



City profile

Shanghai

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While striving to become the new economic power house of China and the East Asian region, Shanghai is undergoing a profound restructuring of its infrastructure and, more importantly, its physical form and appearance. Urban revival will in part rely on the successful redevelopment of the old central city where dilapidated housing and fragmented industrial use are no longer tolerable. Shanghai's revival also is dependent on the effective development of the Pudong New Area and several other new urban districts, which will facilitate the growth of industrial activities and the expansion of the tertiary sector. © 1999 Elsevier Science Ltd. All rights reserved

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Shanghai, which is the largest city in China with a metropolitan population of over 13 million,¹ is undergoing wholesale changes to become the new economic power house of China and the East Asian region. The changes include not only a profound restructuring of many of its aged industries and its infrastructure, but also the physical form and appearance of the city. Compared to other major cities on China's east coast, Shanghai had lagged for years in obtaining a comparable degree of municipal autonomy from the central government. However, once barriers were removed at the beginning of the 1990s, the pace of reform has been impressive. Shanghai is now one of the pioneers in experimenting with urban land markets and leads other major cities in attracting foreign capital for pro-

perty development and building of urban infrastructure. Proclaimed one journalist on a recent visit, "1990s' Shanghai is one of the great urban renewal stories of all time" (Yatsko, 1997, p 66). This profile offers a glimpse of how metropolitan Shanghai has fared in the reform era, with a focus on urban redevelopment and housing provision, and the creation of new urban districts.

Shanghai's past and present

Built along the Huangpu River in the lower Yangtze delta, Shanghai's development has been linked to its history as China's largest seaport (see Fig. 1). Its hinterlands (principally Jiangsu and Zhejiang provinces) are some of the richest in resources and one of the most densely populated regions of the country. Shanghai stands out among China's cities by its sheer size (a total land area of 6340 km², see Table 1), its population density (in excess of 22 700 persons per square kilometer in the central city), and its importance in the national economy (5.5% of the national industrial output in 1995). The metropolitan area consists of 14 urban districts in the

city proper (2057 km²) and six suburban counties. The metropolitan population is expected to rise to 14.06 million by the year 2020 (*Shanghai Star*, 5 June 1998, p 3).

First established as a fishing village in the tenth century, Shanghai became a county seat in 1074. Merchant families from nearby Ningbo (in Zhejiang Province) were instrumental in making it an integral part of the coastal trading system, and Shanghai grew steadily to become a regional commercial center. By 1853, it had surpassed Guangzhou (Canton) as China's premier trading city (Yusuf and Wu, 1997). Modern industrial development commenced in Shanghai in the late nineteenth century. Today, as it was then, Shanghai is China's foremost industrial center. Banking and other producer services began taking root three-quarters of a century ago. Shanghai also was the city where China's first modern institutions of higher learning were established.

In its pre-1949 glory days, Shanghai boasted the most highly developed urban amenities in Asia outside of Tokyo. The foreign officials who managed the city's International Settlement and French Concession built electricity

¹This population figure includes only registered permanent residents; same throughout the text unless otherwise noted. In 1997, the city of Chongqing was designated as the fourth city with provincial status (Shanghai, Beijing and Tianjin had been the only three cities with such status). It is now considered to be the largest city in China measured by metropolitan population.

