The Plan-led Urban Form: A Case Study of Shenzhen

Luxin Huang, Yongqing Xie, China Academy of Urban Planning & Design, China

1. Introduction

The city of Shenzhen, the first Special Economic Zone (SEZ) in China, is located in the southern part of Guangdong Province with the Daya Bay to the east, Pearl River Estuary to the west, and Hong Kong Special Administrative Region (SAR) to the south. Before 1979, Shenzhen was a small town with a total population of less than 30,000 and an area of less than 3 sq km. By 2010, the total population was over 10 million and the built-up area nearly 830 sq km (Department of Urban Social and Economic Survey, 2011). The rapid development of Shenzhen is seen as a miracle in the world. During the rapid development period, the urban structure of Shenzhen played a significant role in promoting economic development, since the economic efficiency of a city is highly affected by its spatial structure (Zhao, 2004). As an emerging city, the formation and evolution of urban structures of Shenzhen are mainly decided by urban planning. In this sense, it can be inferred that the proper plans have offered great spatial supports to the success of Shenzhen.

At the beginning, the area of Shenzhen SEZ was just 327 sq km, an administrative line - the second line, separating the SEZ from other areas. In July 2010, the second line was removed and the SEZ extended to the whole territory. In retrospect of the spatial evolution, the second line has become an important boundary distinguishing the different land use features. This paper tries to explore the evolution of urban forms led by urban plans. In general, the four versions of urban master plans and a strategic plan in 1989, which had a decisive influence on urban structure formation, will be reviewed. Furthermore, this paper will examine the rationality and operational results of these plans and summarize the common features as well as the major deficiencies in these plans.

2. Shaping a Multicentric, Clustered Belt Structure

2.1 The Initiation of Urban Development Led by the 1982 SEZ Master Plan

The “1982 SEZ Master Plan” is the first version of master plans in Shenzhen, which just covered the SEZ. This plan proposed a multicenter – cluster – belt urban structure, composed of Nantou Cluster, Luohu-Shangbu Cluster and Shatoujiao Cluster. The three clusters were connected by a major trunk road - Shennan Road from west to east. Following this plan, the structure of the city began to develop towards a muticentric pattern, which became a rudiment of today’s structure (Mao et al, 2008).

Figure 1: The Spatial Structure of 1982 SEZ Master Plan

Under the planning framework, Luohu-Shangbu cluster was the main development area initiated by the municipal authority, which was at the geographical centre of the SEZ and also close to the border with Hong Kong. Since then, Luohu was the only land port to Hong Kong, where most investment came from. The SEZ authority intended to develop this area into a commercial centre to facilitate cross-border trading. No sooner was the Luohu commercial area oriented to large-scale, high-rise and high-density development than the SEZ authority realised the potential environmental problems and its ineffectiveness in attracting investment, especially from Hong Kong. After all, the investors from Hong Kong were mostly fed up with the Hong Kong style development, and were expecting something different and interesting. The SEZ authority therefore immediately decided to reduce the development scale by cutting down the number of high-rises from 80-90 to 40-50 in this small area of only 80 hectares. The plot ratio was also reduced to not more than 5. Without this policy adjustment, perhaps the Luohu center would be a part of a much more congested and noisy scene than the one seen today.

The development scale in Shangbu, however, was not as optimistically estimated in the initial plan. On the one hand, most of the investments in Shangbu were low in value addition and small "Sanlaiyibu"[1] enterprises with relatively weak economic strength. On the other hand, the SEZ authority had a more ambitious intention to attract large-scale investment and establish more highly value-added Sanziqiye to build up a more consolidated economic base for the SEZ.

The Shekou Industrial District in Nantou Cluster was another area on the west end, developed by the Commercial Investment Bureau of the Ministry of Communications for setting up joint ventures with inward investment, based on its advantageous location for obtaining fresh water and electricity supplies, and for building up a sea port. The designation of Shekou as an industrial district was a separate initiative from developing Luohu and Shangbu. Early in the 1970s, the Commercial Investment Bureau was already at an advantage in attracting foreign investment, because it had been based in Hong Kong for years and was well experienced in dealing with issues in a market economy. Under its management, the Shekou Industrial District in the early 1980s had already appeared to be very dynamic in attracting Sanziqiye rather than Sanlaiyibu enterprises, which was a distinctive contrast to Shangbu. Admittedly, its success also highly depended on the assistance from the local authority of the Bao'an County, the provincial authority of

Guangdong, and especially, after the establishment of the Shenzhen SEZ, the SEZ authority, for infrastructure provision.

