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Chinese Investment in Ghana’s Manufacturing Sector

Xiaoyang Tang

Development Strategy and Governance Division

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AUTHOR

Xiaoyang Tang (tangxyang@gmail.com) is deputy director of the Carnegie-Tsinghua Center for Global Policy and associate professor in the Department of International Relations at Tsinghua University, Beijing.

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ABSTRACT

This paper uses Ghana as a case study to illustrate the extent to which Chinese manufacturing firms are driving manufacturing in an African country. Through a combination of desktop and field research, the author finds that the total number of Chinese manufacturing investments in Ghana indeed increased during past decade, but quite a few projects have been abandoned or not implemented because of the unfavorable investment environment. Small and large manufacturing projects can be found in different sectors, such as plastics, steel, pharmaceuticals, and others. All of the manufacturing investments target local or regional markets, either taking advantage of local raw materials or seeing opportunities in a market with little competition. Transitioning from trading to manufacturing investment and clustering are identified as the main patterns by which Chinese investors establish themselves in Ghana. Chinese firms source simple raw materials from local suppliers but import industrial supplies from abroad. Learning from Chinese business models, a few local businessmen have started their own manufacturing projects, mostly in the plastics recycling sector, but a lack of capital appears to keep some local players from moving up the value chain. Ghana's weak economy itself is limiting technology transfer and local linkages between Chinese firms and Ghanaians.

Keywords: manufacturing, cluster, FDI, local linkage, technology transfer

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1. INTRODUCTION

Industrialization is a priority on many African countries' development agendas. Growth in manufacturing not only raises levels of employment but also can drive structural transformation, an essential step toward higher standards of living. China and many other Asian countries have successfully transformed from rural economies into manufacturing powerhouses. Recently, rising production costs at home and the desire to expand markets overseas have driven more and more Asian manufacturing firms to invest in Africa. Will their arrival accelerate the growth of manufacturing in Africa? Will they contribute to industrialization in African countries in general? Will they bring employment and technology to local people? These questions need to be investigated in order to evaluate the impact of investments in Africa by China and other Asian countries.

Some studies have been done to map the development of Chinese investments in Africa's manufacturing sector and their impacts. Researchers have found that beginning in the 1960s China provided a number of aid projects in African manufacturing, and some of those aid projects facilitated Chinese investments in the sector later (Brautigam 2008; Song 2011; Tang 2014a). Some statistics show that manufacturing investments from mainland China began to arrive in Africa, particularly South Africa, from the 1990s to the early 2000s (UNCTAD 2007). A 2005 World Bank survey reported that 45 percent of Chinese firms with overseas investment plans were interested in investing in African manufacturing (MIGA–FIAS 2007). However, actual manufacturing investments from China were rarely identified and studied before 2012. For example, Kaplinsky (2008) reported "no evidence" of Chinese setting up factories in Africa. In particular, the data and research were less focused on Chinese private enterprises than on larger investments of state-owned enterprises (Kaplinsky and Morris 2009; Gu 2009; Shen 2013). During the last five years, however, new research suggests that Chinese and other Asian countries' manufacturing investments in Africa south of the Sahara have begun to grow (Brautigam and Tang 2014; Chen, Dollar, and Tang 2016). As of January 2015, 1,418 Chinese enterprises that had registered their outward investments to Africa were engaged in manufacturing, amounting to 46.5 percent of the registered firms in Africa according to the database of China's Ministry of Commerce (Tang and Sun 2016). Whereas studies have demonstrated roughly the growth trajectory of Chinese manufacturing investments, the sources of information are limited and the precise operations of such factories is far from clear.

The impact on Africa of Chinese manufacturing investments is a question that has not been sufficiently investigated. Brautigam (2003) documented that ethnic Chinese investors from Hong Kong and Taiwan played a role in facilitating industrialization in Mauritius and eastern Nigeria. In 2011, Lin suggested that Chinese manufacturers were ready to shift their production bases to Africa and serve as a "leading dragon" to drive the development of manufacturing sectors in Africa (Lin 2011). His conviction was based on the "flying geese" model—namely, that countries tend to be leaders and followers in producing for the global value chains depending on their comparative advantages (Akamatsu 1962). However, Tang's (2014b) study on southern Africa's textile and garment sectors revealed that the Chinese and other Asian investments there continued to stay away from the export-processing business. Instead, most Asian investors targeted local consumers and contributed to the booming niche markets that were neglected by global players. Therefore, there is a need for more on-the-ground research analyzing the different effects of Chinese investments on manufacturing in Africa.

This paper examines the extent to which Chinese manufacturing firms are driving manufacturing in Ghana. According to data on investment approvals by China's Ministry of Commerce, as collected by researchers at the China–Africa Research Initiative at Johns Hopkins University's School of Advanced International Studies, 34 Chinese manufacturing investments have been approved for Ghana, making that country fourth in Africa south of the Sahara—behind only South Africa, Nigeria, and Ethiopia—in terms of the number of approved Chinese manufacturing investments (Bi 2014). However, the actual number of Chinese investments in Ghana is much larger. We discuss this discrepancy further below.

This paper's findings are based primarily on the results of field research conducted in Ghana from July 6 to July 31, 2014. Table 1.1 reports the number of Chinese firms registered to invest in Ghana according to three separate sources. The Ministry of Commerce's approval list is based on voluntary reports of Chinese firms that plan to invest in Ghana, but that may not actually end up implementing the projects. The other two sources are the registration lists of Chinese and Indian companies from the Ghana Investment Promotion Centre (GIPC) and the Ghana Free Zones Board (GFZB).[1] Using these sources, we mapped the overall state of Chinese investments in Ghana's manufacturing sector. Out of 183 registered Chinese manufacturing investors in Ghana—according to the GIPC and GFZB lists—we visited 33 selected companies from mainland China and 2 companies from Hong Kong for in-depth interviews. The companies were selected through snowball sampling so as to better understand Chinese investors' linkages with other industries, as well as clustered development patterns.[2]

Interviewees included factory owners, managers, Chinese employees, and Ghanaian employees. For each company, the firm's history and data were obtained using a semi-structured, open-ended questionnaire.

Table 1.1 Number of Chinese firms registered to invest in Ghana

Variable	GIPC	GFZB	MOFCOM	Before 1994	Hong Kong
Total Chinese projects	560	4	136	N/A	N/A
Projects registered in manufacturing	179	4	34	N/A	N/A
Confirmed manufacturers in operation	28	4	9	1	2

Source: GIPC (2014b); GFZB (2014), and MOFCOM (2014).

Additionally, we met with officials from the Chinese embassy, leaders of the Chinese Chamber of Commerce, several Ghanaian entrepreneurs, and Ghanaian officials in the GIPC, the GFZB, the Ministry of Trade and Industry, the Association of Ghanaian Industries, and the Ghana Plastic Manufacturers Association. Through semi-structured interviews, interviewees expressed their viewpoints about the impact of Chinese and Asian investments on local development and the extent of technology transfer. They also provided insights into local policy frameworks and the general business environment related to Asia–Ghana economic interactions.

[1] The GIPC is a government agency that encourages and promotes investments in Ghana. It registers, monitors, and keeps records of all enterprises in the country except for those in the free zones. The GFZB was established by the government in August 1995 to construct and operate free zones in Ghana. It collects information on registered firms in the free zones.

