

Chapter 2

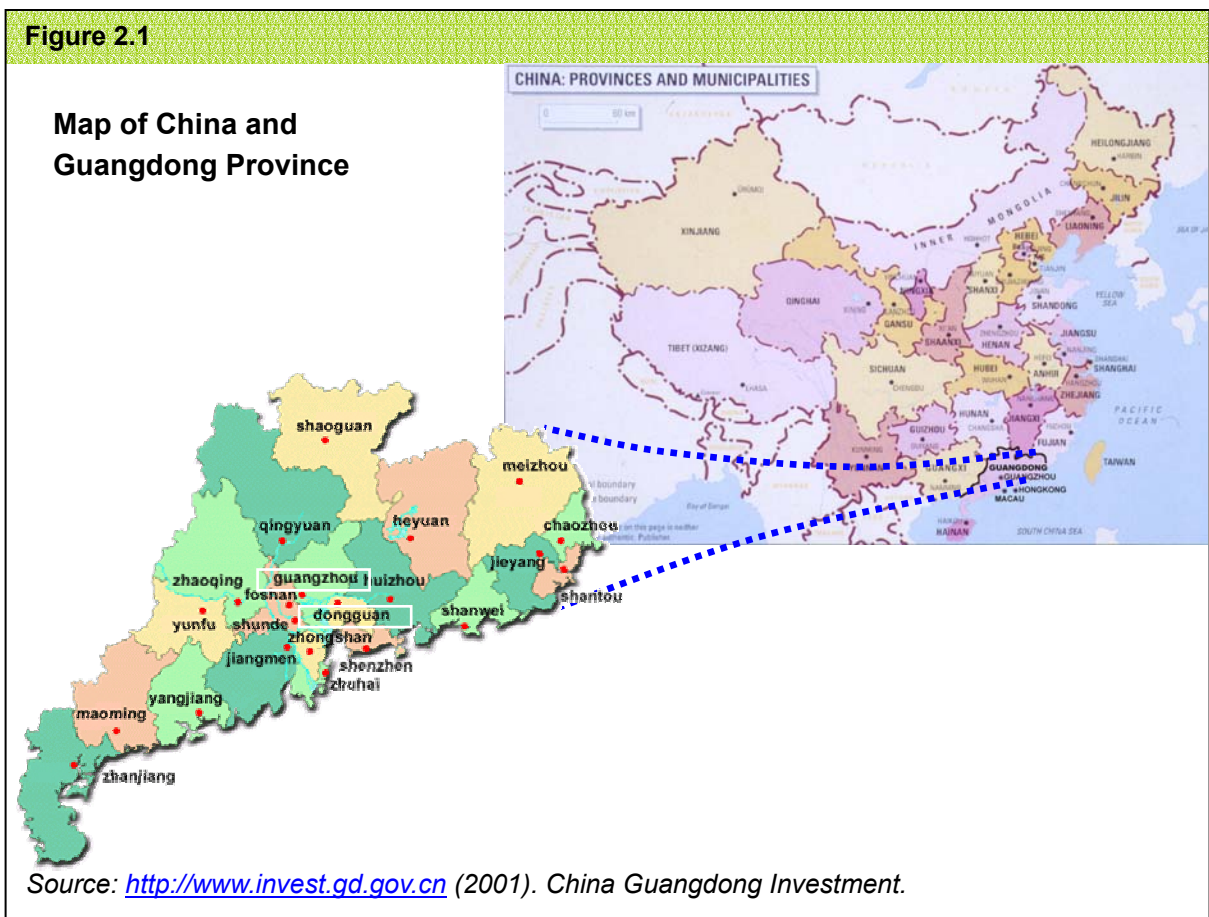
REGIONAL CONTEXT

The dramatic economic and spatial transformation of China since the adoption of pragmatic development policies in 1979 is not easy to track due to China's vast scale. For the past decade, the Pearl River Delta had the highest recorded rate of economic growth in East Asia. Where is the Pearl River Delta? What were the driving forces that propelled this development? What urban and environmental problems did it experience during this period? In this chapter, the economic, environmental, and urban development in the Pearl River Delta are reviewed.