Building on the locational advantage, Shatoujiao Cluster became one of the first processing trade areas and developed processing, breeding and trading industries. With Shatoujiao port opening in 1984, the industrial area was further enlarged, which also facilitated its residential and service function.

In general, infrastructure provision was the predominant concern in the initiatial stage of the SEZ's urban development in the early 1980s. Upon the foundation of the SEZ, the municipal authority had already recognised that the lack of infrastructure was an obstacle to the success of urban development. After preparing for a road network plan for the SEZ, the authority immediately decided to implement onsite Qitongyiping, i.e. provision of road, water, electricity, telecommunication, drainage, sewage and municipal gas, and land formation, to guide the development pace with large-scale infrastructure provision. For example, to initiate the development in Luohu, the municipal authority not only provided general infrastructure, but also undertook the groundwork to fill up the low land in order to prevent flooding and provide more development space by cutting away the Luohu Hill. This enabling policy significantly ensured the implementation of a snowball-rolling mode of the development strategy, which aimed at achieving instant development effect upon direct and active planning and infrastructure support. Moreover, this policy was also constructive at the initiatial stage for enabling an efficient infrastructure network to guide urban development in the following years.

2.2 The Acceleration of Urban Expansion Led by the 1986 Master Plan

A new plan complied in 1986 replaced the 1982 SEZ Master Plan. In this plan, the urban structure was further reassured and enhanced, and meanwhile, this plan enabled the function of promoting the sustainability of industrial development. Compared to the 1982 master plan, the 1986 master plan had a more strategic view on urban land use and infrastructure provision to ensure high-standard urban development in Shenzhen. The plan also had an estimation of 0.8 million permanent dwellers and 0.3 million floating population occupying 123 sq km of urban land for the year of 2000 (Shenzhen Bureau of Construction, China Academy of Urban Planning & Design, 1986).

A belt-shape spatial layout of five development clusters could be distinguished in the plan: Nantou, Huaqiaocheng, Futian, Luohu and Shatoujiao. Nantou Cluster aimed to develop commercial and industrial function; Huaqiaocheng Cluster accommodated comprehensive land uses ranging from industry, tourism, real estate and commerce; Futian Cluster was to be a new city center with administration and commercial functions; Luohu retained its function for commercial and residential use; and, Shatoujiao Cluster was to be developed into a major industrial area. The clusters were designed with the separation of natural landscape, such as rivers, orchards or open spaces, which provided for green corridors within the urban space to promote quality of life and the environment. Compared to the previous urban structure, the clusters identified in the 1986 master plan were intensified along the major trunk road, Shennan Road.

In the plan, it was also determined that the SEZ would mainly develop technology and capital intensive enterprises and reject those that would bring about environmental pollution. To facilitate industrial development, this plan designated fifteen industrial zones of various sizes to develop electronics, light industry, building materials, machinery manufacturing and textile industries. At the same time, the plan also provided sufficient land for residential use, which included 179 residential areas covering a total area of 3,042 ha with various building and population densities. To create a beautiful urban environment, the plan allocated 22 municipal or district level public parks, 5 Litchi orchards, a 140 km long green belt along the

roads, and 10 tourist destinations, which set out a framework for transforming the city into a contemporary garden city.

