

# Applicability and Prospect of China's Development Zone Model in Africa

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**Abstract:** Development zones have been an important spatial approach to promoting economic development since China's reform and opening-up. They have also been major contributors to the processes of China's industrialization and urbanization. Along with improvements in the worldwide industrial division of labor and the gradual implementation of China's development zones' *Go Global* strategy, it is necessary for Africa, a hot spot of global industrialization in recent years, to learn from China's development zone model. By attracting China's capital, technology and enterprises to Africa via Sino-African co-built development zones, a pattern of high complementarity and mutual development between China and Africa can be formed which does favor further improvement of the global industrial division of labor. In order to study the applicability and prospect of China's development zone model in Africa as per the above-mentioned international situation, this paper first sorts out the development course of China's development zones and discusses their roles in China's industrialization and urbanization. Subsequently, this paper analyzes the status quo of industrial development in Africa as a whole and the differences in industrial development between China and Africa, aiming to justify the timing of industrial transfer from China to Africa by constructing Sino-African co-built development zones. Lastly, this paper analyzes the current situation of six Sino-African co-built development zones by focusing on their operation modes, industry types and investment promotion models. In the authors' view, Sino-African co-built development zones can function as a new window of China-African cooperation, a new carrier of African industrialization, and a new engine of global industrial restructuring. China should adhere to the general principles of 'Sino-African Integration, Multi-Cooperation, Mutual Benefit, Scientific Location, Systematic Planning, Cluster Growth and Open Development' in the planning and construction of development zones in Africa, effectively promoting Africa as the very important part of the global industry system.

**Keywords:** development zones; China; Africa; industrialization

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## 1 Introduction

Sino-African economic and trade cooperation is a highlight and hot spot in an era of globalization. With China's wider opening to the outside world and the implementation of the 'Go Global' strategy, the total

amount of China's direct investment in Africa has markedly expanded, especially for the investment in African industrial development, which has been becoming an important impetus of export-oriented industrialization development in Africa. According to *Sino-African Economic and Trade Cooperation White Paper (2013)*,

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the total amount of China's direct investment in Africa has risen from  $1.44 \times 10^9$  US Dollar (USD) in 2009 to  $2.52 \times 10^9$  USD in 2012. During the same period, the total stock of China's direct investment in Africa has increased from  $9.33 \times 10^9$  to  $2.12 \times 10^{10}$  USD. At present, more than 2000 Chinese enterprises are now investing in more than 50 countries and regions in Africa, with cooperation fields gradually expanding from traditional industries such as agriculture, mining and construction into fields like deep processing of resource products, industrial manufacturing, finance, commerce & trade logistics and real estate, etc. Manufacturing is a key area of China's investment in Africa. From 2009 to 2012, Chinese enterprises' direct investment in manufacturing in Africa has totaled  $1.33 \times 10^9$  USD. By the end of 2012, the manufacturing investment stock reached  $3.43 \times 10^9$  USD, creating huge amount of tax revenues and enormous opportunities for employment, as well as extending the manufacturing value-added chain of 'Made in Africa'. Forms of China's industrial investment in Africa are also changing gradually from constructing a single project to investing a whole industrial chain, from building pure plants to constructing clustered development zones. All these have suggested that China's experience and modes of development zone construction are being transplanted into Africa (Wang, 2015).

China's successful experience in using development zones to promote the processes of industrialization and urbanization has been increasingly highlighted and recognized. Some African countries have cooperated or are planning to cooperate with China to build new industrial parks. In 2003, *China Overseas Science and Innovation Pilot Park Work Guidance* was issued by Ministry of Science and Technology. The *Basic Requirements and Application Procedures of Overseas China Economic and Trade Cooperation Zones* issued by the Ministry of Commerce in 2006 approved 19 overseas trade and economic cooperation zones, most of which are located in Africa. The document also approved a number of overseas industrial parks co-built by China's enterprises and local governments through their foreign partnerships with Africa. Premier Li Keqiang addressed at the 24th World Economic Forum Africa Summit, *Jointly Push African Development to A New Level*, on May 8, 2014 and stated that, 'China will actively participate in African industrialization, strengthen industrial coopera-

tion with Africa..., enhance African self-development ability, and realize strategic connection between Chinese and African industry'. At the Johannesburg Summit of the Forum on China-Africa Cooperation which was held on 4th December 2015, Chinese President Xi Jinping made a clear commitment that 'China will actively promote China-Africa industry partnering and production capacity cooperation, encourage more Chinese enterprises to invest in Africa and build or upgrade a number of industrial parks in cooperation with Africa'. Predictably, a boom of China's construction of overseas industrial parks in Africa is approaching along with further strengthening of Sino-African economic and trade cooperation and acceleration of African export-oriented industrialization. The industrial park model will play an important role in African urbanization and industrialization.

## 2 Literature Review

Whereas China has constructed and will continue to construct a number of development zones in Africa, relatively little attention has been paid to the study of Sino-African co-built development zones. This is mainly because of the low level of African industrialization and the lack of relevant practices. Related studies have mainly put emphasis on the following three aspects.

The first aspect relates to the factors affecting China's direct investment in Africa. Kragelund (2009) summarizes factors influencing China's direct investment in Africa from the perspectives of both China and Africa. Using Zambia as an example, he puts forward that the advantages Chinese enterprises enjoy to invest and develop in Africa not only come from the targeted policies formulated by the Chinese government but also from Western countries' previous open investment policies in Africa. Li (2012) analyzes the factors that influence the location choices of China's investing enterprises in Africa, reckoning that natural resources, market size and bilateral relations exert significant influences on the location choices of Chinese investing enterprises, while the impacts of infrastructure conditions are limited and the influences of the host country's political risks are inconspicuous. He (2013) explores the modes and location choices of China's foreign direct investment from the perspective of 'relationship', finding that political, social and economic relationships with the host country

are important factors of location choices. Zhang (2013b) finds that economic, political and natural resources are all significant factors in the selection of direct investment opportunities.

The second aspect is the holistic study of China's overseas economic and trade cooperation zones, and those in Africa in particular. Scholars have analyzed the overall development of China's overseas economic and trade cooperation zones from various perspectives. For instance, Zhou *et al.* (2008) put forward the general and specific factors influencing their location decisions. Whereas the former usually includes political environment, macroeconomic development and infrastructure quality, the latter should be considered differently according to different types of zones. Guan (2012) carries out a comparative study on China and Singapore overseas industrial park construction. In contrast to Singapore, China's overseas economic and trade cooperation zones are confronted with many problems such as weak infrastructure, lack of overall strategies, the relatively passive role of governments and unbalanced distribution of these zones. In terms of Sino-African economic and trade cooperation zones, Alves (2012) argues that most are still at the starting stage of construction, and are confronting many challenges from both sides, including how to acquire the host country's language, culture and knowledge, how to attract enterprises to invest in these zones, and how to ensure that economic development of the host country will enjoy spillovers of the development of these zones. This argument is supported by many other studies that have explored possible ways for sustainable Sino-African cooperation and construction of economic and trade cooperation zones (e.g., Wang, 2008; Zhang, 2011; Huang and Tang, 2012; Zhang, 2013a). Besides, Tang (2010) also argues that the mutual understanding between enterprises and governments from both sides is key to the success of these overseas development zones.