Description of the Pearl River Delta

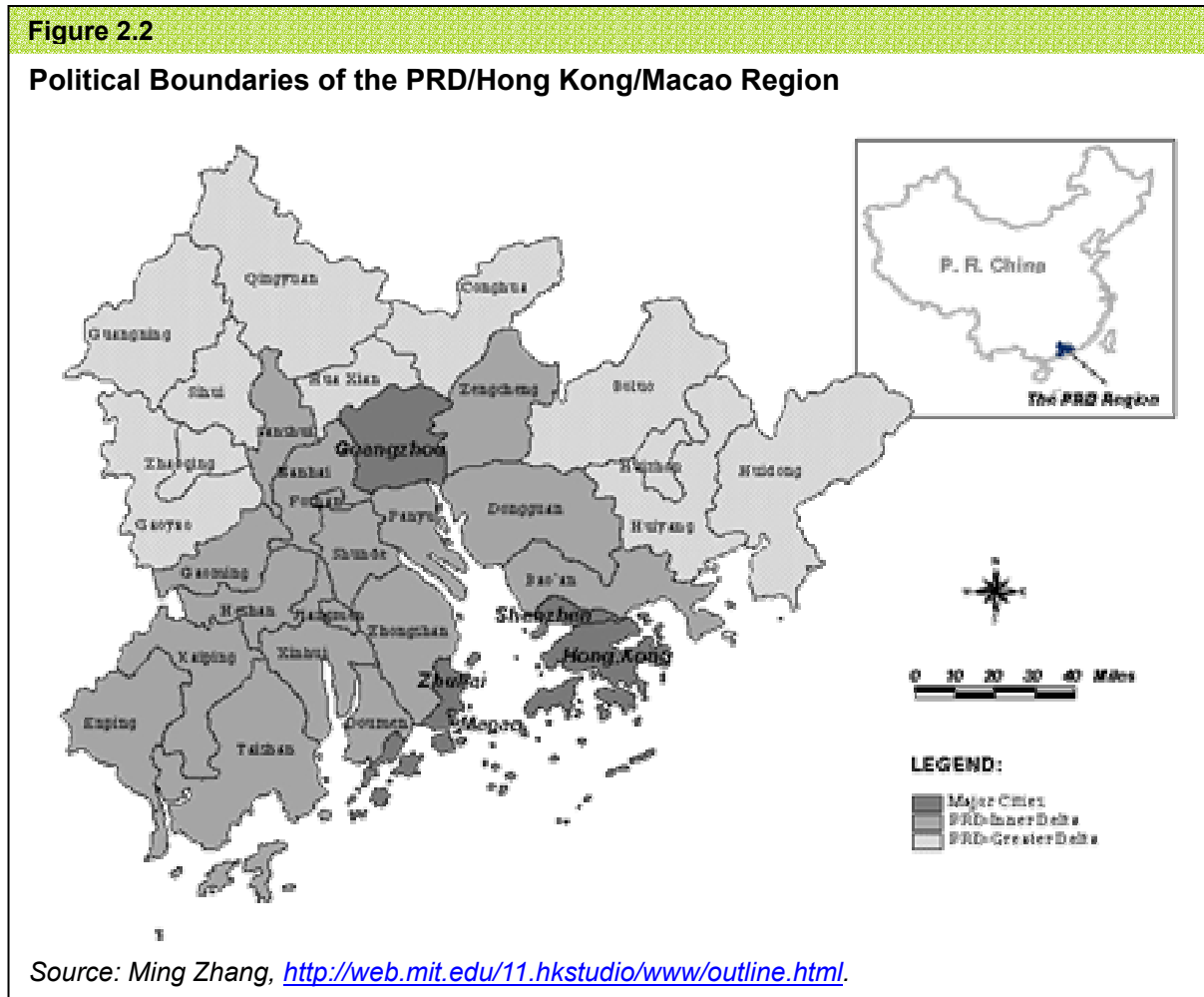
The definition of the Pearl River (Zhujiang) Delta has been expanded in the last two decades for the purpose of attracting foreign investment. The official definition of the delta region, as designated in 1987, contains seven municipalities and twenty-one counties of Guangdong Province, covers an area of 47,430 square kilometers, and houses a total population of approximately twenty million persons in 1990 (Lin, 1997, p.78-80). The population of the Pearl River Delta has been increasing in the last fifteen years due, in part, to the constant adjustment of political boundaries. A more recent source says there are thirty cities in the delta, including Hong