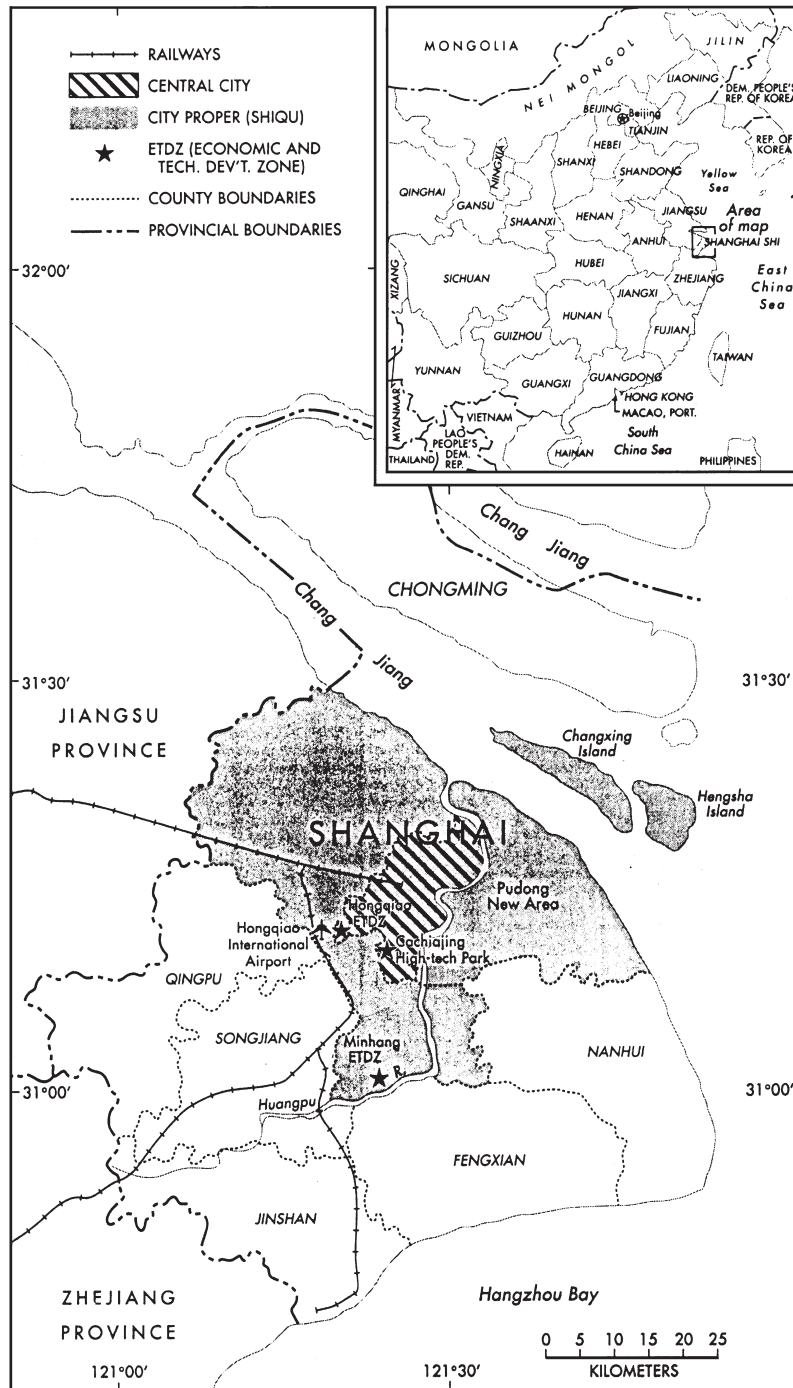


Figure 1 Map of the Shanghai Metropolitan Area. Source: Yusuf and Wu (1997)

networks, sewerage lines, and tramways that were the equal of most European cities. After 1949, however, the city experienced more than 30 years of neglect and disinvestment. Tightly controlled by the central government, Shanghai was the single largest contributor of the country's revenues, providing about 25% on average during

the 1970s (Lin, 1994). With industry soaking up most investment capital, little was left for the maintenance and improvement of urban infrastructure. The anti-urban bias also resulted in limited investment in housing, transport, utilities, and other urban amenities. Shanghai subsisted on infrastructure inherited from the early decades of this

century and, by the 1970s and 1980s, the central city's infrastructure was near collapse. For instance, in the former French Concession, nearly 700 000 dwellings were without flushing toilets. Compared to the national urban average and Beijing (a city of comparable size), Shanghai lagged in several important indices of urban infrastruc-

Table 1 Indicators for Shanghai and the Pudong New Area, 1995

Indicator	Metropolitan Shanghai	Pudong New Area
Land area (km ²)	6340.50	522.75
Population (millions)	13.01	1.49
Population density (persons/km ²)	2052	2843
Employment (millions)	7.94	0.80
GDP (billions of yuan)	246.26	41.47
GVI0 (billions of yuan)	534.95	112.22
Per capita GDP (yuan)	18 943	28 127
Per capita GVI0 (yuan)	41 147	76,124
Average annual wage (yuan)	9279	9995
Per capita open space (m ²)	1.69	2.85
Contracted foreign investment (US\$billion)	12.59	3.26
Commodity exports (US\$billion)	11.58	2.48

Sources: Shanghai Municipal Statistical Bureau (1996) and Statistical Bureau of Shanghai Pudong New Area (1996).

Note: GDP, gross domestic product; GVI0, gross value of industrial output.

Table 2 Urban infrastructure in Shanghai, Beijing and China, 1995

Indicator	Shanghai	Beijing	Urban average
Per capita living space (m ²)	8.0	8.9	n.a.
Per capita paved road (m ²)	3.9	5.5	7.3
Public transportation (vehicles/10 000 residents)	14.2	15.1	7.3
Access to faucet water (percent)	93.7	100.0	93.0
Per capita annual electricity consumption (1000 V/hour), 1994	279.6	n.a.	125.2
Per capita annual water consumption (tons)	80.1	91.6	71.3
Natural gas usage (percent)	90.1	91.7	70.0
Per capita open space (m ²)	1.7	6.8	36.7

Source: State Statistical Bureau (1995, 1996).