The third aspect is the typical case studies of development zones co-built by China and Africa. Bräutigam (2012) conducts a relatively profound and systematic research in this field. Her monograph *Dragon's gift: China's True Story in Africa* (Bräutigam, 2012) comprehensively analyzes the model of China's assistance to Africa and provides a deep discussion of China's overseas economic and trade cooperation zones in Africa. Egypt's Suez Economic and Trade Cooperation Zone is

often taken as a case study due to its long history and relatively better development. Bräutigam and Tang (2011) take it as a typical case, for example, to analyze the background, motivation and development of China's overseas economic and trade cooperation zone construction, arguing that these zones are unique and exploratory as a kind of cooperation model between China and Africa. However, they indicate that these zones confront a series of political, economic and social problems. Besides, they point out that inadequate local learning and local participation may affect the ability of economic and trade cooperation zones to promote industrialization processes of African countries. El-Gohari and Sutherland (2010) analyze the factors affecting the construction of Sino-African co-built economic and trade cooperation zones from the respective perspectives of both sides, discussing whether they can serve as a new model for the construction of African development zones. An (2012) and Feng *et al.* (2012), likewise, study Egypt's Suez economic and trade cooperation zone from different views. Wang *et al.* (2010) discuss the planning of some Sino-African co-built development zones when studying China's planning practices in African countries.

It can be observed that Sino-African co-built development zones have gained certain achievements but also faced some prominent problems. Whether China's development zone model is applicable to African countries needs to stand the test of time because most Sino-African co-built economic and trade cooperation zones are still at the stage of initial development. However, it is reasonable for us to develop some theoretic predictions. Davies (2008) pays early attention to this issue but offered no clear conclusion. Farole (2011) proposes political suggestions on the set-up time, industrial types and planning of development zones in African countries by combining comprehensive evaluation with international experiences. To answer the question mentioned above, this paper first looks back to the important role that development zones have played in China's economic development over the last three decades. It is then followed by an analysis of similarities between the current development stage of African countries and the early development stage of China when it first set up development zones. Finally, the significant impacts of China's development zone model on industrial park construction and industrialization of African countries

are confirmed with the analysis of the current development situation of Sino-African co-built economic and trade cooperation zones.

### 3 Roles of Development Zones in China's Economic Growth

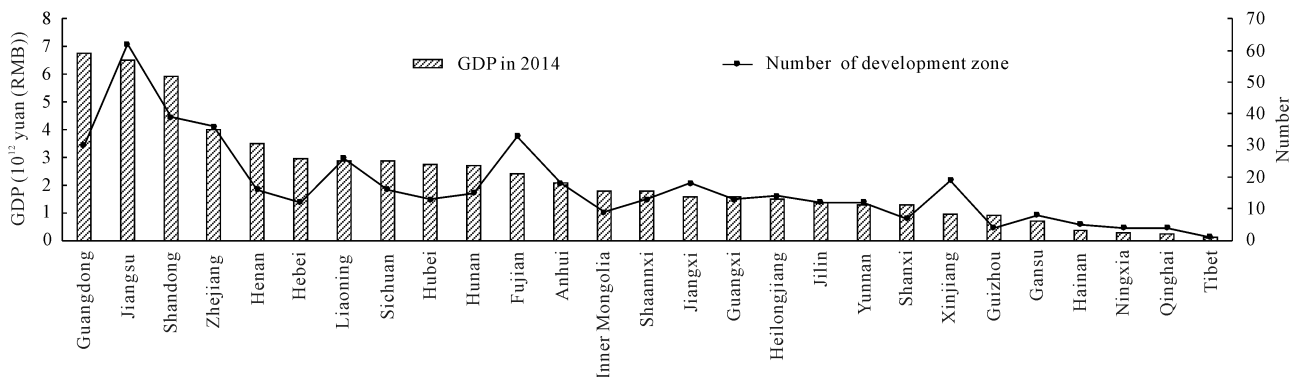
It has been confirmed by much international experience that industrialization is key to a country's economic growth. Since China's reform and opening up, economic growth has been prioritized as an enduring target in governments' agendas. In 1984, fourteen coastal port cities were opened up formally, including: Dalian, Qinhuangdao, Tianjin, Yantai, Qingdao, Lianyungang, Nantong, Shanghai, Ningbo, Wenzhou, Fuzhou, Guangzhou, Zhanjiang and Beihai. Fifteen economic and technological development zones were successively established in these cities. These development zones not only attracted large amount of foreign investment but also promoted industrial agglomeration and development in these cities. Consequently, the curtain of China's development zone construction has been raised.

The extension of the worldwide industrial chain in different forms has facilitated the international industrial transfer. As an important component of the global industrial chain, China has been in general affected by the construction of development zones during the processes of industrialization and urbanization. At the provincial level, the number of state-level development zones has been mainly in line with the development stages of provinces as reflected by per capita GDP (Fig. 1). Relevant policies supporting the construction of development zones can be seen in the example of Jiangsu Province where the impact of development zone construction is extremely prominent. These supportive policies have

also echoed the established spatial axis belt and development node of Jiangsu Province (Table 1), involving various fields such as land, tax, development concepts, etc., thereby further strengthening the crucial role of development zones in promoting its industrialization and urbanization.

Development zones are not only major contributors to regional and national economies, but also important driving forces promoting urban economic development. Take Ningbo, an early open coastal port city, as an example, it has made significant progress in the construction of development zones over the last three decades. In line with the national economic development, Ningbo has experienced four different development stages in the construction of development zones: start (1984–1991), expansion (1992–2003), consolidation (2003–2006) and promotion (since 2007) (Table 2).

