival. This is not true in West Africa, where other priorities consequently exist, especially in forest areas where a living can still be made with lower labor inputs and shifting, rainfed cultivation techniques. A design that required, per hectare, more than 300 persondays of skilled labor was for most farmers too great a contrast with alternative choices such as millet (50 persondays/hectare) or rainfed, upland rice (79 persondays/hectare), even if yields in traditional systems were much lower. Likewise, the Chinese were ignorant of the gender division of labor in West Africa. By addressing their project to men, the Chinese deprived women of the long-term use rights traditionally associated with land reclamation and development, and this quite possibly altered the economic balance of power in some West African families, leading to women having to rent rice land from their husbands and male relatives. These choices flowed naturally from assumptions that African rice cultivation either did, or should, resemble China's own long-standing culture of rice cultivation.

As Ferguson emphasized, and as this study confirms, frameworks that privilege cultural misunderstandings as explanations for the outcome of development interventions can be improved by including an analysis of the political concerns of African governments and project officials. For example, Chinese planners made assumptions about African institutions such as land tenure that were reinforced by the political concerns of African governments. In Sierra Leone and Liberia, Chinese ignorance about local land tenure systems, and expectations that the land was, as in China, essentially controlled by the state, reinforced the central government's efforts to superimpose its own, similar, interpretation on the shifting set of traditional rules and norms about land use and ownership. With the assumption that the Sierra Leone government had the right to control all use of the station land, an assumption contested by local farmers, the Chinese devised station rules that made it easy for the government to remove station farmers who had different ideas about how to cultivate the land, or who refused to follow station rules. In many cases, this led to significant shifts in control over land, from the traditional occupants of the site, to the government and its clients. In Liberia, both traditional landholders and members of the former cooperative that had held the land were ignored in the design and implementation of Kpatawee, and this foreclosed the opportunity to teach Chinese irrigated rice cultivation techniques directly to farmers, while creating resentment toward the project among local families who remained uncompensated for the seizure of their land.

THE FUTURE OF THE GREEN REVOLUTION IN AFRICA

When the Chinese came to The Gambia, they said 'give us problems as big as mountains.' With their work in West Africa, they were able to chip away at the problem of inefficient and low productivity local rice production, but the mountain still remains. On many levels, the story of the Chinese effort to export green revolution to Africa raises doubts about the chances for rapid agricultural change in West African rice production. In part, this is due to the technical difficulties of intensive rice cultivation in a region where soils and growing conditions can differ dramatically from one end of an irrigation system to another. But an even greater difficulty is the fact that where it has been most successful, in Asia, irrigated rice demands substantial state support. Subsidies for the construction and operation of irrigation systems are the norm in Asia, even in China. East and Southeast Asian countries have invested substantial sums in research capacity, transport infrastructure, and extension. This kind of support is largely absent in West Africa. Non-governmental organizations, with small projects and few economies of scale, have been unable to substitute for the state in providing sustainable agricultural institutions. Certainly, in war-torn Liberia and Sierra Leone, governments are now concerned primarily with survival, and well-working agricultural institutions are but distant dreams. However, even in Asia, support for capacity did not materialize overnight. Population pressures have pushed the intensification of agriculture in Asia, and in time, growing land pressures and the demand for more intensive rice production techniques may lead African officials and farmers to resurrect the irrigation systems constructed in the 1970s and 1980s with the help of Chinese foreign aid. In fact, this process may not be as far off as it now seems. I end this book with a story that illustrates both the hopes and the challenges facing the 'green revolution' in Africa.

More than a decade after the last Chinese technician departed from Lambyama in Kenema, Sierra Leone, the Ministry of Agriculture posted a dynamic new agricultural officer, Prince Gamanga, to the former Chinese station. 'This place was a mess, a forest!' Gamanga told me as we walked among the neat rows of vegetables on our way down to the rice paddies where a number of people were weeding their plots in the cooler evening air. Station workers had been supplementing their incomes by renting out plots haphazardly. Ministry supervision had grown lax and arguments between workers and renters were heated and common: sometimes five different people would have paid for the same plot.

Gamanga remeasured and renumbered the plots, and then reestablished the centralized controls whereby farmers had to apply for plots through his office, and (in another echo of the departed Chinese) abide by the station's cultivation rules or lose access to their plots. He called a meeting of interested farmers, and asked them to fill out an application form for the plots. The traditional landowner families and those who had been farming plots recently were given preference, but other project farmers were also allocated plots.

With the farmers back in the fields, Gamanga tackled the bureaucracy at the station. He found that out of 80 staff and daily workers paid by the station, 20 didn't exist and 20 were very unenthusiastic about work. Without knowing that he was following Chinese practice, Gamanga established a daily schedule with a task for each person, each day: a piece-rate system he called 'tax-job'. By cobbling together spare parts from the pile of broken down Chinese power tillers, Gamanga and the technicians managed to get one of the 12 year old tillers back to work.