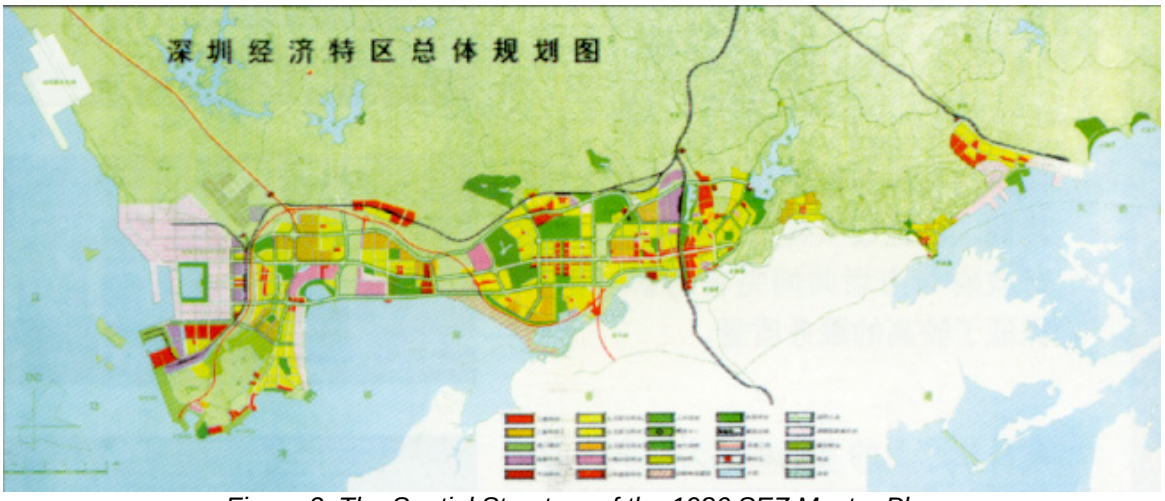

Figure 2: The Spatial Structure of the 1986 SEZ Master Plan

At this stage, urban expansion mainly took place within the second line. The construction of Luohu Cluster was further infilled, forming the city center and resulting in a more evident agglomeration effect. In Futian Cluster, the secondary industries were further enhanced, together with the residential function, and correspondingly the industrial area extended rapidly; the proposed new city center, Futian center, was still empty and reserved for high-end service and business industries. The construction areas in Huaqiaocheng industrial area and Shahe industrial area within Huaqiaocheng Cluster were extended very fast by promoting high-tech industries; at the same time, the tourism projects of “Splendid China” and “China Folk Culture Villages” were opened to the public and further facilitated the tourism development in this cluster. The booming of the secondary industries also happened in Nantou Cluster, which is reflected by the large-scale industrial development of Nantou industrial area and Nanyou industrial area. By the early 1990s, these industrial areas had expanded to connect with Shekou industrial area. Compared to other places in SEZ, the East Cluster developed at a relatively low speed due to the disadvantageous location. The urban development mainly concentrated in Shatoujiao industrial area, while the development of Yantian port area, Dameisha, Xiaomeisha lagged behind. The planning area of the 1986 plan was also physically and spatially confined within the SEZ territory (second line). The planning consideration in the Bao’an County was still a separate story, which, in the face of rapid industrial development, gradually became a threat to the coordinated development in the entire city region.

The manufacturing industry was largely catalysed by the urban land reform in the mid 1980s. Since 1981, the separation of the land development right from the land ownership and the permission of land-use transfer had already been constructive in attracting inward investments. Under the circumstance of lacking direct financial support from the central government, a reform in the urban land system was crucial to the SEZ authority for generating adequate revenue from land-use fees, and thus raising funds for urban infrastructure. Before 1987, land was basically developed through administrative allocation by the SEZ authority. The state Land Administration Act was enacted in 1987 followed by the Provincial Regulations on the Planning and Management of Development Land. The “Regulation on Shenzhen SEZ Land Administration” was also promulgated in1987. After that, a new system was born in the SEZ, which facilitated the coexistence of the land market and the administrative control through transfer of land-use right by agreements, tenders or auctions.

However, transfer by agreements, especially those with the SEZ authority, was the predominant format due to the concern of an immature land market and the loss of government control that might "kill the infant" of the newly emerging industrial development in the SEZ. The agreements handled by the SEZ authority were often formulated with low land-use fees in order to attract more inward investments and quickly generate revenue for the authority to repay the early-year bank loans on infrastructure provision. This resulted in a mushrooming of industrial development, which in return not only brought in adequate municipal revenue but also kept the low production cost to maintain the competitiveness of the city's economy.