At the earlier stage, the international industrial transfer to China was mainly achieved through development zones in two forms. One was the introduction of low and mid-range links in the industrial chain, focusing on manufacturing such as processing materials and sample-based assembly. The other was the spillovers of the introduction of particular industries into traditional industries. As a result, China's development zones will inevitably face the pressure for industrial transformation and upgrading after a certain period of development. For that purpose, China's State Council issued the Ten Industrial Promotion Plan in 2009, on steel industry, shipbuilding industry, automobile industry, textile industry, petrochemical industry, light industry, non-ferrous industry, equipment manufacturing industry, electronic and information industry and real estate industry. This plan affirms the backbone status of manufacturing industries, while referring to the transformation and upgrading of



**Fig. 1** Comparison of number of state-level development zones and per capita GDP in China's provinces. Data source: official website of the National Bureau of Statistics and China Association of Development Zone

**Table 1** Corresponding development nodes relevant to development zones mentioned in previous Five-year Plans in Jiangsu Province

Planning document	Development axis belt	Development node
Seventh Five-Year Plan	None	Open areas of 'Two Cities, One Region, and Four Ports (Nantong, Lianyungang City, Suzhou-Wuxi-Changzhou Region, Nantong Port, Lianyungang Port, Zhangjiagang Port, Nanjing Port)' to the outside world
Eighth Five-Year Plan	Speed up the coastal area exploration, focus on development of area along Yangtze River, and actively improve development of area along the east Lanzhou-Lianyungang Railway to gradually form the new pattern of opening to the outside world	Build economic and technological development zone, open cities and regions; pay special attention to the Pukou high-tech development zone construction in Nanjing City; transform traditional industries into high-tech industries in experimental cities of Suzhou, Wuxi and Changzhou
Ninth Five-Year Plan	Develop areas along coast, Yangtze River, the east Lanzhou-Lianyungang Railway, Beijing-Hangzhou Grand Canal and other major economic axes	Plan and Construct Regional International Trade Center in Southern Jiangsu, Nanjing and Lianyungang; foster new economic growth point focusing on Suzhou-Singapore Industrial Park
Tenth Five-Year Plan	Construct Economic Belt along Yangtze River and Xuzhou-Lianyungang Economic Belt; develop urban development areas along Yangtze River, Nanjing-Shanghai Traffic Corridor, Beijing-Shanghai Railway, Lanzhou-Lianyungang Railway, Xuzhou-Suqian-Huai'an-Yancheng Expressway axes	Build Suzhou Industrial Park as the top priority in Jiangsu Province to open to the outside world, construct three regional international business centers within the province; concentrate efforts on the knowledge creation base, taking Nanjing as center; make metropolis and mega-metropolis stronger, larger, better and more beautiful so as to become growth poles within relatively large region
Eleventh Five-Year Plan	Comprehensively advance areas along Yangtze River, Nanjing-Shanghai Traffic Corridor, east Lanzhou-Lianyungang Railway, and coast axes	Actively construct Metropolis Circle along Yangtze River and advance development of cities along east Lanzhou-Lianyungang railway; build four state-level high-tech development zone as regional innovation highland

Note: data are from Planning Documents of Seventh Five-Year Plan, Eighth Five-Year Plan, Ninth Five-Year Plan, Tenth Five-Year Plan and Eleventh Five-Year Plan

manufacturing, the promotion of traditional industries and the nurturing of strategic industries. Financial support corresponds to policy support. China research and development (R&D) in the early Twelfth Five-year Period invested more than  $2 \times 10^{10}$  yuan (RMB) in eight industries (Fig. 2), especially in communications equipment, computer and other electronic equipment manufacturing industry, transportation equipment manufacturing industry, electrical machinery and equipment manufacturing industry, whose total expenditure accounted for 72% of all industrial enterprises above designated size. There were eleven industries whose R&D intensity (measured by the share of R&D expenditure to main business income) has exceeded the average (0.71%). It should be noted that most of these industries that have been supported by China's policies and funds are exactly leading industries that China's development zones bear.

Today, China's development zones have evolved from policy highlands to real competitive highlands, creating enormous employment opportunities while promoting industrialization and economic growth of China. Since the end of the twentieth century when China's urbanization rate exceeded 30%, development zones have greatly sped up industrialization and urbanization processes due to relatively cheaper factor cost

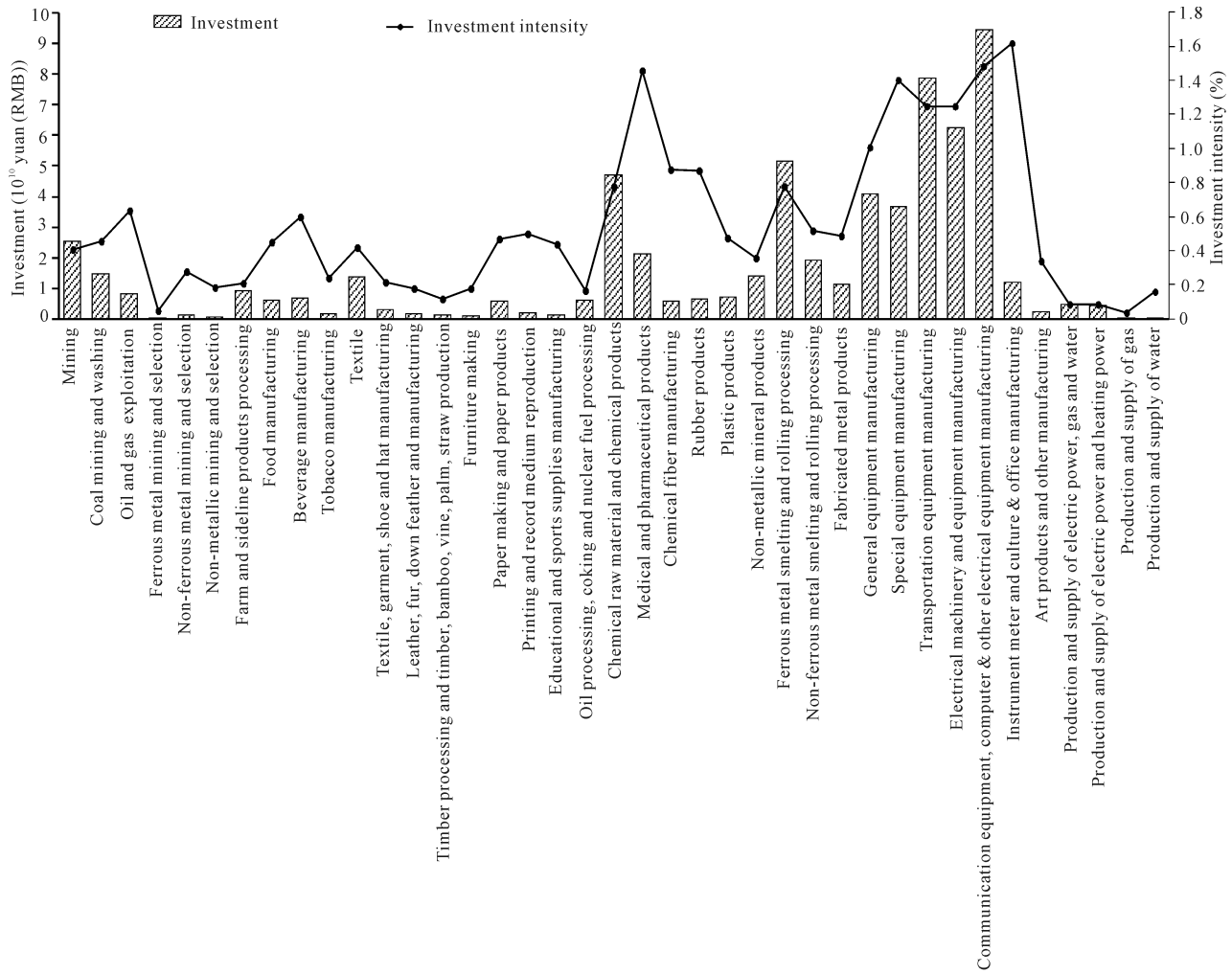
(especially labor cost) than developed countries. Over the decades, numerous rural labors have migrated into cities and development zones, breaking down the traditional family mode of 'stay at home and maintain what has been achieved by one's forefathers or predecessors'. Meanwhile, urban manufacturing expansion has enlarged the demand for basic labor force, and cities have to provide more consumer services because of the sudden influx of population, thereby further diversifying employment population. Under such circumstances, China's urbanization rate exceeded 50% in 2011.