[2] Snowball sampling uses a small pool of initial informants to nominate, through their social networks, other participants who meet the eligibility criteria.

2. BACKGROUND ON THE GHANAIAN ECONOMY AND THE SINO–GHANAIAN RELATIONSHIP

Our fieldwork coincided with a serious economic setback in Ghana. When Ghana discovered the Jubilee oilfield in 2007, people expected that the oil wealth would advance the development of a stable and democratic nation. Yet three years after oil production began in Ghana, the country realized that the development of its oil production was progressing much slower than originally anticipated (Hicks 2014). Expecting an influx of petrodollars, the government had already spent a lot to raise civil servants' wages to buy popular support during an election period, before it had secured oil income. This increased the public finance deficit to 11.8 percent of gross domestic product (GDP) in 2012. Rising wages in turn caused inflation to rise to 14.8 percent in 2014 ("Once a Model" 2014). Another consequence was that imports rapidly increased, pushing the current account deficit to 12 percent of GDP in 2013 ("Once a Model" 2014). The US dollar/Ghanaian cedi exchange rate fell from 1.9 in August 2012 to 3.8 in August 2014, with the cedi losing half of its value. Workers demonstrated in the streets to protest against their deteriorating living conditions. The government finally decided to seek financial help from the International Monetary Fund in August 2014, recognizing that the country's economy was in peril.

China viewed Ghana as a close socialist friend when the countries established diplomatic ties in 1960. The relationship was suspended after Ghana's first president, Kwame Nkrumah, was overthrown in 1966. Ties were restored in 1972, and the bilateral relationship has been growing at a stable pace since then. During this period, China offered Ghana a number of aid projects, including farms, textile mills, and hospitals. Since 2000, the Chinese government and Chinese banks have offered a large number of concessional and commercial loans to Ghana for infrastructure construction in the telecom, energy, fishing, and transportation sectors. In particular, on December 16, 2011, the China Development Bank and the Ghanaian government signed an ambitious master facility agreement. The US$3 billion commercial rate loan was to be divided into two equal tranches. Twelve projects were identified as eligible for financing by January 2012, including roads, ports, railways, and industrial zones (Ghana, Ministry of Finance 2012). The loan was supposed to be secured and repaid by Ghana's oil revenue, despite criticism from the opposition party for using oil revenues as a guarantee. However, the Ghanaian cabinet later canceled the second tranche of US$1.5 billion due to the country's precarious external debt situation.[3]

Another event that attracted international attention was the arrest and deportation of hundreds of illegal Chinese gold miners in Ghana in June 2013. In our interviews with Chinese manufacturers in Ghana, many expressed sympathy for the arrested miners, but nobody seemed to be worried about anti-Chinese sentiment.

[3] On the side, however, the China Development Bank has said that the loan offer remains open (Chen 2016).

3. METHODOLOGY

According to data from the GIPC, of 560 total Chinese investors, 179 were registered in the manufacturing sector from 2004 to 2014.[4] This period covers most of the currently operating Chinese investments. Only one Chinese plastics factory (Shifa) and one Chinese pharmaceuticals company (Sanbao) were found to have started before 2004, and both were existing firms that were sold to new owners from China. Two manufacturers from Hong Kong (Ghana Carton and Andy Chou) were established long ago and were still operating. None of these four investors was on the GIPC list, but Sanbao is in the list of GFZB.

We tried to reach all of the Chinese companies on the GIPC list with the contact information given by the GIPC but were unsuccessful in more than 60 percent (113) of the attempts. Some phones had been switched off and others did not answer the call. As the economic situation in Ghana was deteriorating, a large number of Chinese businessmen were said to have left the country for an extended vacation or even for good. Among the others, four reported that they were only trading and had never engaged in manufacturing. Another five companies used to have manufacturing activities but had stopped production and were only trading. Six were repeats of a single company, and one was actually a Ghanaian owner who was wrongly registered. We also inquired about the status of firms on the list with other Chinese investors and Chinese officials working in Ghana. We were ultimately able to visit or talk to approximately 56 percent (28 of the remaining 50 manufacturers on the GIPC list) to collect detailed information.[5]

In addition, four Chinese manufacturing companies were registered with the GFZB, including Sanbao Pharmaceutical, Rider Steel, Rebecca Wig, and S.F. International. All of these are large companies with investments of more than US$10 million. We visited each factory and interviewed the managers.

In addition to these interviews and site visits, we interviewed representatives from the Chinese Chamber of Commerce, the Chinese economic counselor's office, the Ghanaian government, and industrial associations in order to further identify significant Chinese investments in Ghana's manufacturing sector.

[4] Except for the investments in free zones, all companies in Ghana have to register with the GIPC to get a business license.

[5] To clarify, the list contained 179 registered manufacturing firms. Of those, 113 were unreachable through phone calls and nine said they were not manufacturing any longer or had never started. Six on the list were duplicates, and one was not Chinese. This left 50 firms that were potentially engaging in manufacturing, of which we were able to visit 29, or 58 percent.

4. GOVERNMENT POLICY AND INCENTIVES

Ghana provides several general incentives to develop manufacturing, including a reduction of the import duty on raw material imports and an exemption from the minimum investment requirement (US$1 million for trading companies and US$500,000 for other nonmanufacturing companies). Manufacturing firms can also be wholly owned by foreigners, and foreign machinery and equipment can be imported free of duty. But Chinese investors are not satisfied with only these incentives. As one factory owner commented, the "Ghanaian government speaks about support, but in fact does nothing."[6]

At least on paper, Ghana has several sector-specific incentives. Ghana's new industrial policy focuses on the provision of local raw materials to local industries. An official in the Ministry of Industry and Trade explained, "Ghana already has enough agricultural products and is in need of non-agricultural raw materials, including metallic materials like steel, non-metallic materials like cement, clay, brick and mortar, etc."[7] Although there is no explicit tax incentive, both Chinese steel mills report that they have received support from the Ghanaian government. Rider Steel negotiated with the government on some preferential treatment regarding import duties and repatriation of profits. Sentuo Steel formed a joint venture with the Social Security and National Insurance Trust (SSNIT), which was said to help the mill get its power connection quickly.[8] When the Ghanaian minister of industry visited China, he invited Huasheng Jiangquan Group to come and invest in Ghana's steel sector. But the group suspended the plan after discovering that the iron mines in Ghana were not yet developed and that all the steel mills had to recycle scraps.

According to the latest tax regime, waste-processing factories are exempt from all taxes except for the value-added tax for seven years (GIPC 2014a). This has helped reduce costs for recycling manufacturers. Yet some Chinese recycling companies cannot enjoy the tax benefits because they do not deal directly with waste, but buy pellets from others.

[6] Interview, Jin, Yunfeng Recycling, Kumasi, July 2014.

[7] Interview, Kofi Nutta, director of manufacturing, Ministry of Trade and Industry, Accra, July 2014.

[8] A previous owner of the steel mill, a Taiwan businessman, sold it to the SSNIT 10 years ago. An Indian company managed the factory for a while but suffered losses. The SSNIT further sold the company to Sentuo.