3. Developing the Whole Territory Led by the "Strategic Planning in Shenzhen, 1989"

Although the 1986 master plan played a positive role in framing the base of the future urban form, many of its estimations, such as population and industrial output growth, were exceeded through the acceleration of industrial development in 1987. This breakthrough happened too soon that it led to a revision of the spatial structure only three years later. Within the SEZ territory (second line), the situation became more apparent that the land scarcity would become a bottleneck for accommodating large-scale industrial development in the coming future. The frequent occurrence of urban disasters and social turmoil also indicated the overloading of development pressure, the lack of monitoring and management, and to some extent, the ignorance and the neglect in providing timely infrastructure and ensuring social equity. A new strategy of Shenzhen called "The development strategy of Shenzhen" compiled in 1989 estimated that by 2000, the construction area would have reached 150 – 160 sq km, which would exceed the available land resource within the SEZ. There had already been some manufacturing enterprises voluntarily moving from the early established Shangbu Industrial Zone to places with much lower land prices or loose development control, such as Bao'an County or even Dongguan City, and leasing out the original sites for commercial use to make the best profit from the differential rent. To seek for more land resources, this strategy proposed the approach of exploring the whole territory. But, some researchers consider this strategy to be a compromise of the existing chaotic land use in the non-SEZ.

This strategy proposed that the SEZ would be the city center and the construction areas would extend outwards to the non-SEZ gradually. In principle, the labor-intensive industries and polluting industries would not be located in the SEZ, as it was aimed to develop towards a world city. In spatial extent, the territory of Shenzhen was further divided into three rings. The first ring covered the SEZ, where trade, finance and high-tech industries would be developed; the second ring covered the towns around the SEZ, including the towns of Xinan, Fuyong, Longhua, Henggang, Buji, Pinghu, Pingshan, where the "Sanlaiyibu" industries would be accommodated and the urban industries, warehouse industries and transport station would be located; the other towns outside would be grouped into the third ring, mainly developing export agriculture. This strategy also proposed upgrading the industrial structure and promoting urban land intensification to avoid urban sprawling.

After this strategy, one distinctive development phenomenon in Shenzhen in the early 1990s was the intensive and widespread land development and speculation across the city region, especially beyond the SEZ territory (second line) in the then Bao'an County. In fact, the emergence of such phenomenon can be traced back to the late 1980s when large profit return from transferring land-use rights became gradually and widely recognized. However, the SEZ authority, although claimed to be the municipal authority, had very little power to control land development and speculation in Bao'an County. This was largely due to the county's status as a rural area, which was not included in the planning area of the SEZ at this point. In particular, a large proportion of the rural land was owned by villages and townships empowered with discretion on their own development needs, such as villagers' dwellings and township enterprises. There was a lack of a monitoring system in Bao'an which, if in place,

should have been effectively avoid the actual transfer of land-use and development rights to other developers and speculators in the name of village and township development.

Therefore, the development beyond the SEZ territory (second line) in the late 1980s and the early 1990s remained a largely scattered and chaotic situation. Townships in Bao'an County were competing with each other, striving to attract inward investment. Many land lots were bulldozed for selling and reselling the land-use and development rights, without having onsite development. This situation had led to the emergence of a large amount of brownfields, particularly along the three major transport corridors, i.e. Xin'an to Songgang in the west, Buji to Longhua in the middle, and Buji to Longgang in the east. While the east-west transport linkage was also being improved in the sub-regions beyond the SEZ territory (second line), areas previously regarded as being remote also actively participated in the development competition. Some sites even intruded into the environmentally sensitive areas, such as water-source protection areas around the reservoirs, resulting in environmental deterioration.

4. Developing towards a hierarchical city network

4.1 Large-scale Construction Led by The Master Plan of Shenzhen 1996-2010

Under the direction of the spatial strategy in 1989, "The Master Plan of Shenzhen 1996-2010" was compiled, which covered the whole city region, to coordinate the land uses between the SEZ and the non-SEZ. This plan was completed and approved at the municipal level in 1996, and subsequently approved by the State Council in 2000. According to the plan, future development could no longer take place in a random state, but along the western, central and eastern axes to form a "hierarchical city network" and a "linear-clustered city". Nine development clusters and six independent towns would form the constructed areas in Shenzhen. Along the three proposed axes, nine clusters would be distributed. Another important factor of this plan was to retrieve the land transfer rights and avoid the illegal and casual transferring.