Kong and Macau, and 420 towns (Huang, Personal Interview, 2001). According to growth trends, some scholars estimate this area will become the world's largest community of big cities early in the 21st century (Dyck and Huang, 2001, p.1). For reasons provided in the previous chapter, HK is not included in the PRD in this paper. From an urbanization perspective, however, HK is inevitably an integral part of the PRD, not only because the economy of HK and cities in the PRD rely heavily on each other, but also because as a megacity with limited natural resources, HK is dependent on the PRD as a lifeline to provide numerous resources for its everyday life.



More than 90% of HK's raw meat products come from or through the PRD. The PRD is also the major drinking water and electrical provider to HK.

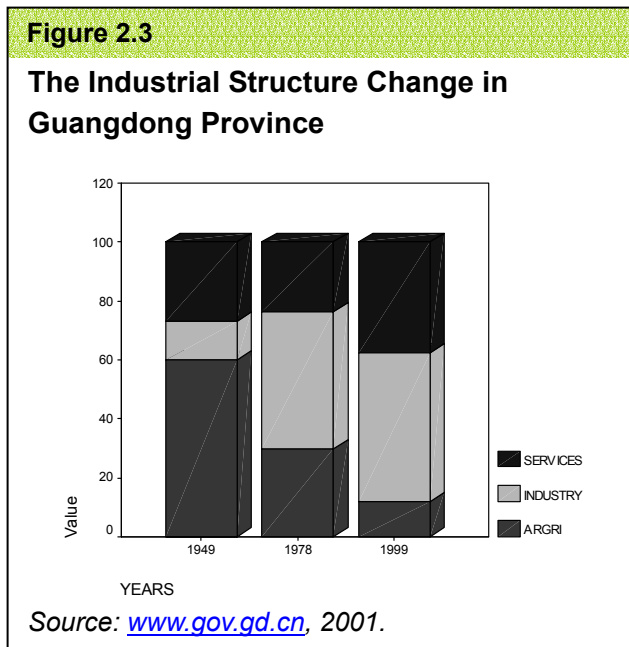
Economic Development of Guangdong and the Pearl River Delta



Since 1978 Guangdong has taken the lead in carrying out economic reforms and acting as the national "pilot region of comprehensive reform" under the guidance of government development policy has scored remarkable achievements in social and economic development. After more than 20 years of reform, Guangdong has evolved from a remote and primitive province dominated by an agricultural economy, into a province with strong economic capability, high exports, and relatively high productivity levels (www.gd.gov.cn, 2001).

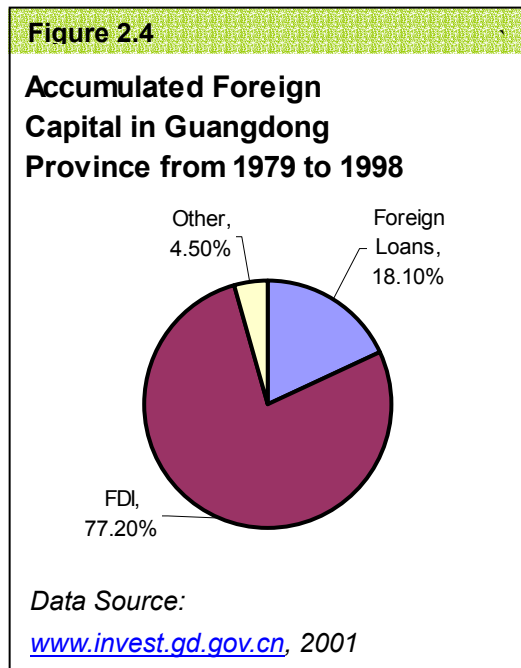
In 1999, Guangdong's GDP reached 8.46 trillion yuan (8 yuan \approx 1 US\$ as of 2002). This GDP was 81.5 times that of 1949 and 15 times that of 1978, when calculated according to standardized prices. The GDP per capita was 11,722 yuan, 29.7 times that of 1949 and 10.4 times that of 1978. Indicators such as GDP, total investment in fixed assets, total exports and imports, and foreign investment put in place have ranked first in the whole country for many consecutive years (www.gd.gov.cn, 2001).