Note: n.a., not available.

ture, including per capital living space and per capita paved roads (see Table 2).

An acute housing shortage is probably one of the most severe problems confronting Shanghai today, as a result of disinvestment in housing during pre-reform decades. Per capita living space still lingers around 8 m², while about 10% of all urban households have per capita living space of less than 4 m² (see Table 3). Improvements in housing have only been substantial since the

Table 3 Population growth and housing conditions in the Shanghai city proper, selected years, 1978–95

Year	Population in city proper (millions)	Per capita living space (m ²)
1978	5.57	4.5
1980	6.01	4.4
1985	6.98	5.4
1990	7.83	6.6
1995	9.57	8.0

Source: Shanghai Municipal Statistical Bureau (1996).

early 1990s, made possible by a double digit annual increase in housing investment (Chiu, 1996). The lack of housing space also reflects the steady growth of the population, which has far outpaced the expansion of the urban area and efforts to renovate old living quarters and to construct new apartment buildings in the suburbs. The growth of the population between 1985 and 1995 was especially rapid, largely accounted for by the return of youth from remote areas displaced during the Cultural Revolution.² But the statistics do not capture the whole picture of population growth, as over 3.3 million temporary migrants and transients are now work-

ing and living in metropolitan Shanghai, most of whom do not have urban status and are therefore not counted as part of the resident population.

Trying to compensate for past inattention, both central and municipal authorities have begun investing large sums in Shanghai's infrastructure. Between 1991 and 1996, about US\$10 billion was invested in infrastructure projects (Yatsko, 1997), such as two bridges (Nanpu and Huangpu bridges) and a tunnel across the Huangpu River, an inner ring road, an elevated north-south throughway, and a new subway line (see Fig. 2). The pace was something like building the Brooklyn and Manhattan Bridges in New York and the Lincoln and Holland Tunnels between New York and New Jersey all in 5 years.³ At the same time, Shanghai's port has been upgraded and

²The natural growth of the population was very low, about 0.37% in 1990 and -0.8% in 1993, as the one-child family planning policy has been fairly effective in large cities. In fact, Shanghai is facing a rapidly aging population. Seniors accounted for 12.5% of the total population in 1996, and are expected to account for 26% in the year 2020 (*Shanghai Star*, 5 June 1998).

³See "Free Now to Build, China's Biggest City Binges", *New York Times*, 12 April 1995.

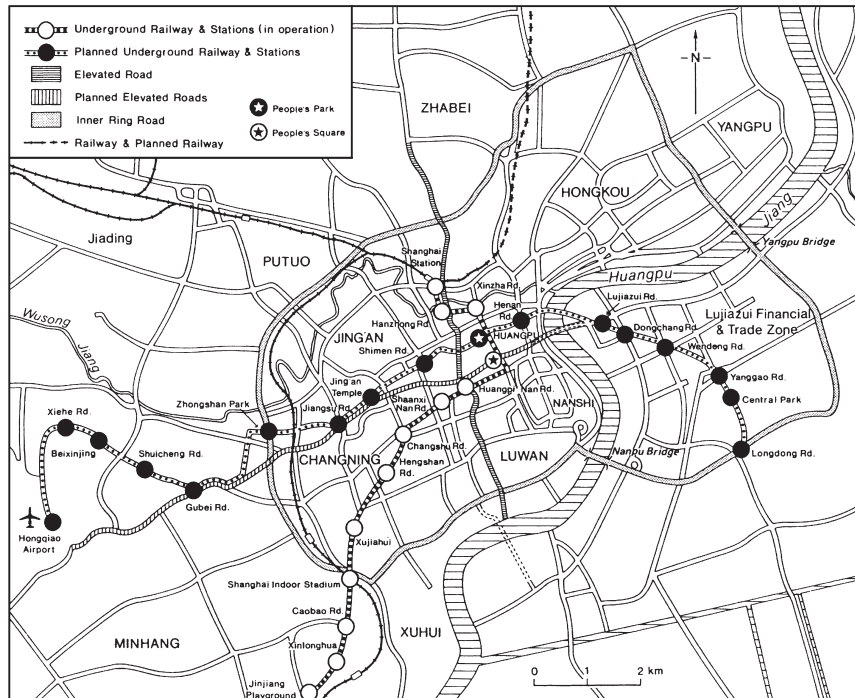


Figure 2 Map of the central city of Shanghai. Source: Chan (1996)

expanded to accommodate a much larger volume of traffic in containers. Constructed quickly and with the help of a German consortium, a fully modern subway system has been under construction. The first 10 miles of track – the south section – was completed and opened for traffic in April 1995. Another 200 miles of track on six more lines will be built over the next 50 years. Once completed, the subway will take some of the pressure off the city’s congested road systems.