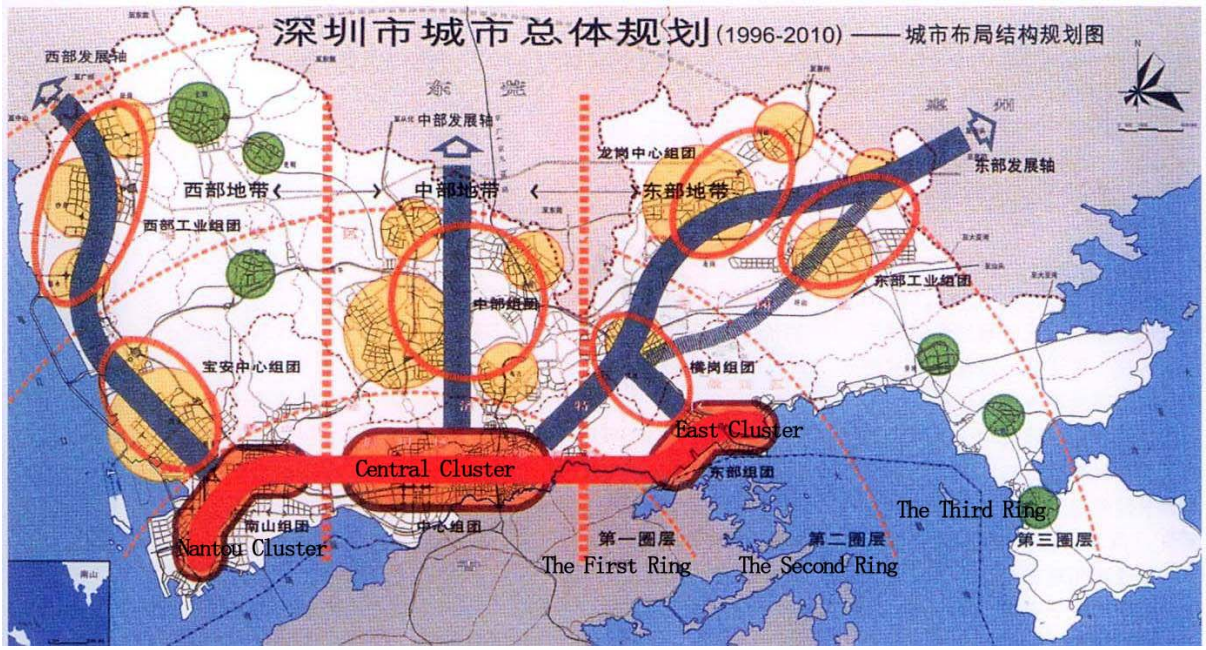

Figure 3: The Urban Structure of The Master Plan of Shenzhen 1996-2010

The spatial layout of the city was organized in two systems: the urban development space, which formed a "W" shape, and the natural conservation space, which formed an "M" shape. The interlocking of the two systems not only was ideal for promoting the city's economic development, especially for hi-tech industries requiring a pleasant urban setting, but also brought the natural landscape within easy reach of the citizens. All three development axes

were in a roughly north-south direction and stretched outward from the city core. The spatial layout was defined on a more macro scope than in the previous plans. The SEZ territory (second line) was divided into three clusters, which was previously defined as five. The western axis started from Nanshan Cluster, and went alongside the Pearl River to connect the Western Industrial Cluster and the Bao'an Central Cluster, ultimately linking to Guangzhou. The central axis started from the Central Urban Cluster up to Longhua and Guanlan at the north edge of the city. The eastern axis passed through Buji and Longgang towards Huizhou and Shantou, and includes the Eastern SEZ Cluster, the Eastern Industrial Cluster, Longgang Central Cluster and Henggang Cluster. The six independent towns were Gongming, Guangming, Shiyan, Kuichong, Dapeng and Nan'ao, which were all located in environmentally sensitive areas requiring special attention to regulating development and ensuring environmental protection.