Guangdong has witnessed a quick development in infrastructure construction along with its radical economic change. Continuous large-scale building of infrastructure has been carried by establishing a new investment mechanism to raise building capital from different quarters, including foreign investment. The ratio of the three major industries has changed accordingly. Farmlands were lost during the rapid industrialization and urbanization process, and the structural changes are shown by Fig. 2.1.



China's definition of FDI in official records is not consistent in differing direct capital and loans from international banks and foreign governments (see Chapter 3). Most of the cases the

statistics merge foreign investment and loaning into the same FDI category. During the period of 1979-1998, Guangdong Province had contracts on utilizing foreign capital accumulated to 202,900 cases, with an annual growth of 12.5%. Foreign capital utilized was accumulated to US\$ 176.586 billion total with an annual growth of 23.4%, while foreign capital actually utilized was



US\$ 96.199 billion total with an annual growth of 30.8% during the twenty years (see Appendix C for verifications for this high figure). In 1998, total exports of exclusively foreign-invested enterprises, joint-ventures and cooperative enterprises reached US\$ 39.259 billion, accounting for 58.1% of the total exports of the whole province, total imports of above-mentioned enterprises reached US\$ 31.817

billion, 58.5% of total imports in the province (Topic Group of Foreign Investment Division of Guangdong Development and Planning Commission, www.invest.gd.gov.cn, 2001).

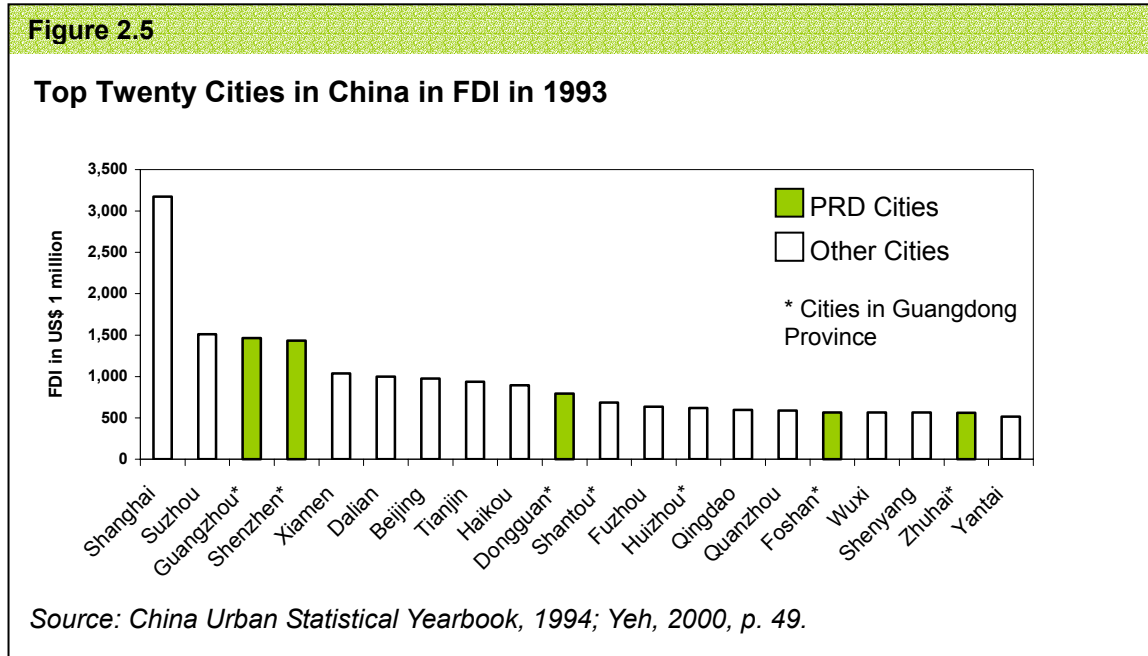
Chinese of Guangzhou origin now living in Hong Kong, Macao, and overseas have helped to develop its successful export-oriented economy, partly based on family ties. Foreign investors continue to be especially interested in investing in the PRD also because of its major network of rivers, its well-structured transportation system, the low cost of its labor, and the openness of its local governments to investment. Foreign trade has become a mainstay of