Urban revival in Shanghai will partly rely on the successful redevelopment of the old central city. With the growth of commercial establishments, real estate value is rising rapidly there because of its prime location. To make room for more development, both residential and industrial relocation needs to be undertaken. In the foreseeable future, Shanghai’s land market will rival that of other major cities in the region, such as Seoul and Bombay. Shanghai’s revival, in part, also is dependent on the development of the Pudong New Area, a new district to the east of the city and the Huangpu River. Based on the model of China’s Special Economic Zones

(SEZs) and initiated in 1990,⁴ Pudong has a total area of 522 km², larger than the central city.⁵ Planned for a three-phase development, Pudong is designed to relieve the spatial pressure on old Shanghai and become a new center of industrial and commercial activities. A new international airport is being constructed in the southeast corner of Pudong. With both ocean and air transport capacity, Pudong is also destined to expand Shanghai’s volume of trade.

Urban redevelopment and housing provision

The central city of Shanghai has been characterized by an extremely high density of housing and industry, largely

⁴The key attractiveness of China’s Special Economic Zones is the provision of preferential incentives to foreign investors to promote investment and exports.

⁵There are four key development sub-areas in Pudong (see Fig. 4): Lujiazui Finance and Trade Zone (Shanghai’s new central business district), Jinqiao Export Processing Zone, Waigaoqiao Free Trade Zone, and Zhangjiang High-Tech Park (Massey *et al.*, 1997; Olds, 1997).

an historical legacy from the European concessions prior to 1949. In an area of 280 km² the population was about 6.37 million in 1995 – an average density as high as 22 700 persons per square kilometer and easily one of the highest in the world.⁶ There were over 4000 industrial enterprises, taking up close to a quarter of the land (He, 1993). In addition to the shortage of available land for new housing, the existing housing stock is dilapidated (see Fig. 3). Land shortage also obstructs the construction of some basic infrastructure such as road systems.

An additional drawback is the mixed pattern of land use in the area. The lack of a proper planning framework in the pre-1949 period, when foreign concessions and Chinese districts were separate jurisdictions administratively, led to a situation whereby factories and houses were located rather randomly and often encircled each other. With no

⁶In fact, two of the central city districts (Huangpu and Nanshi) had a population density over 60 000 persons per square kilometer in 1995. See Shanghai Municipal Statistical Bureau (1996).



Figure 3 Delapidated housing in the central city of Shanghai

space for expansion, many industrial enterprises often stored materials on the streets and posed environmental hazards for residents. The shortage of space and the fragmentation of industrial land use, combined with inefficient transportation services, also imposed severe constraints on industrial performance. This problem was further aggravated by Mao's policy on industrial self-sufficiency and the system of administrative allocation of land before 1979 (Hodder, 1996).

The extreme conditions of high density, dilapidated housing, inadequate infrastructure, and mixed land use patterns are making the redevelopment effort a challenging one. There are two important tasks in the redevelopment of the old central city: provision of housing and industrial relocation. Of course, infrastructure maintenance and upgrading will also need to keep pace. It has been estimated that about 100 000 residents will lose their inner city homes to make room for new freeways and

high-rise buildings.⁷ There is some resistance from the population to relocation to satellite and suburban towns because urban services and employment opportunities there are not as ample as in the central city. However, new residents will enjoy apartments with gas, electricity, and indoor plumbing, the latter of which is not available in much of the older housing stock downtown.

Shanghai has set fairly high goals for improving housing conditions for its residents. Average living area per person has increased from 3.9 m² in 1949 to 8.0 in 1995. By the year 2000, per person living space is expected to average 10 m² for 70% of all units. The city has proposed to replace the 3.6 million

square meters of endangered structures and shanty apartments, mostly in the old central city. To achieve these goals, over 60 million square meters of housing needs to be built in the 1990s. In addition, significant upgrades of public utilities, including power, water, and communications will need to be provided. The financing of such large amounts of housing would be a serious challenge in any circumstance, and it is clear that new, innovative approaches would be necessary.