After 2000, many areas were constructed, which had a significant impact on the urban structure. Meanwhile, the pace of old city regeneration was accelerated, and during the tenth five-year period, the investment for urban regeneration reached 33 billion RMB. Within the SEZ, Luohu District focused more on urban renewal, and the new construction projects mainly concentrated in Futian District, Nanshan District and Yantian District. It should be mentioned that the infrastructure construction in Futian Center had been generally finished, and the size of Futian Center expanded to 6 sq km. During this period, the construction of the Civic Center, Children's Palace, Central Library and Concert Hall were launched, the government office moved to this area, and the Exhibition Center and high-standard office buildings put in use. A series of actions focused on the development of Futian Center after it had been reserved for a couple of years. Since 1999, the operation areas of office buildings in Futian have exceeded in Luohu. By the end of 2004, over 70% of the headquarters in Shenzhen moved into this center. The subway station in this area has aggravated the capital agglomeration effect.

The construction area in the non-SEZ further expanded at this stage. The high-tech parks, logistic parks and transportation hubs led by the government promoted this expansion and formed the growing poles in the non-SEZ. Driven by these growing poles, the towns of Shiyan, Guanlan and Fuyong developed very fast. The towns of Pingshan and Kengzi also had rapid development rates, which were led by the Longgang industrial area. Buji and Longhua became the major areas for real estate development because of their locational advantages. The coastal area in Bao'an was designated as a key area for future development and the new Bao'an Center was to be constructed on the reclaimed land.

4.2 To Be Further Intensified Led by The Master Plan of Shenzhen 2010-2020

In 2006, the Shenzhen government began to compile "The Master Plan of Shenzhen 2010-2020" after the approval of The Ministry of Construction (now The Ministry of Housing and Urban-Rural Development). After ten-years of construction guided by "The Master Plan of Shenzhen 1996-2010", the urban structure of Shenzhen has been generally formed. The land use in the SEZ has been relatively arranged as planned; however, the non-SEZ has confronted a serious problem of extensive land use. Therefore, this plan pays more attention to urban intensification in the non-SEZ and an enhancement of the urban structure proposed in the 1996 master plan. A significant feature of this plan is the highlighting of the three hierarchical levels: municipal level, district level, and cluster level and correspondingly, three levels of the development poles are distinguished.