5. SECTORS OF CHINESE MANUFACTURING INVESTMENT

Chinese investment has spanned multiple industries of Ghana's manufacturing sector, ranging from plastics recycling and pellet production to steelmaking and steel products. The effect of Chinese investment on each industry has varied, due to industry-specific issues, competition, resources, and the local economic environment.

Plastics Recycling and Pellet Production

Although Ghana's economy was declining rapidly in the middle of 2014, the plastics recycling business was still booming. A coordinator of the Ghana Plastic Manufacturers Association (GPMA) estimated that about 20 Chinese plastics manufacturers were operating in the country (the researcher identified 11 of them). The reason is that Ghana has a huge market for sachet water, which is the main form of drinking water for local people. Every day, millions of plastic water sachets, which are made of polyethylene (PE), are littered after use. In 2005, as the Ghanaian government wanted to ban sachet water, an Indian sachet water maker proposed to collect and recycle sachet water bags. Since then, Chinese producers have dominated the market. The GPMA coordinator analyzed the reason:

> *The plastic industry in Ghana is divided into recycling and production. The production part of the industry is much larger and is dominated by Indian and Lebanese companies such as Polybule [Mohinani family] and Blueplus [Manoji family]. These companies were established in the 1950s and 60s. The recycling part of the industry is a much newer addition. Ninety percent of the recycling market is taken by Chinese companies. They came too late and cannot beat Indians in the production market; therefore, they are only able to expand in the new recycling market.*[9]

PE recycling can be divided into three sectors: waste collection, making pellets from recycled waste, and processing pellets into plastic bags. There are no Chinese businesses in the first sector. The GPMA estimated that there are 50 large local sachet collectors with crushing machines. The Chinese do not have a competitive advantage in this area against local collectors, as the most important part is not processing but knowing the area and securing access to dumping sites. In the second sector, a handful of local waste collectors have climbed up the value chain to produce pellets. Two small Chinese businesses are dedicated to pellet making. Chinese factories are concentrated in the last sector of bag making, as this is the most profitable sector—once by more than 30 percent, and even with increased competition, it is still around 20 percent. Most of the Chinese factories also have machines to produce pellets, but the demand for pellets exceeds their capacity.

Apart from PE, some firms also recycle polypropylene (PP) from beer crates to make chairs and containers. A Chinese businessman, Chen Zhongwei, claimed to be the one who started this business:

> *I used to be the general manager of a Sino–Hong Kong joint venture in the city of Kaifeng in Henan province, recycling waste plastic to produce industry-used bag. When I came to Ghana, I saw that people here were just burning plastics. I found that there was an opportunity for a new market. As Ghana did not have enough industrial clients, I chose to produce plastic consumer products like buckets and chairs out of waste. After people saw that I was making good money, five Chinese workers also set up similar factories. Two were my previous employees.*[10]

Chen used to collect waste himself, but now Ghanaians have taken over the job of collecting. At least one has moved from collecting into the production of plastic pellets. In 2000, a Ghanaian, David, started to work in a Chinese plastic products company, Fanpack, in the city of Accra, where he learned to operate machines. Later, he moved to a company owned by an Indian and worked as a recycling manager. When the Indian company was sold to a Lebanese businessman in 2011, he decided to start his own waste collection and pellet production business.

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[9] Interview, Quaranchie Adama-Tetteh, coordinator, Ghana Plastic Manufacturers Association, Accra, July 24, 2014.

[10] Interview, Haojie Plastic, July 2014.

David bought his pellet-making machines from Chinese recycling factory owners. After discovering a Chinese recycling factory's plans to close, he became interested in purchasing its bag-making machines, but he could not afford the price of 1.5 million RMB (US$241,935). This shows that capital constraints may be an important factor preventing local workers in Chinese factories from starting their own factories. Indeed, although we see few examples of Ghanaian workers transitioning into investment, several rich Ghanaian businessmen opened their recycling factories or took over Chinese firms.

All of the plastics recycling factories are fairly small—most have fewer than 40 employees, and the largest ones have no more than 100 workers. Chen explained that "the factory in every place should not be too big, as the market is limited. The source of waste plastic and the market for products are both limited in Ghana."

Chinese producers acknowledge that the waste material (plastic sachet) is very good. The plastic has been processed only once and can still be recycled to make plastic bags easily. In comparison, there is no sachet water in China and the plastic waste for plastic bags has already been recycled several times. Since the raw material and the market of the recycling business are both within Ghana, the dramatic depreciation of Ghana's cedi has not affected the industry much. Nonetheless, several Chinese investors complain that their profits in terms of dollars and RMB have dropped a lot.

Plastic Products

As noted earlier, the plastics industry in Ghana has been dominated by Lebanese and Indian investors since the 1950s. During recent years, only a handful of Chinese newcomers have attempted to enter this market. One Chinese company (Shifa) produces small plastic tableware while another (Lakerise) produces plastic bottles. Both investors wanted to do something different from other Chinese investors who had crowded into the recycling sector. Both firms are very small with investments of less than 2 million RMB (US$300,000). Another firm (Verise) invested more than US$1 million in Ghana in 2005 to produce plastic sandals after having imported sandals and achieved good sales. This company was able to remain profitable during the economic recession because it was importing the raw material, ethylene-vinyl acetate, from another of the owner's factories in China. Thus, the owner made an overall profit even while the Ghanaian factory was barely breaking even.

Steelmaking and Steel Products

According to one steelmaker, seven steel plants operate in Ghana. Two of them are from China. A Taiwanese businessman established one of the Chinese plants 40 years ago. It was acquired by an Indian company several years ago and was resold to an investor from Fujian province in 2010. Ghana's SSNIT acquired 26 percent of the shares in the Chinese plant. The other Chinese investor came to Ghana in 2008 because of encouragement from the Shandong provincial government.

Steel production is relatively expensive. The investment in each Chinese plant was approximately US$30 to US$40 million. Currently, both solely produce iron rods by recycling scrap metal (most locally sourced). The iron rods are used for construction, supplying Ghana's booming real estate market. But the new plants have increased the total iron rod production capacity to 600,000 to 700,000 metric tons per year, far exceeding Ghana's market demand. The plants were running at low capacity in July 2014. Finding sources for scrap metal is also a problem; rising demand means Ghana cannot supply enough. Both Chinese plants are planning to produce other kinds of steel with more added value, such as coils, beams, and angle bars. They commented that raw materials (for example, scrap steel) could be sourced from China and Ukraine, but likely not from Africa.

One firm, Sunlight Engineering, produces colored steel tiles and rolling gates for houses. The owner came to work in Ghana as an employee of Gansu Construction Company in the 1990s. He founded the firm in 2003 when he discovered that Ghana had very few factories working in this field. Since he did not have enough capital, he partnered with a Korean friend to form a 50–50 joint venture. The total investment was approximately US$500,000, of which US$200,000 was spent on machinery. The firm imports the steel for the tiles and gates from China and South Korea; it processes the products according to clients' orders (most clients are government agencies). Several Ghanaians have bought machines from Chinese to open similar businesses, but Indians have been in the market for a longer time and ask a higher price. Another firm, S.F. International, is constructing a much larger steel tile factory with an investment of US$12 million. It plans to target large industrial clients across West Africa.