The mechanism of housing finance has gone through a series of reforms in Shanghai during the last decade or so. Before 1979, Shanghai's housing construction drew its funding from the municipal fiscal budget, and units were built and distributed by government authorities and state working units. Provision of housing was considered to be part of the social welfare system. This system allowed for very little return on the investment, which made the expansion and maintenance of housing very

⁷*New York Times*, 22 December 1993. The elevated inner ring road and north-south thoroughway have already been completed, providing much improved vehicular travel capacity.

difficult. In 1980, reforms began to take place and the rules were changed such that funding for housing construction became a joint effort between the municipal government and enterprises. The city also began an experiment on housing commercialization by selling units to enterprises and individuals. As a result, housing investment between 1980 and 1990 accounted for about 90% of the total amount invested in housing between 1949 and 1990 (Chiu, 1996). However, this reform program still did not solve the problem caused by the highly subsidized housing provision, which subsequently limited production and distribution of new units.

A significant reform came in 1991 when a policy scheme was formulated that introduced a new mechanism of housing provision, one of the most comprehensive in the nation. It was stipulated that the city, employers, and employees would all contribute, gradually shifting from a system of free housing provision to a paid, self-supporting distribution system (Wang and Murie, 1996; Shen, 1994). Other elements of the housing reform scheme included the establishment of a public fund reserve (*gong ji jin*), rent subsidies and bonds, discounts for home purchase, and establishment of a housing commission. The China Construction Bank (its Shanghai branch) was authorized to supply mortgages to qualified home-buyers on behalf of the public fund reserve. The 1991 reform brought some real progress. For instance, rents were raised by 100% and about 500 000 m² of housing were sold by employers to their employees. By May 1998, about 18 billion yuan in public fund reserve had been raised by the city, involving thousands of enterprises and accounting for 20% of all such housing funds in the nation (*Xinmin Evening News*, 3 June 1998). The public fund reserve was subsequently used for new housing construction, rebuilding of old, endangered housing, and as mortgage loans for commercially produced units.

Housing reform received another stimulus in May 1998 when the municipal government announced that it would supply a record 7 billion yuan (about US\$843 million) that year in mortgages to encourage home purchase and boost the lackluster property mar-

ket (*China Daily*, 25 May 1998, p 7). All banks now may cooperate with the public fund reserve to offer various types of mortgages. As a result of all the reform measures, the production of housing is no longer the sole responsibility of the government and housing is no longer a free public good for urban residents. Many people have already bought property rights to the homes they acquired under the old welfare housing system. Since early 1998 they also can put their homes on a secondary housing market and trade for better housing. In fact the city plans to phase out all welfare housing beginning in July 1998 (*ibid.*).

However, the compensation scheme for residential relocation that prevails in China may still be an obstacle to urban redevelopment. In most cases, compensation provided to households to be relocated is made on an in-kind basis and rarely reflects the economic value of either the demolished or new units. These households are given new, often higher-value housing units in exchange for their old, often lower-value units without any charge being levied by the municipality to recover the difference between the two values. This method renders residential redevelopment a very costly operation for municipal authorities or developers, which are usually responsible for providing such compensation. A survey of 11 residential redevelopment projects in China shows that the value of new units often ranges from two to six times that of the old units, and the relocation cost ranges from 17% to about 70% of the total cost of project redevelopment (Dowall, 1994). High relocation costs have also led to many instances of awkward juxtaposition of flashy, high-rise commercial buildings and dilapidated, pre-1949 apartment buildings in the central city of Shanghai.

Residential redevelopment can be expanded and expedited if relocation compensation is monetized so that residents receive cash for the value of their units and a share of land the units occupy. Such a scheme has been practiced by Hong Kong, Seoul and Singapore, and can be useful especially in Shanghai because a substantial number of old housing units in the central city are privately owned as a legacy of the

pre-1949 European concessions.⁸ It also may help the process of eliminating the old welfare housing system as new redevelopment or replacement housing could be sold at market prices. Some self-help initiatives in housing renovation also should be encouraged and advocated. For instance, in Yinxian Lane, demolition of old houses and construction of transitional shelters were performed by residents. This significantly cut construction costs and could be a workable measure (Chen, 1991).

To solve problems associated with fragmented industrial land use, Shanghai has largely relied on relocating factories in the central city to new urban districts available for industrial expansion. Since 1978 a number of industrial parks (often called Economic and Technology Development Zone, ETDZ) have been created, including the Pudong New Area, Minhang ETDZ, Hongqiao ETDZ, and Caohejing High-Tech Park, as discussed in the next section. But the current industrial relocation process, where factories receive no compensation for the land value and only compensation for the improvement value, often produces insufficient funds for such relocation. Evidence from a few cities, such as Shanghai and Fuzhou, suggests that city center factories could fully finance redevelopment if they are permitted to sell their land to real estate development corporations through competitive bidding procedures (Dowall, 1993).