So far, China has formed a relatively complete system of development zones, ranging from national-level zones to provincial-level ones. Currently, there are more than 200 national-level economic and technological development zones and over 1100 provincial-level economic and technological development zones. As Fig. 3

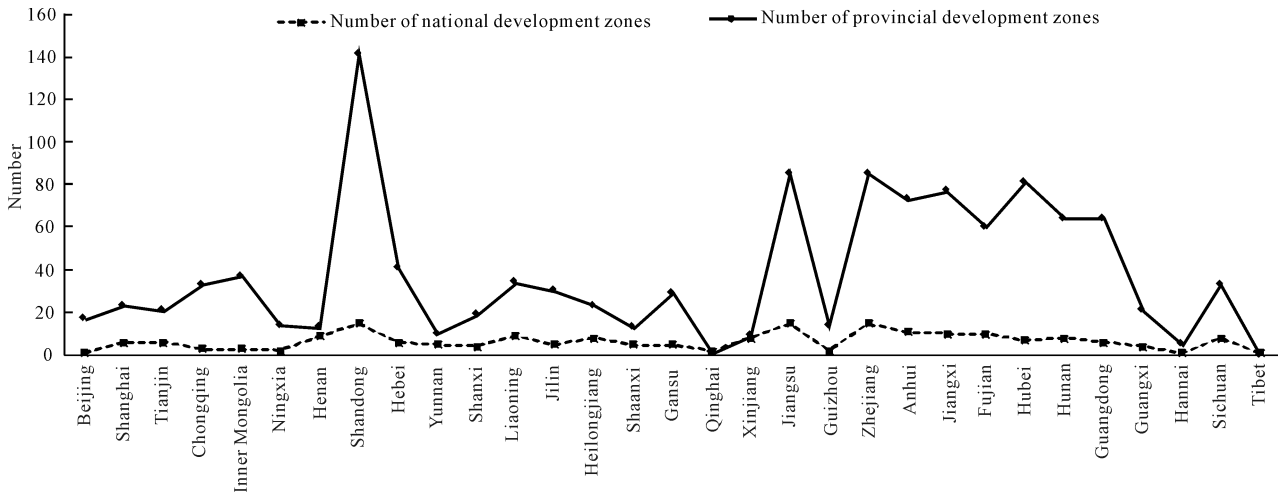
**Table 2** Number of development zones in different development stages (Ningbo City)

Development stages	Number of development zones
Stage of Start (1984–1991)	1
Stage of Expansion (1992–2003)	78
Stage of Consolidation (2003–2006)	27
Stage of Promotion (2007–)	28

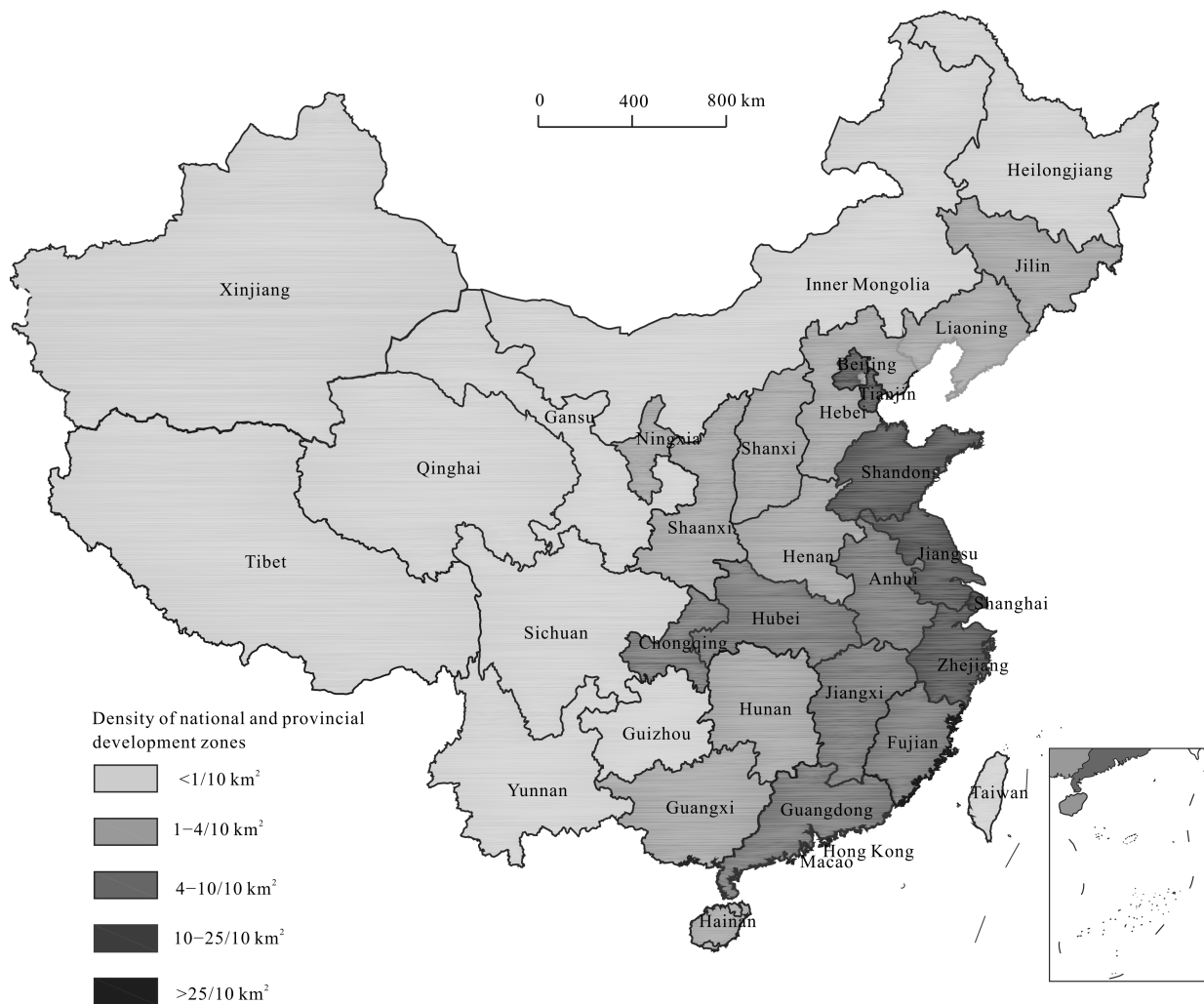
Note: data are from Ningbo City Development Strategy (2030)



**Fig. 2** R&D funds of enterprises above designated size in different industries (2011). Enterprises above designated size means that profit of industrial enterprises with annual revenue of  $2 \times 10^7$  yuan (RMB) or more from their main business operations. Data source: National Bureau of Statistics, 2012



**Fig. 3** Number of national- and provincial-level development zones in different provinces. Data source: official website of China Association of Development Zone



**Fig. 4** Distribution densities of national- and provincial-level development zones in different provinces. Data source: official website of China Association of Development Zone

shows, Shandong, Zhejiang and Jiangsu are the top three provinces in terms of the total number of development zones. Note that these provinces are on average more developed than other provinces. The distribution of zone densities has also shown a similar pattern with developed provinces taking the lead and a gradual decline from the east coast to the west (Fig. 4).