Paper and Cartons

We identified three Chinese investors in the paper- and carton-making sector. One arrived from Hong Kong (Ghana Carton) in 1989 and manufactures cartons out of imported paper pulp. The other two firms are from the mainland; one, Shinefeel Company, came in 2010. One of Shinefeel's shareholders used to manage a paper mill in China and developed an expertise in paper production. Shinefeel began by recycling waste paper to make toilet paper. This helped the factory produce at a rate 15 to 20 percent cheaper than that of the Indian and Lebanese paper mills. Now three other Chinese firms also make paper from recycled paper waste. The company made good money and recovered its investment of US$3 million within three years. However, because the market has become saturated, the owner bought a plastic tableware factory to explore a new business area.

Attracted by Ghana's safe and stable environment and by senior government officials' initial promises of assistance in securing land and mining concessions, one of China's top-500 companies (based on annual revenues according to the China Enterprise Confederation), Huasheng Jiangquan Group, from Shandong province, invested in a paper mill (Gomoa) in 2011 and added a carton factory (JQ packaging) in 2014. Huasheng Jiangquan's total investments reached more than 30 million RMB (US$5 million). Its raw material supply was partially sourced from waste paper recycling. So far, Huasheng Jiangquan has not secured any mining concessions.

Suitcases and Bags

In the GIPC lists, some 10 Chinese firms were registered as manufacturing travel bags or suitcases. However, an official in Ghana's Ministry of Industry complained that these firms were not really manufacturing:

> *Most Chinese just do petty trade and illegal mining. They are registered as manufacturing companies to evade [the] capital requirement, but they actually import almost all the materials and just do simple assembly of travel bags. They have added very little value in Ghana, perhaps merely 5 percent.*[11]

We tried to call the firms making travel bags, but most could not be reached. Two companies reported that they had stopped production due to the poor economic environment. The one company (Yongya) we reached by phone informed us that it planned to close the business to go back to China if the economic situation in Ghana did not improve.

Miscellaneous Manufacturing

A handful of Chinese firms were operating in a variety of other sectors: pharmaceuticals, wig-making, steel products, and mattresses. Some of these factories were quite large. For example, the wig maker (Rebecca) employed more than 900 workers, the pharmaceuticals company (Sanbao) invested more than US$20 million, and a steel tile maker (S.F.) invested US$12 million. With the exception of the wig maker, all of the other companies only sold products entirely within Ghana either because of regulations (pharmaceuticals) or because of transportation costs. As the market was limited and having problems, no one was eager to expand at the time of the interview.

[11] GIPC regulations stipulate that US$1 million in capital is required for a foreigner to register a trading firm, but there is no threshold for manufacturing firms. Interview, Kofi Nutta, Ministry of Trade and Industry, July 16, 2014.

6. INVESTMENT MOTIVES

Chinese investment in Ghana's manufacturing sector does not have a long history. Aside from several companies from Taiwan and Hong Kong, the oldest Chinese manufacturing factories still in operation were set up only a decade ago, around 2003. We found several common motives for investment, but the most common was a desire among traders to lower their costs by producing locally.

From Trade to Investment

Almost all of the first investors in manufacturing started their businesses in Ghana by importing goods from China. Several traders sold very well in the market, and decided to produce locally because this could save them the cost of transportation. The machines they imported were not very expensive. They manufactured and processed the products they traded, such as plastic tableware and agricultural tools.

Other traders felt more and more pressure from competition in trade and wanted to explore new business possibilities outside of the products they had originally been trading. As one factory owner said:

> *I began with trade in Ghana in 1997, taking advantage of the high prices in the local market. I sold various kinds of consumer products. As more and more Chinese came to Ghana, the competition intensified and the margin dropped. I thought that I needed a more stable business and so I opened a restaurant in 2003. In 2007, I set up a plastic recycling factory.*[12]

A plastic shoe manufacturer used to import products like ceramics and candles from China to Ghana. The boss saw that Ghana had a stable political and economic environment and security situation. This motivated him to set up a factory to profit from the market in the long run. A state-owned construction company, Gansu Construction, has been doing well in the contract engineering market in Ghana. Yet as the competition intensified, it sought to diversify its business. It bought a small Chinese pharmaceuticals company and invested in order to turn it into a market leader.

Targeted Investment

By contrast, most of the firms in the plastics recycling sector had not traded before they invested in Ghana. After an established Indian plastics company first suggested recycling sachet water plastic in 2005, Chinese investors quickly entered and dominated the empty market. One investor recalled the beginning of his business in Ghana:

> *I came to Ghana in 2007 and joined with five other people to form a firm called Ohuade. I had my own business in plastic pellet making and printing for over a decade in China. Before I came to Ghana, I closed that business because the clients did not pay their debts on time and because the profit margin had become very low. One of the other five was doing other business in Ghana—he told us information about Ghana and helped us get here. We were able to open the factory very quickly as we were familiar with the business and machinery.*[13]

The young boss of another factory told a similar story of directly setting up a factory in Ghana to explore the underdeveloped market:

> *I came to Ghana together with my uncle and his wife in 2009 to set up a recycling factory. At that time I had just graduated from college and did not want to start with low-level jobs like my classmates. My uncle used to own a bag factory in Dongguan before 2009, but he was forced to close down the factory because of debt default. We brought 300,000 RMB [US$50,000] to Ghana. My brother and his wife opened a plastic recycling factory in Ghana in 2007. Therefore we knew that this business was profitable and that the market was not saturated yet. We used the money to buy several machines from China and we opened the factory, even though none of us had ever run this kind of business before.*

[12] Interview, Chen Zhongwei, Haojie Plastic, July 2014.

[13] Interview, Jin, Yunfeng, July 2014.

7. FUTURE PROSPECTS FOR INVESTMENT

Several large Chinese projects (over US$10 million), including two steel mills (Sentuo and Rider), a paper mill (Gomoa), and a steel tile producer (S.F.), based their investment decisions on the long-term prospects of Ghana's economic development. Projects of such a large scale do not aim at short-term returns but hope to get sustainable income in the long run. The Chinese investors often analyze Ghana's future with China's own development experience. For example, the owner of Sentuo Steel, a Chinese businessman who lived in Spain for years, said:

> *The development of Africa is the big trend. Even if Africans themselves do not want to develop, other people will push them. The problem will just be speed. Infrastructure is currently weak in Third World countries like Ghana. But I have seen how developed countries grow step by step. In the development process of every country, infrastructure has always been among the first sectors to take off. People need houses and the construction of houses needs steel.*[14]

The managing director of S.F. International had a similar vision about Africa's future and planned accordingly for the long term. He owned a big cotton plantation firm in China, invested to build a steel tile factory, and was planning to grow cotton in Ghana. He explained his motive:

> *After people accomplish primary capital accumulation in China, they should invest in Africa, because this is the only place where we can still see immense growth potential in the world. Thus I came to visit Africa even though I had not done business with Africa before. Learning from other countries' development experience, I have a 20-year plan for business development in Ghana. I never did the construction business before, but I knew that the steel tile business has a high margin in China, about 15 percent, and the profit rate in Africa will definitely be higher. All developing countries need housing when they grow rich.*[15]

[14] Interview, Xu Ningquan, managing director, Sentuo Steel, Ltd., Tema, July 2014.

[15] Interview, Chen Qishun, managing director, S.F. International, Tema, July 2014.