New urban districts

The development of Pudong is central to Shanghai's ambition to regain its pre-1949 position as the leading industrial, financial and trading center in China and the East Asian region. Despite Shanghai's wide industrial reach, many factories, located mostly to the west of the river, are outdated. A feasible option for these factories would be to move across the river and build anew, where acres of flat farming land are being transformed into a new

⁸The same is true for other older cities, such as Beijing, Tianjin and Guangzhou. In newer urban areas, most housing units are provided by working units as well as local governments.

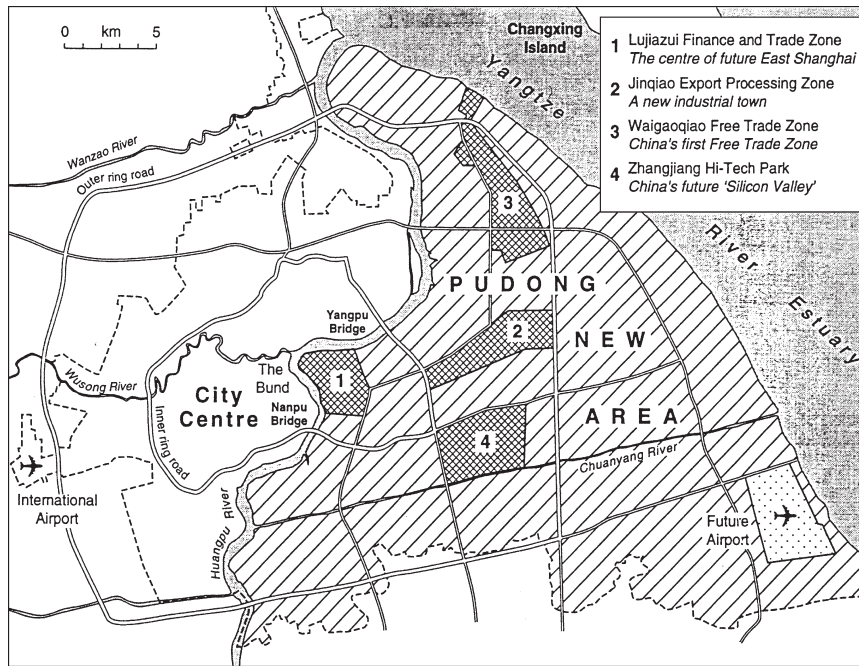


Figure 4 Map of the Pudong New Area. Source: Massey et al., 1997.

urban district, covering over 522 km². The designated space is a triangular area adjacent to central Shanghai, stretching from the east of the Huangpu River to the southwest of the Yangtze estuary (see Fig. 4). Most of this area is within a radius of 15 km from the old downtown.

The special regulations that have enabled economic development in the SEZs to take off have been extended to Pudong: tax exemptions for enterprises doing business with foreign companies, tax holidays for new factories set up with foreign investment, and a bonded zone – the largest and first in the country – for duty-free imports of raw materials. So far, most of the new tenants in Pudong are banking on tax concessions and duty-free imports of raw materials to assemble finished goods for export. More importantly, Pudong is buttressed by China's strongest industrial, science and technology capabilities of Shanghai, something not shared by all the SEZs. The central government also has promised that it would help pay for a vast modernization of public works. During the eighth Five-Year Plan period (1991–95), the central government allocated 0.3 billion yuan to Pudong each year, a level of funding that will continue for the ninth Five-Year Plan (1996–2000).

In addition, Pudong has been guaranteed US\$0.1 billion in foreign loans and US\$0.2 billion from the Bank of China every year.⁹

A series of large infrastructure projects have been planned and are underway to prepare for Pudong's development. Two bridges across the Huangpu River, connecting Pudong with the central city, have already been completed. A 45-km inner ring road feeding the Bund area has been widened to complement Yanggao Road – the main artery in Pudong – in addition to access provided by the outer ring road. Construction of the second phase of the new subway system, which is already underway, will provide an additional connection across the river. A four-berth container port is in operation at the northeast corner of Pudong on the Yangtze River. Perhaps most ambitiously, an international airport in the southeast of Pudong is under construction and will be ready for the 2001 Asian Pacific Economic Cooperation Summit to be held in Pudong (the first runway is scheduled to be operational in 1999). The airport, which may easily be Asia's largest, and Waigaoqiao port

are regarded by authorities as crucial to the development of Shanghai as an international commercial and trading center.