Having vigorously boosted industrialization and urbanization of China, development zones are now becoming a crucial symbol of the Chinese mode. Development zones have become one of the two approaches (the other is high-speed rails) for China to move towards the world. China has planned to construct a batch of development zones to worldwide, especially in those countries that have kept good cooperative relations with China for a long time such as countries in Africa, East

Asia, Southeast Asia and South America. It can be expected that China's experience and modes of development zone construction will be of great value for the construction of development zones in African countries which are in general similar to the early development stage of China's reform and opening up.

However, the construction of China's development zones has also triggered some problems which African countries could try to avoid when constructing their own development zones. These problems include but are not limited to the following aspects. First, the intense competition between cities and regions has caused an uncontrolled proliferation of the number and size of development zones, resulting in a huge waste of land and investment. Second, intercity competition has also prompted some development zones to reduce the barriers

ers of industry entry which has led to a low industry level in these development zones. Third, the relationship with their surrounding cities and the supply of necessary living service facilities are often neglected in the construction of development zones, making it inconvenient for their residents and reducing life qualities of their employers. Fourth, locally embedded industrial clusters are difficult to emerge in development zones due to a lack of cooperation between enterprises. As a late comer of industrialization, Africa should and could avoid these problems to construct new-type development zones which are healthier and more sustainable.

#### 4 Occasion of African Countries to Establish Development Zones

African countries, since independence, have gone through a winding road under the guidance of the first and second round of Development Economics theoretical traditions. They have undergone a golden period of rapid development from 1960 to 1975. However, large-scale recession occurred in the 1980s, which is called the 'ten lost years' of African economy. Fortunately, African economy has taken on a stable development momentum since the 1990s, with curbed inflation and the fiscal situation getting better year-by-year.

According to the statistical and forecast data on GDP from 2010 to 2015, the difference in the average GDP growth rate between developing countries and the world as a whole has declined rapidly in recent five years. Overall, the GDP growth rate of Africa has been on the rise although with some significant fluctuations in recent five years. In 2012, the GDP growth rate of Africa reached its peak of 5.7%, much higher than that of developing countries and the world average. However, it dropped by 1.7% in 2013, slightly lower than that of developing countries (4.6%) yet still higher than the world average (2.1%). It is predicted that the GDP growth rate of Africa during the 2014–2015 period will rise to approaching the average level of developing countries. Without considering inflation, more than half of African countries had a real GDP growth rate of over 5% during the 2011–2013 periods. More than 20% of African countries had a GDP growth rate of above 7% in 2011 (Data above comes from EIU Database and UN-DESA 2014).

Africa's economic growth can be attributed to the

rapid growth of domestic demand stimulated by its increasing relative commodity prices and relatively higher private investment into the infrastructure and energy sectors. Besides, African countries have been strengthening their regulation and control of macro economy. In light of the progress in African economy, the renowned British Economist magazine which published a pessimistic article on African economy ten years ago reissued a cover story titled Africa Rising in 2011. The article pointed out that 6 out of the 10 fastest growing countries in the world were African countries in the past ten years, and that Africa was growing faster than East Asia.

Shanta Devarajan, the chief economist of the World Bank's Africa region has pointed out that African economy is expected to embrace a growth period which is comparable to what India has undergone during the past 20 years, owing to the steep growth in agriculture and infrastructure construction as well as the sustained and accelerated inflow of overseas capital when interviewed by news media at the end of 2011 (He, 2014).

Nevertheless, a comparison between China and Africa in terms of their economic growth indicators reveals that China's industrialization as a whole is at the middle stage with obvious characteristics of transiting to the late stage while Africa is at the primary stage with a transition trend to the middle stage. For instance, China's per capita GDP in 2010 was calculated as  $8.5 \times 10^3$  USD using purchasing power parity, being at the late stage of industrialization as per Chenery's Model. In contrast, the corresponding value of per capita GDP of Africa was  $3.9 \times 10^3$  USD, suggesting a middle stage of industrialization (Calculation as per basic data from DATABANK, and Public-Private-Partnership (PPP) Conversion Rate is 2.147 in 2005). This is further supported by the differences in their industrial structures. As can be seen from Fig. 5, China's industrial structure is in line with the characteristics of the start-up of late stage of industrialization, whereas Africa is obviously featured by the characteristics of the early stage of industrialization as its tertiary industry is considerably higher than the second industry. The comparison result of employment structures is similar to that of industrial structures. In 2010, the proportion of China's primary industry employment was 36.7%, suggesting that China is at the middle stage of industrialization. By contrast, the overall proportion of primary industry employment of Africa was 49.8%.



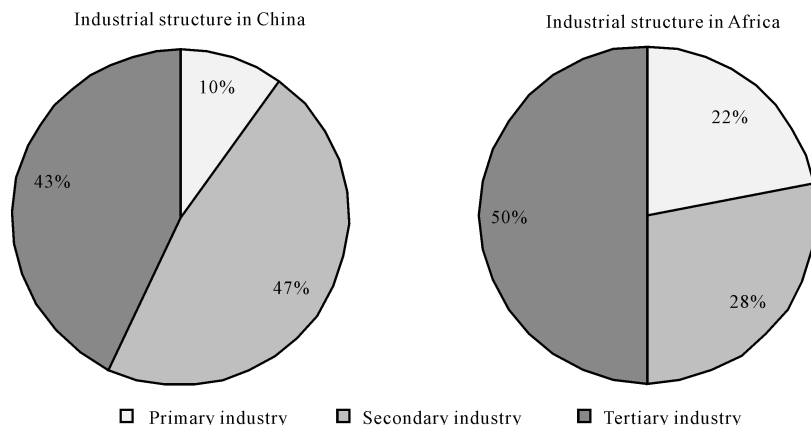


Fig. 5 industrial structure comparison between China and Africa

Given the substantial differences in the industrial development of China and Africa, there exists a 'Natural Gap' of industrial transfer and cooperation between China and Africa. Five large-scale international industrial transfers occurred historically. The most recent has been the global manufacturing industry transfer to China since the 1990s, making China the real global manufacturing base. A new round of large-scale international industrial transfer from China is imperative. If Africa can grasp this opportunity and vigorously promote export-oriented industrialization, it is possible to rewrite the East Asian economic miracle in Africa.