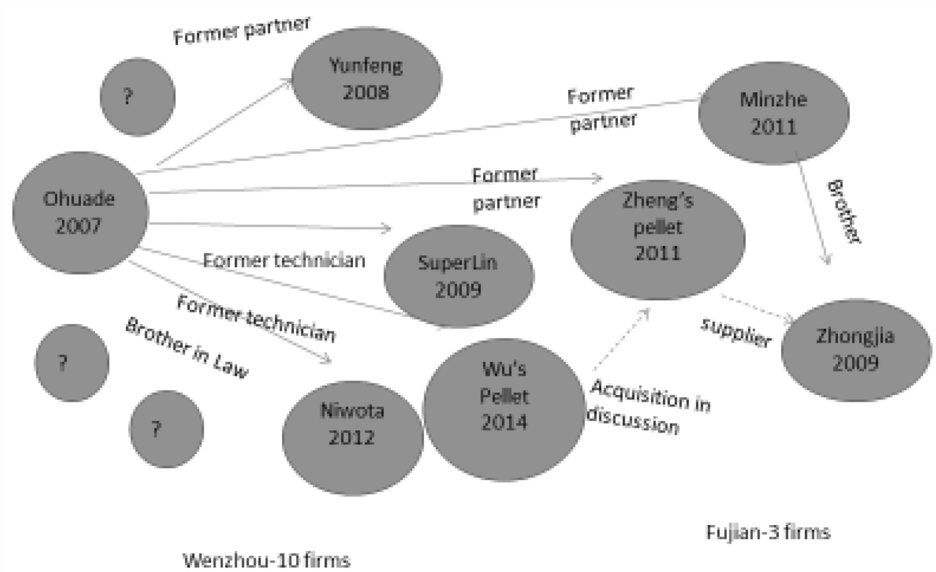
8. CLUSTERING AND SPECIAL ECONOMIC ZONES

With the expectation that clusters might provide better opportunities for firms to learn from others, we explore the degree to which Chinese firms cluster in sector-specific ways, or geographically. In the latter case, we examine Chinese investment in industrial or free zones in Ghana.

The Plastics Cluster

Chinese investments in the plastics recycling sector have formed a cluster. Shortly after the recycling of water sachets started in Ghana in 2005, a dozen Chinese firms flocked into the similar business of processing waste plastic to make black PE bags. Likewise, Chinese firms have dominated the PP recycling sector. Investors in such clusters are closely connected with each other through familial, communal, or professional ties.

Figure 8.1 Relationships among Chinese and Ghanaian plastics firms



Source: Author's own illustration according to interviews

Figure 8.1 shows the connections among major Chinese recycling producers. The first factory, Ohuade, was a joint venture of six shareholders, mainly from the city of Wenzhou. It was made up of merchants who knew the Ghanaian market and businessmen who were experienced in recycling operations. Yet the joint venture did not last long. Almost all of the partners quit to open their own factories, and several Chinese technicians who worked at Ohuade also left to set up new factories. Ohuade was still operating in July 2014, but it was solely owned by one of the six original shareholders and was not the largest firm in the market. The newly established factories also brought their brothers, uncles, and friends from the same region to Ghana to work in plastics recycling. As of July 2014, 10 recycling factories were from Wenzhou, which is the production center of waste-recycling machinery in China. Another three factories were from Fujian province.

The PP recycling sector has a similar story. Claiming to be the first person who started PP recycling, Chen Zhongwei said, "When people saw me make good money from recycled plastic, five Chinese also set up the same factories. Two of them were actually my previous technicians. They also took several skilled workers from my factory."[16] One PP recycler also introduced his nephew to set up another PP recycling factory.

[16] Interview, Chen Zhongwei, Haojie Plastic, July 2014.

Some of the divided factories maintained good relationships with each other. Some of the workers were relatives and some supplied pellets to others. Yet some companies, even though they were all from Wenzhou, had more hostile feelings toward each other. Competition was intense in Accra, with people fighting for clients. One company, Yunfeng, decided to go to Kumasi to find more space and higher profits. As Ghana's economy has declined, several producers (usually the smaller ones) want to close their business and return to China. A couple of larger producers are determined to stay and even expand. Zhang, a partner in Superlin Company, said, "We have already bought land, we have to persist. There is no way to withdraw."

Apart from plastics recycling and bag assembling, the number of Chinese firms in other manufacturing sectors is small. In each sector there is only one or two Chinese companies. No clustered investment is seen in these sectors. The reason is that Ghana's market is small and several big factories can easily satisfy the domestic demands. However, this is not the case for firms in or near Ghana's industrial zones.

Industrial Zones and Free Zones

Chinese firms exhibit significant clustering in and near Ghana's industrial and free zones. For example, six large Chinese factories chose to locate in and around the Tema Industrial Free Zone and formed a geographic cluster. Rebecca Fashion, S.F. International, Rider Steel, and Sanbao Pharmaceutical are located within the Tema Zone. Gomoa Papers and Sentuo Steel are situated right outside the zone. Any company can register as a free zone company and enjoy tax holidays from the GFZB as long as it exports 70 percent of its products, but only Rebecca Fashion has been able to do so. The other companies either sell mainly within Ghana or have not yet started production. The location of a company does not influence the application of tax policy. Thus, the reasons these six firms chose their locations were not related to tax holidays, but rather based on other considerations.

The general manager of Rider Steel, who is from Jordan, believes that Chinese companies like to stay together.[17] He said that when his boss, who is from Shandong province, came to investigate the Ghanaian market in 2008, he found that another Shandong company, S.F. International, was located in the Tema Free Zone as well. This strongly influenced Rider's decision to invest in Ghana.[18] However, the chairman of S.F. International considered the promising investment environment—rather than the presence of other Chinese firms—to be the main reason for his having chosen the location.

> *I decided to set up a steel tile factory here because it has secure provisions of water and electricity. Safety is also good. Although it is more expensive than other places, land ownership is clear. Land belonging to local chiefs may have disputes on ownership.*[19]

In addition, the Tema Zone is close to a seaport and has supportive infrastructure. The GFZB also claimed that there was no shortage of power in the zone, and if there were the board would be alerted immediately. The two operating factories agreed that the power supply in the zone was adequate. Yet Rider Steel reported that the factory waited for a year and a half to get a power connection. Its neighbor, a Lebanese steel company called United Steel, had to wait three years to get power, even though a large power plant was just 2 kilometers away. Outside the zone, Gomoa Papers got a special power line but still had outages at least once a week. The researcher's investigation in Accra found that the Chinese investors were generally satisfied with power supply in the Accra industrial zones, but that there was no space for new investors. In contrast, the Tema Zone provided abundant space (480 hectares) for new investors.

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[17] Rider is from Qingdao, where it originally sold glass. It has a glass production factory in Weihai, called Blue Star, which is a joint venture between Chinese and Jordanians established in 1994. (Blue Star's share composition is 65 percent Chinese to 35 percent Jordanian). In 2008, Rider decided to invest in Ghana. The environmental impact assessment process took a year. In 2011 the factory began construction. For more than one and a half years, the factory did not have power. The previous general manager was an Indian. The current general manager, Al-Alami, who worked as general manager in Rider Qingdao for more than 10 years, came to replace him in October 2013. The former general manager had difficulty blending Chinese and Indian culture.