economic development in Guangdong. In 1999, the value of the province's total exports and imports reached US\$140.354 billion, which amounted to 38.9% of the whole country. The exports (US\$77.682 billion) achieved 642 times that of 1952 and 56 times that of 1978. The foreign investment put in place accounted to US\$14.474 billion (159 times that of 1979), of which the direct investment was US\$12.203 billion (393.3 times that of 1979) (Topic Group of Foreign Investment Division of Guangdong Development and Planning Commission, www.invest.gd.gov.cn, 2001).

From 1979-1998, ordering according to proportion of its actual investment in total of Guangdong province, the main sources of investment were: Hong Kong (70.7%), Japan (7.1%), USA (3.6%), Taiwan(3.0%), Macao(2.4%), Singapore (1.8%), UK(1.7%) and France(1.4%). Foreign investment mainly flowed to manufacturing industry. Of the accumulated sum of foreign capital actually utilized in 1979-1998 65.5% was invested in manufacturing industry, followed by real estate (11.3%), communications, transportation, warehousing & storage and post & communications industry (4.4%), building trade (3.2%) and energy supply industry (2.0%) , agriculture only accounted for 1.4% (Topic Group of Foreign Investment Division of Guangdong Development and Planning Commission, www.invest.gd.gov.cn, 2001).

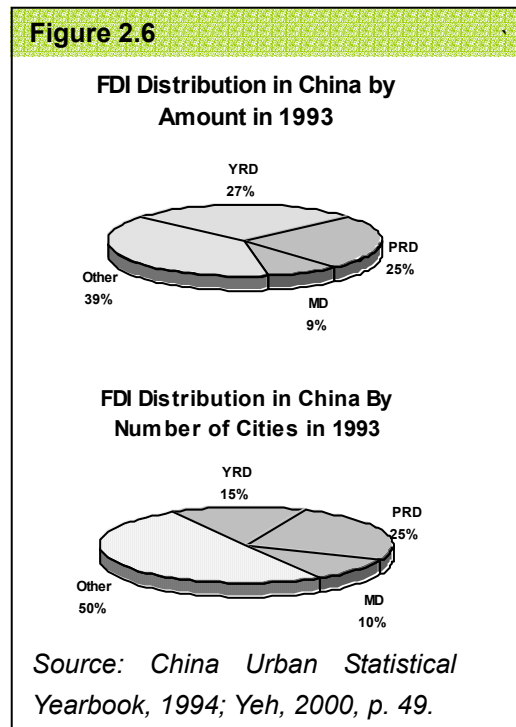
As the most important economic zone in the area, the PRD takes up more than 25% of the land, and 80% of FDI in Guangdong Province. Figure 2.2 summarizes China's foreign direct

investment achievement by ranking the amount of FDI that cities received in 1993. One third of the twenty cities are in Guangdong Province, five of these seven cities are located within the Pearl River Delta region, and four out of these seven are categorized as medium size cities.



Those cities marked with an asterisk in the figure above are from Guangdong Province. The Yangtze River Delta (YRD) and the Minnan River Delta (MD) are two other major river deltas along the South East China coastline, referred to in Fig. 2.3.

Although the local governments encourage foreign investors to focus more on



local infrastructure development and agriculture related industries, many investors prefer to invest in cheaper and less risky traditional manufacturing. However, such manufacturing industries often are pollution-intensive or not compatible with maintenance of good environmental quality (Li, Tang and Kwok, 2000).