Export-oriented industrialization of developing countries must be catalyzed and achieved through direct investment and industrial transfer of developed countries. Such investment and transfer can be agglomerated in development zones which function as important carriers of industrialization. By creating a special institutional environment, development zones have increasingly achieved investors' trust and become popular among them, thus bridging the gap between developed and developing regions. As a country with strong state-led administration, China has creatively put development zone model into practice with reference to worldwide experience since its reform and opening up. With the construction of development zones, China has quickly attracted global industrial transfer and agglomeration, making it a 'world factory' and changing it from a backward and closed rural economy into a developed industrial manufacturing powerhouse. So to speak, development zones have been major contributors to the successful export-oriented industrialization of China, especially those developed areas such as Jiangsu and

Guangdong. The long-term economic growth of those regions can be mainly attributed to the large-scale, fast-paced and early construction of all kinds of export-oriented development zones. Currently, Africa is entering the stage of industrialization. Although a considerable part of African countries and regions are still at the initial stage of industrialization and its internal context faces many factors unfavorable for industrial investment, Africa can only use the export-oriented industrialization model in the context of globalization to start the process of industrialization. To that end, African countries will inevitably need to rely upon development zones as a special form of the export-oriented industrialization model. Through the construction of development zones, African countries can create 'special policy zones' that provide an atmosphere favorable for industrial development and agglomeration in a small space. Such an atmosphere is efficiently formed without changing any existing national institutions and supporting systems, thus effectively combining the advantages of domestic and overseas development elements and boosting the smooth development of industrialization. If a model of isolation were adopted, Africa would have to be dependent on internal sources and natural evolution of its own economic structure, and the historical tragedy of its early industrialization would be bound to repetition and success would be out of reach.

It should be noted that the success of China's development zones is also attributed to other factors such as its richness in population, markets and resources, its state-led development mode and state-owned land system and an organized supply of high-quality labor force. Moreover, it was also a good timing when China began

to construct development zones to develop an export-oriented economy as the world as a whole was in urgent need of general industrial products due to global industrial restructuring and transferring. However, all these factors are now unavailable for Africa and especially for a single African country. As a result, Africa should modify China's development zone model to adapt to its local situation on the one hand, and draw upon part of China's opening up policies and institutional arrangements to create an environment suitable for the operation of development zones on the other hand. In fact, some African countries have already offered some valuable examples. For instance, during its cooperation with China to construct the Oriental Industrial Park, Ethiopia has also actively reformed its land and international trade policies by referring to China's model. In addition, it is also worthwhile for African countries to draw upon the successful experience and development model of Sino-Singapore Suzhou Industrial Park.

## 5 Situation of Sino-African Cooperation Zones

Six out of the seven overseas economic and trade cooperation zones co-constructed by China and Africa, except the Algeria Jiangling cooperation zone, have gained certain achievements (Table 3). Although the development of these economic and trade cooperation zones is

still largely lagging behind China's domestic economic and technological zones and especially those located in coastal areas, these six Sino-African economic and trade cooperation zones have gradually developed some remarkable characteristics in their industrial development models during the last decade. This can be further illustrated by an analysis of the status quo of their development from the following four aspects.

### 5.1 Distribution of Sino-African cooperation zones

In addition to the six overseas economic and trade cooperation zones approved by the Ministry of Commerce of China in 2006, Africa has an estimated number of another 23 overseas industrial parks constructed or operated by Chinese enterprises (Table 4). The number of industrial parks hosting Chinese enterprises is even larger. Among the 23 overseas industrial parks which are not approved by the Ministry of Commerce of China, some of them have been under construction or in operation while some are at the stage of being upgraded on the basis of existing investment and cooperation with the host African countries. Due to the inconvenience of inland transportation, most of the above-mentioned 29 overseas industrial parks have been located in coastal countries in Sub-Saharan Africa. More specifically, these industrial parks have mainly agglomerated along the northern Pacific region in the western Africa, the Gulf of Guinea and the eastern coastal regions.

**Table 3** Development of six Sino-African economic and trade cooperation zones (by the end of May 2014)

Name of cooperation zone	Planned and constructed area	Enterprise investment in zone construction	Enterprise number
Zambia-China Economic and Trade Cooperation Zone	Overall planned area is 17.28 km <sup>2</sup> , in which Chambishi Park area covers 11.58 km <sup>2</sup> with constructed area of 5.26 km <sup>2</sup> , Lusaka Park area covers 5.70 km <sup>2</sup>	Plan to invest 4.1×10 <sup>8</sup> USD in Chambishi Park area; Plan to invest 9.9×10 <sup>7</sup> USD in Lusaka Park area in the first round, and actually complete investment of 1.69×10 <sup>8</sup> USD	29
Egypt's Suez Economic and Trade Cooperation Zone	Overall planned area is 9.12 km <sup>2</sup> , in which start area covers 1.34 km <sup>2</sup>	Plan to invest 4.6×10 <sup>8</sup> USD	32
Nigeria's Lecky Free Trade Zone	Overall planned area is 30 km <sup>2</sup> , and the first round planned area is 11.79 km <sup>2</sup> , in which starts area covers 4.20 km <sup>2</sup> with 3.12 km <sup>2</sup> constructed	Plan to invest 7.9×10 <sup>8</sup> USD in the first round, and actually complete investment of 1.26×10 <sup>8</sup> USD	36
Ethiopia Eastern Industry Zone	Overall planning area is 5 km <sup>2</sup> , and the first round planned area is 2 km <sup>2</sup> developed	Plan to invest 4×10 <sup>8</sup> USD, and actually complete investment of 5.75×10 <sup>7</sup> USD	20
Mauritius Jinfei Economic and Trade Cooperation Zone	Overall planning area is 2.11 km <sup>2</sup>	Plan to invest about 6×10 <sup>7</sup> USD, and actually complete investment of 3.83×10 <sup>7</sup> USD	4
Nigeria Guangdong Economic and Trade Cooperation Zone	Long-term planned area is 100 km <sup>2</sup> , and the first round planned area is 20 km <sup>2</sup> , in which start area covers 2.5 km <sup>2</sup>	Plan to invest about 4×10 <sup>8</sup> USD	32

Note: data are from organized as per information from Ministry of Commerce website and websites of each economic and trade cooperation zone, accessed on 21th July, 2014