[18] Interview, Walid Al-Alami, general manager, Rider Steel, Tema, July 2014.

[19] Interview, Chen Qishun, chairman, S.F. International, Tema, July 2014.

However, the connections between the Chinese firms in the zone seem weak. First, as these companies work in largely different sectors such as steel, paper, wigs, and medicine, they have few opportunities to work together in business. Second, though there are two steel mills just 5 kilometers away, they have little interaction. The Jordanian manager of Rider Steel noted that "Chinese companies are not open to each other," especially with respect to the movement of employees:

> *The Indian community is very organized. If people want to find a certified professional, they can easily get candidates. The employees also move around between Indian companies. But Chinese communities are not organized. . . . Among two companies in the same sector, like Rider and Sentuo, there is no movement of Chinese professionals. They consider stealing people immoral, but such stealing is good competition. Companies should steal people from each other.*[20]

Chinese Investment in Free Zone Construction or Operation

The Ghanaian government has encouraged investors to build and operate new free zones. Authorized by the Free Zone Act of 1995, the Ghana Free Zones Programme aims to promote processing and manufacturing of goods through the establishment of export processing zones (EPZs).[21] By July 2014, four areas had been designated as EPZs: Tema, Ashanti, Sekondi, and Shama.

Table 8.1 Export processing zones in Ghana

Zone name	Location	Focus industries	Status as of 2014
Tema	Near Accra	Multipurpose	Operating
Ashanti	Central Ghana	Information Communication Technology, agroprocessing, light manufacturing	Planning
Sekondi	West Ghana	Heavy industries	Planning
Shama	West Ghana	Petroleum petrochemical sector	Planning

Source: GFZB (2014).

Although as of 2014 several Chinese firms were interested in developing zones, none had yet done so. In February 2011, the GFZB announced that a Chinese company, Hasan, was to develop a zone in Sekondi, but the representative of Hasan had already left Ghana at the time of our research (Modern Ghana 2011). An official in the Chinese embassy said that a number of Chinese firms had been interested in developing the Sekondi zone. But after Hasan signed a memorandum of understanding with the GFZB, it found that land ownership there was not clear and that resettlement was difficult. Hasan was thus hesitant to move forward.[22]

In January 2014, as noted above, a Chinese top-500 company, Huasheng Jiangquan (Tema Papers' parent company), agreed to invest US$2 billion in Shama, Ghana, to construct an industrial park based on iron ore and steel (Sotunde 2014).[23] An official in the Chinese embassy noted that an informal promise had been obtained with the Ghanaian minister of industry and trade when he visited China. Later, Huasheng discovered that the minister's promise was difficult to implement. For example, the iron ore

[20] Interview, Walid Al-Alami, general manager, Rider Steel, Tema, July 2014.

[21] Ghana, Ministry of Trade and Industry, http://moti.gov.gh/agency/ghana-free-zones-board-0.

[22] Interview, Chinese economic counselor's office, Accra, July 2014.

[23] See also "华盛江泉集团在加纳建循环经济产业园," *Linyi Online,* January 10, 2014, http://meili.ly-www.com/2014/0110/45172.html.

had not yet been extracted and there were disputes over land ownership. A manager from Gomoa Papers mentioned that the zone project was still in the planning stages by the headquarters in Shandong.

An official at the Chinese embassy explained the reason for Chinese enthusiasm in zone construction:

> *They still have a traditional way of thinking. They want to encircle a piece of land like they did in China, so that they can profit from the real estate boom. But this does not work in Ghana [because] the land ownership here is complicated and the resettlement is very difficult.*

At the time of this writing, only the Tema Free Zone, which was developed by Ghanaian authorities, is in operation. All other plans of zone development exist only on paper.

9. LOCAL LINKAGES

The degree to which foreign firms have linkages to local firms helps determine what opportunities are available for learning and technology transfer. Such linkages often begin through supplier relationships. Another key area is local competition. When local and foreign firms operate in the same sector, learning is more likely to occur. We explore the degree to which Chinese firms have links to other Ghanaian institutions.

Suppliers

Plastics recycling firms, steel mills, and paper mills source a large part of their raw materials from waste in Ghana. Investors who started earlier in Ghana recalled that waste was very easy to get and cost almost nothing in the beginning. But as investors increased, the competition for raw materials also intensified. For example, the price for plastic waste rose from 0.1 cedi per kilogram (US$0.03/kilogram) to 0.8 cedi per kilogram (US$0.25/kilogram). Since Ghana imposes a high duty on the importation of waste plastic and steel, factories have to rely on domestic supplies. The Sentuo steel mill runs at only half of its production capacity because of a shortage of raw materials.

Chinese factories are not very satisfied with their local supply. According to the general manager of Rider Steel:

> *We source all the scraps locally, but unlike in China, the scraps are not processed first in Ghana. Vehicle wrecks are simply brought to the factory. Chinese technicians were shocked at the beginning, because in China the scraps are processed by supplier companies and they never saw such kind of scraps. Only after two months, the production manager understood that this is the nature in Ghana.*[24]

As plastics recycling started just several years ago in Ghana, local people did not know how to collect waste. Chinese producers did the waste collection at the beginning. The founder of Haojie Plastic recalled:

> *Previously, my factory did everything: collect waste plastics, crush them, and then make them into finished products. But as this business grew, local people realized that collecting waste has lots of profits. They began to collect waste by using small carts to go to all the small trash collection stations. I knew that I cannot compete with Ghanaians in this part. Therefore I gave up the waste collection business to focus on the processing of finished products. I paid some Ghanaians to collect plastics for me first. Later I gave them the crushing machines so that they set up their own collection business and supply crushed waste to me.*[25]

However, he complained that the local collectors do not know how to wash and process the crushed plastics properly, and so his factory has to do it again. Other Chinese recyclers shared similar concerns. They pointed out that the African collectors did not wash carefully and that the supplied waste was of poor quality. The quality problem also hindered the Ghanaian suppliers from providing processed raw materials (pellets). A Chinese factory owner said, "Unless the pellets are of good quality, we only accept crushed plastics and process with pellet making ourselves." At the time of the interview, this factory only bought pellets from one local supplier—this is because "he is able to find good clean waste plastic, his pellets are clean."[26]

Two Chinese pellet makers supply pellets to Chinese PE bag makers. One of them explained the reason for low quality among local suppliers:

[24] Interview, Walid Al-Alami, general manager, Rider Steel, Tema, July 2014.

[25] Interview, Chen Zhongwei, Haojie Plastic, July 2014.

[26] Interview, Zhang Yu, Zhongjia Plastic, July 2014.

Local competing recyclers do not wash carefully and do not use good sift nets either. Therefore sands are mixed into their pellets. I use 80 mm mesh nets to sift sand out. But this requires my workers to change the nets several times a day. Local suppliers are not able to do this.[27]

The Chinese pellet makers occasionally supply Ghanaian or Indian PE bag makers as well, but charge a higher price. Their priority is to meet the demands of long-term Chinese clients. In any case, non-Chinese bag makers are few in number, making up only about 10 percent of the whole market.

Manufacturers in other sectors such as pharmaceuticals, wigs, steel tiles, and plastics production import almost all of their raw materials. Their main source is China, but they sometimes import high-quality materials like pulp from Europe and the United States.