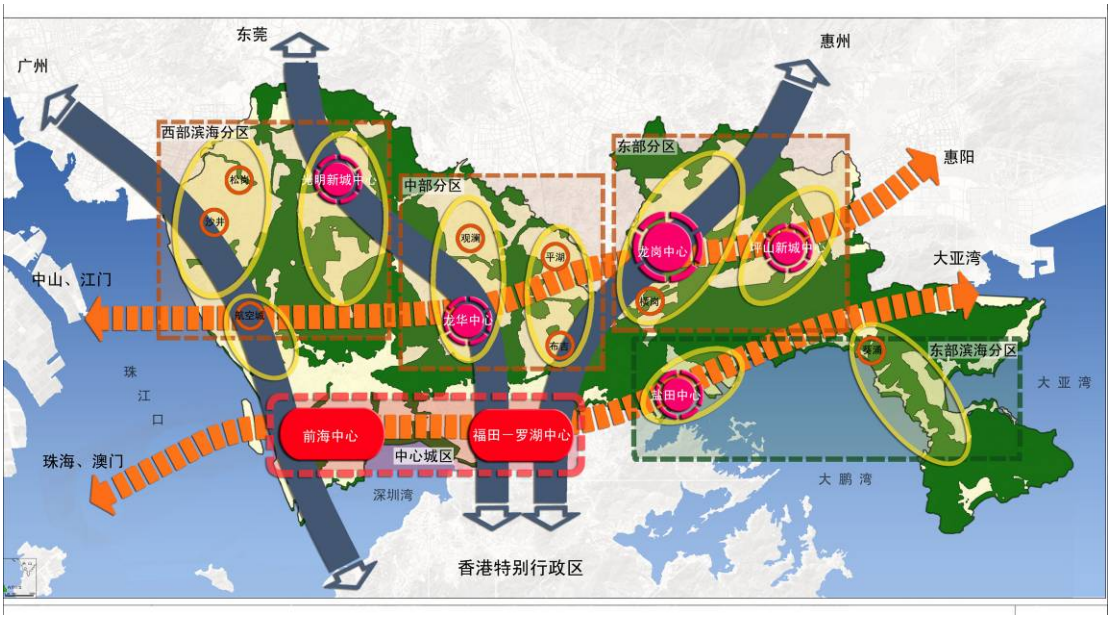

Figure 4: The Urban Structure of The Master Plan 2010-2020

The Qianhai Center and Futian-Luohu Center are the two municipal centers. The land in Qianhai Center is mainly temporarily utilized for port-service industries and logistics and storage industries. Meanwhile, this area is further enlarged by sea reclamation. Due to the advantageous location on the developing corridors of Hong Kong and Guangzhou, Qianhai Center will be used for a business center to serve as an international production service center. In Futian-Luohu Center and Shatoujiao Cluster, there are very few land resources to be constructed. However, there are many urban villages, old industrial areas and old residential areas, not coinciding with urban development and in the future, these areas will be further renewed by improving infrastructure and upgrading the industrial structure.

In July 2010, the second line was removed and the SEZ extended to the whole city territory. In this context, the land resources of the previous non-SEZ will have more development potential. To protect the city environment, the Shenzhen authority also made up a plan to set up a construction boundary called “Ecological Control Line” and the state government also controls the urban expansion of Shenzhen by putting a limit on the quantity of developable land. Under the trial-forces, Shenzhen does not have enough space to support future urban development. The only approach that Shenzhen can take is urban intensification of the previous non-SEZ.

In this plan, the cluster centers and the district centers outside the second line are significant to Shenzhen’s development. Yet, the developing levels of these proposed centers were very low and there are many empty areas among existing construction areas. During this planning period, the infrastructure provision of these centers will be enhanced and these empty areas will be integrated with the existing areas.

5. Reflection of the Plan-led Approach in Shenzhen

Flexibility is the main feature in these plans, which is also significant to rapid urban development. In retrospect of the history of Shenzhen in the past three decades, the rapid growth from a small border town to a mega-city is beyond all imagination. In other words, the development of Shenzhen is unpredictable. Although the prediction in each plan is very bold, compared to the reality, the predictions are for a development process that is much slower. Under such circumstance, the flexible development pattern gives great supports to Shenzhen’s success.

In the initial stage, Shenzhen has selected a flexible belt shape, connecting the three clusters from west to east, and the connecting corridor, Shennan Road, connecting to 107 State Road in the west. These clusters do not interfere with each other and have good accessibility to the outside. Based on this, the Shennan Road has become a commercial axis. With construction area growing, the distribution of these clusters has further intensified along the Shennan Road. The role of Shennan Road is further enhanced, and at the same time, a parallel road, Beihuan road began to be constructed and designed as a freight trunk road. Beihuan Road also goes through these clusters, and the industrial areas in each cluster are distributed along the Beihuan Road. At the same time, the Nanhuan Road has formed an axis where the leisure and education functions concentrate along.

Under the spatial framework, each cluster is relatively independent, and change in an individual cluster would not affect the development of other clusters. Each cluster is connected to the outside by the three clusters and has the equal development opportunities. By expanding the whole territory, the flexible spatial structure was applied to the whole territory, which is designated as a hierarch-clustered network. This spatial structure could satisfy the needs of industrial development, which made Shenzhen grasp every economic development opportunity available at different stages.

However, during the rapid urbanization, timely land supply is important to Shenzhen' s success. To ensure timeliness and avoid disputes over land property rights, the government has taken the approach of bypassing the existing construction area and developing empty land. After that, the government has not resolved the areas bypassed, which caused the production of many urban villages. With the rapid rise migrating people, these urban villages have become one of the major places to accommodate them, and the urban villagers have made great profits from renting the urban village apartments. These villages have become places highly concentrated with low-income groups, also known as "Slums in China". Usually, these villages have occupied good locations and the government would pay great amounts of money (which was beyond the government affordability) to compensate these urban villagers.