Pudong also is serving as the site for the new central business district (CBD), as Shanghai moves ahead to rebuild its urban infrastructure and regain its image of a modern metropolis. The traditional centers of the city are formed by two commercial avenues, Nanjing Road and Huaihai Road, which are already approaching saturation as redevelopment proceeds in the central city. What Shanghai aims for is a CBD that can house a variety of business activities and, most importantly, financial and business services that are the backbone of other major world class cities. After careful consideration, the city planners have selected Lujiazui, an area of 1.7 km² on the east bank of the Huangpu River and within the Pudong New Area (see Fig. 4). The building of the Lujiazui CBD has been guided by the long-term ambitions of the city and facilitated by an international consultative planning process participated in by experts from France, Britain, Italy, and Japan (Olds, 1997). A host of financial institutions, corporate headquarters, as well as commercial and cultural activities will be housed there, as a key component of

⁹Official Document from Shanghai Municipal Government, June 1995.



Figure 5 Lujiazui finance and trade zone in the Pudong New Area, photo credit Michael F. Crowley



Figure 6 The Bund, photo credit Michael F. Crowley

Shanghai's strategy to develop the tertiary sector. An impressive skyline has already emerged along the east bank of the Huangpu River (see Fig. 5), although some buildings remain unoccupied.

Given its proximity, the Lujiazui area also can serve as a link between the old central city and Pudong. One of the goals in establishing the new CBD is to rebuild the Bund – the famous area along the west bank of the Huangpu River (see Fig. 6), which housed over 100 financial buildings before 1949 – into China's "Wall Street". A special institution has been organized to help relocate government departments in the

historic buildings. Several of them have already been vacated and changed ownership.¹⁰ The old Shanghai Club, Cathay Hotel, Hong Kong and Shanghai Bank building, and other historic buildings of the 1920s will be preserved.¹¹

If the ambitions for Pudong are realized, it will become the axis of Shanghai's industry and commerce. Some

major industrial and property development has already begun there. Baoshan Steel Corporation, China's biggest steel conglomerate, has leased over 80 acres of land for a giant steel plant to expand its production¹² Japan's retail giant Yaohan Group has built a US\$100 million shopping center in Lujiazui, which is the largest in Asia and becomes the focus of Yaohan's operation as the company has declared bankruptcy in Japan. The Shanghai Security Exchange and other major

¹⁰Foreign Broadcast Information Services, FBIS-CHI-94016, 25 January 1994, p 81.

¹¹"City of Glitter and Ghosts", *The Economist* (London), 24 December 1994–6 January 1995.

¹²*East Asian Executive Reports*, 15 August 1994.

financial institutions also have moved to new facilities in Pudong. Some large international corporations have located there as well. Shanghai-Bell has a US\$130 million investment in a plant producing switches. Others include Eriksson of Sweden, Philips of the Netherlands, Xerox and General Motors of the United States, and Mitsubishi and Hitachi of Japan. A number of commercial joint ventures also have opened up, such as Kentucky Fried Chicken and McDonalds in Lujiazui CBD and some hotel properties managed by Hong Kong businesses.

But problems have already emerged. Land prices in Pudong are getting so high that they are preventing some companies from locating there. Many manufacturers prefer other industrial districts in the city. For instance, in 1993 over 360 joint ventures were set up in the Minhang District in the southwest of the city, which has offered similar incentives and is adjacent to the exiting airport and an expatriate community housing estate. It has been reported that the price for industrial land in Pudong is now five times that of comparable plots to the west of the city, at a level of over US\$100 per square meter in industrial and trade areas.¹³ Such high land prices can be partly accounted for by the different financing scheme used for Pudong. Unlike other industrial districts in Shanghai that have received municipal funding for infrastructure construction, Pudong to a large extent has had to raise its own financing (in addition to some central funding). As a result, Pudong and its development corporations are under tremendous pressure to recover the costs through land leases at higher prices.

It is also important to recognize that Pudong's development has some real constraints. The first is environmental

capacity. Pudong is already one of the areas of Shanghai where surface water pollution is very serious. For instance, it has been reported that ten major trunk streams are heavily polluted (He, 1993). Pudong is also located upwind of central Shanghai, so industrial enterprises with a large potential for wastewater and air emission must be restricted. The second constraint is population capacity. The 10-year development plan for Pudong specifies a upper population limit of 1.8 million, but the population already reached close to 1.5 million in 1995. In addition to natural growth, Pudong will probably only be able to absorb about a half million residents relocated from the old central city before population exceeds the planned target.