Competitors

As mentioned, Chinese, Indian, and Lebanese investments are spread across most of Ghana's manufacturing sectors. Longtime Indian and Lebanese investors are dominant in the plastics production and food processing sectors, whereas new Chinese investors make up most of the recycling market. Only a few small-scale Ghanaian-owned firms have been identified in the plastics recycling, papermaking, and pharmaceuticals sectors.

There is some direct competition between the Chinese and the Indian/Lebanese companies, especially in the steel business. But as the Chinese mills have just started operating, there has been no intense competition and interaction yet. Even in the steel and plastics production sectors, Chinese firms tend to invest in new segments or niche markets that are not taken by the Indians or Lebanese, such as the steel mills' plan to produce coils, beams, and angle bars instead of simple iron rods. A plastics producer bought new molds from China to produce plastic bowls and cups that had not yet been produced in Ghana. Its manager explained, "The market in Ghana is empty. Only a few products are produced here. We don't want to follow others to do similar things. We can easily find some products which nobody has yet produced here."[28]

Ghanaian firms are not regarded as serious competitors. Although some local businessmen have bought machines to make pellets and PE bags, Chinese firms believe that Ghanaian-made products are of lower quality. Sanbao pharmaceuticals company has a Ghanaian competitor, but the competitor was established in the 1970s and has very old equipment. The Chinese company controls more than 70 percent of the market and commented that its major competition is imports from India, not the local producer.

Linkages with Ghanaian Institutions and Associations

Several local agencies and plastics business associations launched the Plastic Waste Management Program in 2012. The purpose is to educate both the public and the government about waste collection. Twenty tricycles have been given to local collectors for trash transportation. Five thousand Ghanaians are estimated to be employed in the recycling business nationwide.[29] They lack the capital to buy machines. The government promised to give a soft loan of 40 million Ghanaian cedi to support Ghanaian recycling businesses, but less than 20 percent was disbursed.

Some Chinese are considered cooperative by the Ghana Plastic Manufacturers Association, for they are willing to talk to the association, but most Chinese recyclers have had no contact with the association. The coordinator of the association thought that Chinese companies "hide themselves," perhaps because they want to evade taxes or immigration checks. He tried to convince them that the association may actually provide subsidies and incentives to them, but the effect was limited.[30] Of the 60 member firms, almost none are from China.

[27] Interview, Zheng Ni, pellet-making factory, Accra, July 2014.

[28] Oxen Zhang, manager, Shifa Plastic, Accra, July 2014.

[29] Interview, Quaranchie Adama-Tetteh, coordinator of Ghana Plastic Manufacturers Association, July 2014.

[30] Interview, Quaranchie Adama-Tetteh, coordinator of Ghana Plastic Manufacturers Association, July 2014.

10. TECHNOLOGY TRANSFER

Some Chinese firms have found issues with Ghanaian workers and machinery. Various steps have been taken to improve the situation, and although progress has been made, problems remain.

Training

Chinese factories employ a large number of Ghanaian workers (approximately nine Ghanaian workers per Chinese worker, on average), but a number of employers have strong prejudices against local workers. They describe local workers as "lazy" or "stupid" and complain that they do "not keep promises" and are "not willing to work on weekends." Many Chinese believe that their employees "like to steal" and so on. Consequently, despite the locals' technical knowledge, these employers do not trust local workers to be in supervisory positions and rely instead on Chinese technicians. The owner of a factory with about 40 local workers said, "Local workers are only able to do simple operations on the machines. They are not able to configure the machines and adjust temperature and time. They often mess things up. I don't allow them to touch the machines any more. Now only three Chinese technicians are allowed to change the settings."[31]

To be sure, not all Chinese companies have such prejudices. Plenty of companies, especially larger ones, do emphasize providing training to local workers. For example, Gomoa Papers has a one-month training program for its local printing technicians, in which Chinese technicians work with the local technicians so that they learn from each other. The firm even invites some Ghanaian experts from outside to hold classes for the staff, because the printing technicians need to gain experience and understand the local market.[32] However, out of more than 100 workers in the company, only seven or eight technicians received such training. Others just did simple manual labor. Sanbao Pharmaceutical also sent some local staff members to government-sponsored training workshops. To conform with local law, the company also hired well-educated Ghanaian professionals to be the principal pharmacists and the heads of inspection labs.

Some Chinese firms prefer to hire workers who have just graduated from high school. The owner of a small workshop for machinery maintenance explained, "First, the young graduates are cheaper [about 350 cedi/month, which equals roughly US$100]. Second, they are easy to train. The experienced Ghanaian technicians do not listen to me. They have their own ideas and habits."

Recycling businesses usually have low requirements when it comes to technical skills. Thus, some companies do not care about training and keeping local workers. A Chinese pellet maker said, "When the local workers wanted higher wages, we simply dismissed all of them. Students and young people come to our factory to ask for jobs almost every day, we are not worried about getting new workers at all."[33] Others treat their employees better. In some firms, a third to a half of their employees have worked for them since the beginning of the investments. In their opinions, experienced workers are more familiar with the machines. They may detect hidden problems in the machines and tell Chinese technicians to repair them in advance.

Machinery Systems

Many Chinese firms claimed that the machines they brought to Ghana are much more advanced than those that Ghana had before, yet the same machinery is already "mature" or even out of date in China. The general manager of Rider Steel said that the production technology of his company is at the level that China's technology was two decades earlier, around 1994. Sentuo's technology is at a level equivalent to that of China in 1997. The imported machines were all new. It is very easy to purchase steel furnaces and install them in Ghana with the suppliers' technical assistance. In fact, none of Rider Steel's and Sentuo Steel's owners ran steel mills before they came to Ghana.

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[31] Interview, Chen Zhongwei, Haojie Plastic, July 2014.

[32] We were not able to determine who supplied this training expertise.

[33] Zheng Ni, Accra, July 2014.

Likewise, the PE bags are already banned in China, because the black PE plastic bags cannot be recycled again and will cause pollution. The Chinese government only allows firms to produce biodegradable plastic bags. The machines and technicians in the PE recycling sector thus found their way to Ghana, where PE recycling was still considered to be a progressive step.

The manager of a bottle-making company (Lakerise) said that he intentionally used an old-generation machine. In his words,

> *It is not suitable to bring fully automatic machines to Ghana, because the technological capacity here is still not enough to operate the automatic machines. Local technicians are not able to do appropriate setting and maintenance. Chinese technicians can do this, but they can't find spare parts. As the labor cost here is very low, it is better to use semi-automatic machines.*[34]

Spillover

Some Chinese employers noted that turnover rates among Ghanaian workers in their companies were pretty high. The workers who quit might go to other factories, but very few of them start their own businesses. The Chinese employers believe that this is because of the relatively high costs of machinery investment. Nonetheless, a small number of Ghanaian businessmen have ventured into their own pellet making and some have even established full recycling factories, such as David, the Ghanaian pellet supplier mentioned earlier.