**Table 4** The distribution of Sino-African cooperation zones

Country	Official industrial parks	Nonofficial industrial parks
Egypt	Suez Economic and Trade Cooperation Zone	
Morocco		Tangier Industrial Park
Senegal		Dakar Industrial Park
Guinea		Linyi-Guinea Industrial Park
Sierra Leone		Pujehun Industrial Park
Ghana		Shama Industrial Park
Nigeria	Ogun Guangdong Free Trade Zone/ Lekki Free Trade Zone	Katsina Industrial Park/Kwara Industrial Park
Ethiopia	Eastern Industry Zone	Kombolcha Industrial Park/Dire? Dawa Industrial Park/Adama Industrial Park/ Hawassa Industrial Park/Ethiopia-Hunan Equipment Manufacturing Cooperation Park
Uganda		Tiantang Industrial Park
Kenya		China-Kenya Economic & Trade zone
Tanzania		Mkuranga Industrial Park
Angola		Yongda Industrial Park
Zambia	Zambia-China Economic & Trade cooperation Zone	Mulungushi Industrial Park
Namibia		Kunene Industrial Park
Botswana		Phakalane Industrial Park
Southern Africa		Gauteng Industrial Park/ Atlantis Industrial Park
Mauritius		Mauritius Jinfei Economic Trade and Cooperation Zone

Take Ethiopia for example, it now has three self-constructed development zones, one Sino-African cooperation zone (The Oriental Industrial Park) and one industrial park specializing in equipment manufacturing (Table 5). While the former four development zones are now in operation, the last industrial park is now at the stage of being expanded and upgraded. According to its national strategy plan, Ethiopia will spend ten years in constructing dozens of world-leading development zones with a total area of 1000 km<sup>2</sup> since the beginning of its second growth transition period (GTP II). Chinese enterprises will be responsible for constructing nine of the eleven No-agro development zones which the Ethiopian gov-

ernment aims to construct during 2016 to 2019. While accounting for a more balanced development between regions, the distribution of these new planned development zones will take full advantages of the Ethiopia-Djibouti Rail constructed by China. Till now, six development zones, either in operation or under planning, have been located in regions along the rail including the capital region of Ethiopia, the Adama region and the Dire Dawa region (Table 5). Moreover, there have been some investments in housing and other supporting facilities in the surrounding areas of these development zones. Overall, development zones have played a remarkable role in initiating and promoting the industrialization process of Ethiopia.

**Table 5** Industrial parks in Ethiopia (in operation, planned and under construction)

Region	China-Ethiopia cooperative parks	Ethiopian Parks	
		Constructed by China	Constructed by Ethiopian
Oromia	Eastern Industry Zone/Ethiopia-Hunan Equipment Manufacturing Cooperation Park	Adama Industrial Park/Kilinto Industrial Park/Jimma Industrial Park	Bulbulla Integrated Agro-Industrial Park
Addis Ababa		Bole Lemi II Industry Park	Bole Lemi I Industry Park/Air lines Logistic Park
Dire Dawa		Dire Dawa Industrial Park	
Tigray		Mekelle Industrial Park	Baeker Integrated Agro-Industrial Park
Amhara		Kombolcha Industrial Park/Bahir Dar Industrial Park	Bure Integrated Agro-Industrial Park
Southern Nations		Hawassa Industrial Park	Weynenata Integrated Agro-Industrial Park

## 5.2 The management modes of zones

Compared with China's domestic development zones and Singapore's overseas development zones, the operation mode of Sino-African cooperation zones follows the principle of 'market-oriented, government supported and enterprise led'. The construction of these cooperation zones receives support not only from the central government of China and the governments of African countries but also from Chinese provincial government such as Tianjin, Shanxi, Guangdong, Jiangsu which have also actively been involved in bidding, infrastructure construction and investment promotion (Table 6). The developers and operators of zones are mostly composed of Chinese domestic large state-owned enterprises and strong private enterprises, revealing that the construction of these economic and trade cooperation zones is essentially enterprise investment behavior driven by bilateral governments. To spread investment risks and better join in local markets, these enterprises tend to co-invest with other domestic enterprises of China, host country governments and enterprises and China-Africa development funds while holding a controlling stake themselves.

## 5.3 Industrial development modes

Due to differences in comparative advantages, host countries' resources and market prospects, the six Sino-African economic and trade cooperation zones have chosen different industrial development modes which include resource exploitation, processing and trade, and comprehensive development (Table 5).

Resource exploitation cooperation zones refer to the ones whose main industrial type is resource exploitation and processing, with Zambia-China Economic and Trade Cooperation Zone as a typical case. Zambia-China Economic and Trade Cooperation Zone, at the present time, is planned as per the planning distribution of 'One District, Two Parks'. As a core part of the cooperation zone, Chambishi Park mainly relies on non-ferrous metal resources and develops non-ferrous metal mining and metallurgy industry cluster on the basis of copper and cobalt mining and core of copper and cobalt smelting.

Processing and trade cooperation zones are those whose main industry is processing and trade industry. The development of the processing and trade industry in these cooperation zones is mainly dependent on the host countries' convenient traffic conditions, low factor cost favorable international trade status. Typical cases are Egypt's Suez Economic and Trade Cooperation Zone, Mauritius Jinfei Economic and Trade Cooperation Zone and Ethiopia Oriental Industrial Park.

Comprehensive development cooperation zones refer to zones that develop different types of industries such as production, processing, trade, logistics, real estate and commercial services. Typical examples are Nigeria's Lecky Free Trade Zone and Nigeria Guangdong Economic and Trade Cooperation Zone. For instance, while mainly focusing on the production industry and the warehousing logistics industry, Lecky Free Trade Zone also provides services for commerce, residence, entertainment and manufacturing.

**Table 6** Investment subject and industrial types of six Sino-African economic and trade cooperation zones

Name of cooperation zone	Investment subject (Controlling stake)			Industrial development mode
	Name	Subordinate province	Type	
Zambia-China Economic and Trade Cooperation Zone	China Nonferrous Metal Mining (Group) Co., Ltd		State-owned	Resource exploitation
Egypt's Suez Economic and Trade Cooperation Zone	Tianjin Teda Co., Ltd	Tianjin City	State-owned	Processing and trade
Nigeria's Lecky Free Trade Zone	Nanjing Jiangning Economy and Technology Development Company	Jiangsu Province	State-owned	Comprehensive development
Ethiopia Oriental Industrial Park	Jiangsu Qiyuan Group Co., Ltd	Jiangsu Province	Private	Processing and trade
Mauritius Jinfei Economic and Trade Cooperation Zone	Tianyuan Iron & Steel (Group) Co., Ltd	Shanxi Province	State-owned	Processing and trade
Nigeria Guangdong Economic and Trade Cooperation Zone	Xinguang International Group China-Africa Investment Co., LTD	Guangdong Province	State-owned	Comprehensive development

Note: data are organized as per information from Ministry of Commerce website and websites of each economic and trade cooperation zone

### 5.4 Investment promotion modes

Attracting domestic and foreign enterprises through investment promotion is a major driving force behind the development of Sino-African economic and trade cooperation zones. Attracting enterprises through convention and exhibition or through industrial chains led by large enterprises are two common investment promotion modes that have been adopted by these cooperation zones.