Several smaller new urban districts have been created to serve more specialized functions (see Fig. 1). Foreign companies and joint ventures located there enjoy the same kind of fiscal incentives offered in the Pudong New Area. Minhang, about 30 km southwest of the central city, is Shanghai's first industrial satellite town. With extensive external linkages including proximity to the Hongqiao Airport, harbor facilities, and highway and rail access, it houses manufacturers of heavy machinery, electrical tools, steam turbines, industrial water pumps, and prefabricated construction materials (Fung *et al.*, 1992). In the northwestern part of Minhang, an ETDZ has been set up in close proximity to existing industrial sites, covering an area of 3.5 km². To encourage the development of modern industries, priority has been given to those utilizing advanced technology such as electronics, medical equipment, and modern construction materials. By 1994, over 100 enterprises had sprung up in the ETDZ, including ventures with Pepsi, Xerox, Seagram, Johnson and Johnson, Squibb, and Coca-Cola.

Hongqiao, the second special district in Shanghai, is located in the western urban fringe of the city. It is only a short distance from the airport and is well served with public facilities. New construction includes about 40 units for consulting services, an international trade center, hotels with nearly 4000 guest rooms, 12 high-rise apartment buildings, a trademart, and some commercial and recreational facilities, with

a total floor area of about 1 million square meters (Huang, 1994). The third one, Caohejing High-Tech Park is located in the southwest of the city proper and has a planned area of 6 km². It is planned to be the high-tech development center of the city and to house firms specializing in microelectronics, computer, telecommunications, bio-engineering, and aerospace and precision instruments.¹⁴

The creation of Pudong and other new industrial districts has resulted in part from changes in the plan of Shanghai's spatial structure. It has been proposed that the outward expansion of the city proper should be controlled and future growth should be diverted to these new areas. As these districts grow, more capital investment will be needed to improve their infrastructure and public amenities. Some special wage incentives, or other types of incentives, also may be offered to employees, as past experience shows a strong reluctance of central city residents to relocate to satellite towns. At the same time, a wide range of employment opportunities need to be created in these new areas so that all members of a family can find suitable employment. Pudong is likely to meet this challenge as its planned sub-areas contain a wide range of functions including administration, trade, commerce, industry, and services. The overall success of these new industrial districts will be vital to Shanghai's economic growth and development in the future.

The future

Shanghai has embarked on an ambitious course of reform, including industrial restructuring, housing reform, and infrastructure rebuilding. One of the major determinants of Shanghai's success will be the speed with which urban infrastructure is updated. The city's current infrastructure cannot accommodate the needs resulting from rapid growth. Many parts of the infrastructure system need to be repaired, particularly in the old central city (Wu, 1996). Authorities are

¹³Land prices in Pudong vary by sub-area; for instance, they range between US\$114 and 123 per square meter in Waigaoqiao Free Trade Zone, around US\$97 in Jinqiao Export Processing Zone, and lower in other areas (Official document from Shanghai Municipal Government, June 1995). However, land prices in parts of Waigaoqiao Free Trade Zone have been lowered to around US\$80 per square meter since 1997 in an effort to attract more foreign investors.

¹⁴See *Shanghai*. Compiled by the Information Office of Shanghai Municipal Government, 1994.

banking on some new urban districts, such as Pudong, Minhang and Hongqiao, as the future of the city. These districts can assist the city's modernization and serve as a catalyst for change. But caution needs to be exercised as these new districts will compete with the central city for resources. It may be wise to prioritize their development since competition among themselves is not necessarily conducive to growth. Shanghai's development funds will be insufficient if they spread too widely and may be wasted in premature over-building (this is already evident in parts of Pudong).

The financing of new districts, residential relocation and infrastructure rebuilding is still a challenge for the city. Income from land leases may be a potentially significant source. Shanghai's population density, its relative prosperity and current commercial development imply that real estate throughout the city is very valuable today and will be even more so in the foreseeable future. Another potential means of financing would be to levy or increase current levels of user charges. Research indicates that infrastructure is likely to be more cost-effective and to have a favorable impact on the urban environment when it is subject to user charges based on marginal costs of supply and willingness to pay (Kessides, 1993). In order to achieve the greatest benefits from its ability to increase the returns of other factors of production, infrastructure provision should be priced to reflect resource scarcity and investment costs. User charges also are necessary to ensure the efficient use of infrastructure and to discourage wasteful consumption. The absence of such charges tends to reduce both the quality and availability of infrastructure facilities.

The critical issue Shanghai faces is how the city can revive its old, build its new, and integrate them to create a metropolis accommodating modern

industrial, commercial and cultural activities on the one hand, and providing a rising quality of life for its residents on the other. Part of the solution depends on the rate of growth of the city's economy and the extent to which urban population can be contained. If both can be successfully managed, Shanghai will be on its way to alleviate its current problems and become a world class city.

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