Several Chinese recycling firms also sell machines to Ghanaians. As noted earlier, Chinese companies gradually withdrew from the waste collection segment. A recycling firm gave crushing machines to local Ghanaians so that they could become its suppliers. As the number of Ghanaian collectors increased, that firm sold more than 20 crushing machines to Ghanaians (each machine costs more than 10,000 RMB). In Kumasi, only one Chinese PE recycler was operating. The owner, Mr. Jin, was unwilling to run the pellet-making process himself, as waste collection and primary processing is dirty, requires hard work, and frequently results in accidents. Therefore, he sold pellet-making machines to Ghanaians. Those local companies in turn became his suppliers of pellets. The quality of those suppliers was good, because Jin would send technicians to install the machines and teach them how to operate them. Jin provides all the sift nets and spare parts. Two-thirds of Jin's pellets are sourced from local Ghanaian suppliers. One-third is recycled from the side products of his own factory.

Jin also sold printing machines to sachet water makers. These water companies in turn gave him waste sachets. As a big water company in Kumasi stopped producing sachet water, there is a large vacuum (15 metric tons/day) for sachet water producers. He has sold 20 to 30 sets of machines to sachet water companies and five sets of pellet-making machines. The buyer of pellet-making machines is actually a relative of the owner of a sachet water producer. Thus, they can form a recycling chain and supply high-quality pellets to Jin. Jin does not sell PE bag–making machines to local firms because he does not want to nurture competitors.[35]

Without the assistance of Chinese technicians, Ghanaians who have bought Chinese machines may encounter big problems. For example, the owner of a Chinese PE recycler fell heavily into debt because of gambling. He gave his factory to his Ghanaian landlord to cover the rent due. The landlord kept the factory running, but when some of the machines had problems, he had no idea how to solve them. His Chinese neighbor said that the landlord once paid a large sum of money to a Chinese technician just to solve a small problem. Another time he wired money to a supplier in China to get spare parts, but has not yet received them. When we visited him, the factory had suspended operation and was still waiting for machine repairs.

[34] Li, Lakerise Bottle, Kumasi, July 2014.

[35] Interview, Jin, Yunfeng, Kumasi, July 2014.

11. CONCLUSION

After careful examination on the ground, we can map the development of Chinese manufacturing investments in Ghana and their linkages to the local society. First, we find that in reality the investment landscape is quite different from that reported by the media, other researchers, or government statistics. Although more than a hundred Chinese firms are registered as manufacturing investors with the GIPC, we can only confirm, at most, one-third as currently in operation. Several large projects, such as the Sekondi EPZ or the Huasheng Jiangquan ecological park, had not materialized in spite of much fanfare and media coverage. Second, Chinese manufacturing investments have been constantly increasing during the past decade even though Ghana has at times experienced significant economic difficulties. On the one hand, some Chinese traders who had become familiar with the local market decided to invest there instead of limiting their business to import–export. On the other hand, a few successful pilot investors attracted other Chinese investors to join them, to seize business opportunities. The clustering in the plastics recycling sector in Ghana vividly demonstrates how Chinese investments expanded through various linkages like these. Third, almost all of the manufacturing projects in Ghana are targeted at local or West African regional markets. Chinese firms see competition in Ghana as less fierce than in China, and with lower transportation costs and the use of local materials, they believe their products have a competitive advantage against imported products (often made in China). We did not find any Chinese manufacturers establishing themselves in Ghana to make labor-intensive products for the global market, as we have seen in the shoe and garment sector in Ethiopia (Brautigam, McMillan, and Tang 2013). High labor costs (about 350 cedi/month, which equals roughly US$100 for unskilled new workers) in Ghana may be a hurdle for export-processing enterprises.

As for local linkages, the vast majority of the employees in Chinese factories consist of Ghanaians: on average, 10 Ghanaians to one Chinese. However, few Ghanaians are in management positions. Training is usually provided to local employees in most firms, yet most simply train new employees "on the job." Larger and technologically more sophisticated firms, for example, the pharmaceuticals firm, offered classroom training too. Since most of the Chinese investments in Ghana are small and employ fairly simple technologies, they do not require sophisticated skills. Local workers have learned how to operate machines and repair them.

Other forms of learning occur. Several local businessmen and former Ghanaian employees of other foreign firms have started their own businesses in some sectors by learning from Chinese investors, primarily in the sector of plastics recycling. Chinese firms have local suppliers of raw materials—plastic waste, waste paper, and scraps—but import industrial supplies like steel, polyvinyl chloride, and pulp from abroad. Therefore, local backward linkages are very basic and the chain is short. Some Chinese firms have sold machines to their local suppliers to help them begin or improve production, but a lack of capital appears to be the main obstacle keeping local players from moving up the value chain. The weak economic environment of Ghana itself limits the technology transfer and local linkages between Chinese firms and Ghanaians.

APPENDIX: SUPPLEMENTARY TABLE

Table A.1 List of Chinese manufacturing firms visited in Ghana: July 6-30, 2014

1	Arising Plastic Company Ghana, Ltd.	Plastic products
2	China Hardware Manufacturing Company, Ltd.	Gardening tools
3	Chuang Hui Company, Ltd.	Mesh nets
4	Fuxing Food Company, Ltd.	Food processing
5	Ghana Ohuade Plastics Products Factory, Ltd.	Plastics recycling
6	Goodwill Precision Machinery Company, Ltd.	Machinery reparation
7	Defa Plastic Ghana Ltd..	Plastic products
8	Haojie Waste Plastic Recycle, Ltd.	Plastics recycling
9	Lakerise Industrial Company, Ltd.	Bottle making
10	JQ Packaging Ghana, Ltd.	Packaging
11	Minzhe Company, Ltd.	Plastics recycling
12	Niwota, Ltd.	Plastics recycling
13	Sen Da (Gh) Company, Ltd.	Electric equipment
14	Sentuo Steel, Ltd.	Steel and iron products
15	Gomoa Paper Mill Ltd.	Paper products
16	Shinefeel Ghana Company, Ltd.	Paper products
17	Sunlight Engineering, Ltd.	Roofing tiles
18	Super Lin Packaging Products (Gh) Company, Ltd.	Plastics recycling
19	Verise Industry Company, Ltd.	Plastics products
20	Yunfeng Plastic Production Company, Ltd.	Plastics recycling
21	Zhong Jia Plastic Develop Company, Ltd.	Plastics recycling
22	Rebecca Fashion Company	Wigs
23	Ghana Meicheng Long Plastic Factory, Ltd.	Plastics recycling
24	S.F. International	Steel tiles
25	Rider Steel Company	Steel products
26	Sanbao Ghana Pharmaceuticals Ltd.	Pharmaceuticals
27	Shifa Plastic Products Company	Plastic products
28	Yongya International (Gh), Ltd.	Bags and suitcases
29	Tai-Thou Plastic Company	Plastic products
30	Fu Fa Company, Ltd.	Mattress
31	Home Base Plastic Manufacturing Company, Ltd.	Plastics recycling
32	Royal Motors Company	Motorbike assembly
33	Xin'an Sunrise Company	Pesticide
34	Andy Chou Plastic Company (Hong Kong)	Plastic products
35	Ghana Carton Company (Hong Kong)	Paper products

Source: Author's compilation.

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IFPRI HEADQUARTERS

2033 K Street, NW
Washington, DC 20006-1002 USA
Tel.: +1-202-862-5600
Fax: +1-202-467-4439
Email: ifpri@cgiar.org