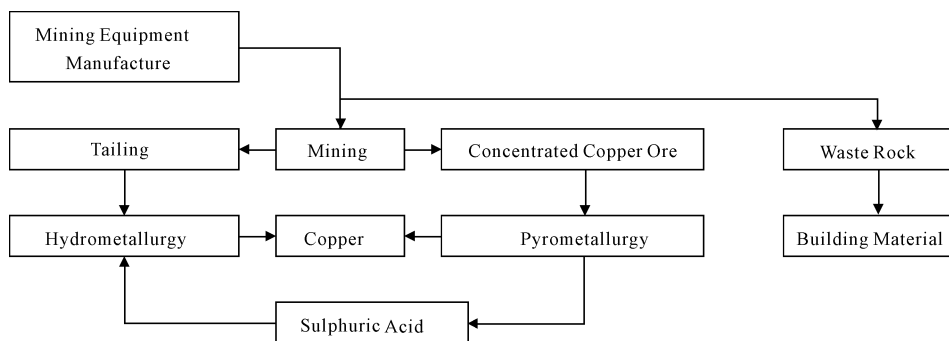
Most of these cooperation zones have utilized the good reputation of relevant enterprises and the vigorous support of governments to attract China's domestic enterprises by actively organizing and participating in investment promotion platforms such as investment meetings and introduction and promotion meetings. Cities selected for introduction and promotion meetings are not limited to where their investment subjects are located, but also the ones with close economic, trade, and industrial relations with Africa. Taking Egypt's Suez Economic and Trade Cooperation Zone as an example, it has promoted investment not only in Tianjin where its investment subject is located, but also in cities like Tangshan, Xiamen, Changshu, Yinchuan and Hefei (Table 7).

Zambia-China Economic and Trade Cooperation Zone is a typical example concerning investment promotion through industrial chains led by large enterprises. The cooperation zone relies on the leader position of China Nonferrous Mining Group in copper mining and smelting processing and focuses on building and forming Copper Circular Economy Industrial Chain (Fig. 6). The zone has attracted 13 enterprises such as NFCA Mining and Zambia Chambishi Hydrometallurgy Company as the upstream and downstream of this industry chain.

It can be observed that construction of China's development zones in Africa has achieved remarkable results and recognition from all host countries in a relatively short time. The trend of further extension and expansion has fully demonstrated that construction of China's development zones in Africa is a key channel for sharing development opportunities and experience. Driven by development zones, China's cooperation and assistance with Africa have converted from one-way blood transfusion support and project promoting to reciprocal investment cooperation and cluster formation. The construction of China's development zones will

**Table 7** Investment and promotion meetings participated by Egypt's Suez Economic and Trade Cooperation Zone

City	Name of meeting	Time	Number of participated enterprises
Tangshan	Project introduction and promotion meeting on Egypt's Suez Economic and Trade Cooperation Zone	May, 2008	More than 30
Xiamen	Trade matching conference of Twelfth CIFIT (China International Fair for Investment & Trade) on going-out project of Chinese Enterprises	September, 2008	
Changshu	Changshu introduction and promotion meeting on China-Egypt Economic and Trade Cooperation Zone	June, 2012	Almost 60
Tianjin	Investment promotion meeting on China-Egypt Economic and Trade Cooperation Zone	August, 2012	
Yinchuan	Ningxia introduction and promotion meeting on China-Egypt Economic and Trade Cooperation Zone	September, 2012	Almost 150
Hefei	Investment promotion meeting on China-Egypt Economic and Trade Cooperation Zone	April, 2013	More than 60



**Fig. 6** Circulatory economic industry chain of Zambia-China Economic and Trade Cooperation Zone

promote African transformation from an area of consumption and resource extraction to that of production, upgrade its economy and consumption, formulate locally circulated modern industries and help Africa start the path of modernization. Furthermore, economic development and changes in economic foundation will lead to changes in values and world views of African people, gradual alleviation of poverty and improved stability, and a modernized and peaceful development environment of Africa.

Despite these remarkable outcomes achieved in the construction of Sino-African cooperation zones, it should be noted that African countries are still at the stage of exploring their own policies on industrialization and urbanization. Some policies and their implementation are indeed improper. Their weak industrial base and creaking infrastructure have not only increased the construction cost of development zones but also constrained the production expansion of these development zones. Besides, as the pre-constructed Sino-African cooperation zones have mainly hosted Chinese enterprises and simply copied the operation patterns of Chinese development zones, local residents and communities are ineffectively involved and linked in the development of these cooperation zones. The end result is a low level of openness and integration of these Sino-African cooperation zones, which has further constrained their abilities in promoting the development of surrounding areas. Under the new strategic context of China-Africa production capacity cooperation, these problems could be addressed when both sides optimize and adjust existing arrangements in the construction of new cooperation zones.

## 6 Conclusions and Suggestions

This study explores the feasibility and necessity of applying China's development zone model in African countries by discussing the roles that development zones have played in promoting China's industrialization and urbanization, comparing the differences in the development stages of China and Africa and assessing the achievements that the six Sino-African economic and trade cooperation zones have reached. It can be concluded that the construction of Sino-African economic and trade cooperation zones is fair cooperation based on market economy and international trade agreed on by

both parties. It is mutually beneficial economic cooperation between developing countries and regions as per modern international economic principles. China's development zones in Africa, from the perspective of globalization, are not only economic collaboration between China and Africa, but also between two economic lands, which will surely exert great influence on a new round of globalization and South-South Cooperation. It is likely to observe that those cross-border development zones serve as an engine, belt and bridge during the new process of globalization.

Along with further development of Sino-African economic cooperation and the rise of African industrialization, it is advisable that China should draw lessons and share experiences from the earlier stage of zone construction in Africa and learn from other modes like Singapore's construction of overseas industrial parks, formulating overall strategy so as to guide the smooth development of cross-continent zones. What can be predicted in accordance with the current trend is that China's development zones in Africa will act as new windows of Sino-African integration, new carriers of African industrialization and new engines for global industrial restructuring. The construction, development and planning of China's development zones in Africa shall persist in the overall principles of 'Sino-African Integration, Multi-Cooperation, Mutual Benefit, Scientific Location, Systematic Planning, Cluster Growth and Open Development' to further deepen the cooperative construction of Sino-African industrial zones.

For those Sino-African cooperation zones that have already been constructed, we suggest that globalization, localization, and industry-city integration are three possible routes for them to further optimize their development. Globalization implies that these cooperation zones should attract enterprises which are not only from China but also from other countries. Localization means that these cooperation zones should not only focus on the processing export model based on local land, labor and resources. They should also actively promote the growth of local supporting enterprises and their products could also meet the demands of local markets. As for industry-city integration, the traditional model of constructing pure development zones should be abandoned in favor of a more sustainable model which integrates production, people's living and environment protection and promotes integrated development of their towns and

regions. In doing so, these cooperation zones could play a comprehensive and significant role in promoting industrialization, urbanization and socioeconomic development of Africa.

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