While we walked around the station in the cool of the evening, station workers were slashing at the elephant grass on the bunds, clearing the power tiller roads, and cleaning out the canals. 'They say Chinese yams don't grow here,' Gamanga said as he pointed to half a plot of yams all neatly tied to tall stakes. 'I'm going to prove them wrong.' In the paddies, the most popular rice varieties remained those brought in by China and the Taiwanese before them: CCA, Mange 2, and ROK 14. Although Prince Gamanga never studied the thought of Chairman Mao, his attitude reflected Mao's advice, as enshrined in the quotation at the beginning of this chapter: use your head, learn those things that fit your conditions, absorb what is useful.

Much that the Chinese brought to Africa was in fact useful. Although soon after the Chinese left, all three countries found their project sites 'flourishing with weeds,' determined local people were able in many cases to repair and renovate these Asian transplants. In many ways, China's green revolution exports seemed failures. Yet success has many measures, and sustainability is something that can only be measured after the passage of time. Rural Africans have long memories of the Chinese. In some areas, nearly two decades after their departure, Chinese assistance is still enshrined in the many working sites known individually as 'China Farm', in popular introduced varieties known as 'China yam' or in adopted, and adapted, systems of irrigated cultivation now called 'China rice.' Although not perfect replicas of the Chinese model, these are also the outcomes of China's aid.

China's 'East Wind' never swept across Africa with the force predicted by Chinese leaders. But Gamanga's experience suggests that with energetic government support and the aggregated efforts of committed individuals, China's green revolution might ultimately rival the impact of its red revolution as a source of ideas for African development. The challenge to this optimistic picture comes from its reliance on a state that can provide, at a bare minimum, the essentials listed by Adam Smith: 'peace, easy taxes, and a tolerable administration of justice.'¹⁸ Gamanga's efforts to rehabilitate Lambyama ended when Liberia's civil war spilled over into eastern Sierra Leone, leaving towns from Kenema to Bo at the mercies of roving bands of rebels. Until governments in Africa become stable, legitimate, and capable of providing an 'enabling environment' for their more energetic citizens, the promise of the green revolution is likely to remain untapped.

Appendix: Chinese Foreign Aid in West Africa: Country Overviews

CHINA AND SIERRA LEONE

China's aid program reshaped the skyline of Freetown, the capital of Sierra Leone. The massive, Chinese-built Siaka Stevens stadium and pool sit high on a hill just outside the city center in the Brookfield neighborhood of embassy houses and middle-class apartments. Across a valley, the Youyi (Friendship) Building towers over nearby one-story shops and homes. The Ministry of Agriculture, relocated to Youyi from the crumbling wooden colonial structure at Tower Hill that had served many generations of Sierra Leone farmers, now occupies a suite of offices overlooking the stadium. China's projects were not confined only to the capital, however.

Every two years from 1973 on, a team of approximately fifteen Chinese doctors and para-medical staff (including a cook) and equipment were sent to the rural Rotifunk hospital. In 1973, China donated two gunboats to assist Sierra Leone in patrolling its waters against unauthorized fishing expeditions. Between June and November 1974, five Chinese experts spent months in the Ferengebeya area conducting a feasibility study for iron ore mining. Also in 1974, the two governments announced that a Chinese table tennis coach and his interpreter would be dispatched to Sierra Leone for a one year stay, although a later report indicated that 'attendance at the table tennis coaching sessions being held in Freetown by the Chinese coach has been very poor.'¹ In 1975 three Sierra Leoneans travelled to China to study Chinese cooking for six months, financed under the loan.² Between 1976 and 1977, the Chinese built two bridges at Mange and at Kambia to complete the road linking Sierra Leone and northern Guinea. Construction began on the Magbass Sugar Cane Plantation in 1976 to provide raw material for the 10 000-ton capacity Chinese-built Magbass Sugar Mill. In 1979, the 30 000-seat Siaka Stevens stadium in Freetown, and its accompanying sports complex and athlete hostel were completed (the Chinese pointed out to President Stevens that the stadium would be quite useful for mass rallies).³

Early in the 1980s, the Chinese used funds originally committed to build a fiberboard factory to construct a 300-unit complex to house workers and staff of the Magbass Factory, originally the responsibility of the Sierra Leone government. A small (4000 kw) hydropower dam was discussed for years and finally construction began at the Doda site, north of Kenema, in late 1982.⁴ As with so many of their projects in Sierra Leone, the hydroelectric dam encountered delays due to government corruption. According to the Chinese, money allocated by the Ministry of Energy to the Ministry of Works to build a road to the site 'went into someone's pocket. This was a big problem for our project.' Eventually, the road was built by the Sierra Leone government, but by then the project had been