In the previous non-SEZ, since the area had not been included in the urban planning range, the land in the non-SEZ had not been effectively monitored. The land use in the non-SEZ was very chaotic, especially when Shenzhen carried out the whole territorial expansion strategy, the real estate speculation further promoted the urban expansion. Later, although Shenzhen began to compile sub-region planning, aiming to control the construction area expansion. Yet, this has not worked effectively and in the latest master plan and land use plan, the lack of land resources has become a serious weakness in future development.

6. Conclusion

As mentioned before, the formation of a city's physical environment can be regarded as the spatial outcome of certain urban development processes under the manipulation of certain urban policies. And the key issue is the direction, the scope and the degree of such management. Although there have been great achievements in Shenzhen's urban development, which can be seen in its current urban form, the development process itself has not yet been a calm and straightforward voyage in shaping a more liveable urban form with economic vitality. It is rather one that is often accompanied by great uncertainties or even formidable challenges that call for policy adjustment. In fact the prizes and awards that Shenzhen won were not a walkover for the city.

Nevertheless, Shenzhen has created a miracle in the world in the 30 years of urban development process by adhering to the spirit of openness, confidence, bravery, flexibility, compatibility, creativity, diligence and passion. Its current success in urban development is largely due to timely and flexible policy adjustment. A prominent feature is, although there

were fluctuations, the development process in Shenzhen has fundamentally adopted a plan-led approach, which has prevented the city from encountering major frustrations. This approach will obviously continue to be adopted in Shenzhen's future development process. It has to be emphasized that this plan-led approach in Shenzhen is no longer as traditionally suitable or comprehensive. It is itself experiencing transformation towards a more open and democratic decision-making process and a more human faced urban development.

Endnotes:

1 "Sanlaiyibu" ("The Three plus One") is a preferential policy for foreign-funded enterprises to promote coordination between local enterprises and foreign-funded enterprises. In detail, the local enterprises manufacture with materials, designs or samples, and the foreign-funded enterprises can have the trade compensation.

References:

China Academy of Urban Planning & Design (2003), "Shenzhen 2030: Towards a Sustainable Development" , Retrieved from China Academy of Urban Planning & Design.
Department of Urban Social and Economic Survey in National Bureau of Statistics of China (2011), China City Statistical Yearbook 2011, Chinese Statistics Publishing: Beijing.
Mao, J.X., Yan, X.P. et al.(2008) "The Effect of Urban Planning Control upon Land Use in Shenzhen", ACTA Geographica Sinca, Vol.63(3), pp. 311-320.
Shenzhen Bureau of Construction (2005) "Basic ecological control line in Shenzhen", Retrieved from http://www.szpl.gov.cn/main/csgh/zxgh/stkzx/index.htm
Shenzhen Bureau of Construction, China Academy of Urban Planning & Design. (1986), "The General Planning of Shenzhen Special Economic Zone" , Retrieved from China Academy of Urban Planning & Design,
Shenzhen Bureau of Construction, China Academy of Urban Planning & Design. (1989), "Strategic Planning in Shenzhen" , Retrieved from China Academy of Urban Planning & Design.
Shenzhen Bureau of Construction, China Academy of Urban Planning & Design. (1996), "The Master Plan of Shenzhen 1996-2010" , Retrieved from China Academy of Urban Planning & Design, Retrieved from http://www.szpl.gov.cn/main/csgh/ztgh/ztgh/index.htm
Urban Planning, Land and Resources Commission of Shenzhen Municipality, China Academy of Urban Planning and Design. (2010), "The Master Plan of Shenzhen 2010-2020" , Retrieved from China Academy of Urban Planning & Design, Retrieved from http://www.szpl.gov.cn/main/csgh/ztgh/ztgh/index.htm
Zhao, Y.J. (2004) "Theory and Practice of Spatial Arrangement And City Competition" Planners, Vol.20, Issue 7. pp. 5-13