Urbanization in the Pearl River Delta

“Urban” is a statistical concept defined by a country's government, which is different from the concept of “city”. A city is a complex political, economic, and social entity. Because each country sets its own definition of “urban,” there is a bewildering array of definitions around the world. In many countries, the definition is based on a threshold number of inhabitants; when the population of a region exceeds a certain threshold, that region is considered urban. Other governments base their definition on a combination of criteria, such as population density, political function, or predominant activity of the region (World Resources Institute, 1997). China’s definition of urban area belongs to the latter. Although details for the urbanization rate for the PRD are not available, the population density is about 600 per square kilometer, which is substantially higher than the national figure for China of 133 people per square kilometer (Australia-China Chamber of Commerce and Industry of New South Wales, 2002)

However, the predominant method of quantifying urbanization level in China refers to the ratio of urban population to the total population. There are no established statistics for urban population, but in practice, there are three ways to define urban population:

- urban population = non-agricultural population;
- urban population = non-agricultural population + population that provides its own food + population that work in the agriculture sector but live in cities;
- urban population = the number obtained averaging the first two.

The last method resulted a 41.6% urbanization level for Guangdong province in 1998 (Guangdong Construction Agency, 2000, p.12).

Lin (1997, p.5) points out that the urbanization of the Pearl River Delta is different from most international experience. Historically the industrialization of a country or a region would normally result in rapid expansion of cities, especially large cities that act as the centers of manufacturing production, financial exchange, and modernization. Lin observes there has been no growing concentration of population or manufacturing facilities in the large cities of the PRD. The most rapid industrialization and urbanization have occurred along the periphery, especially in the areas between or around major metropolitan cities, due to the cheap land and labor costs. These areas, which are usually classified as “rural,” are not far behind large cities in population density, transportation facilities, attraction to domestic/international investors, and their ability to contribute to the agglomeration economy.

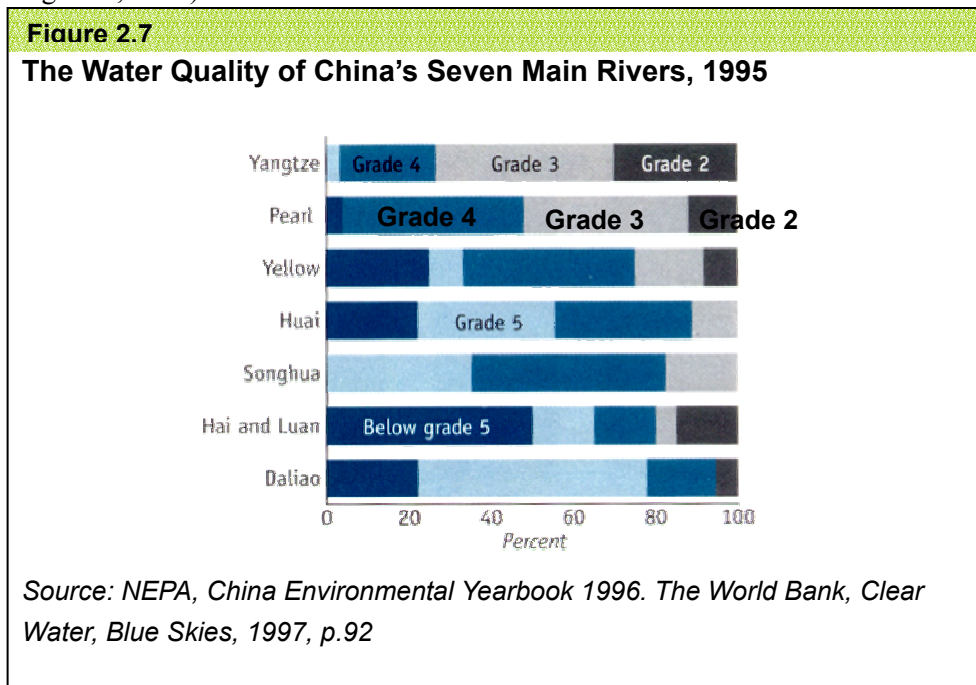
There are two case study cities in this paper, chosen to illustrate the process of development in the PRD. Guangzhou represents a major metropolitan area while Dongguan is an example of how industrialization and urbanization have taken over a once rural area. Their

populations are approximately 7 million and 6 million, respectively. They are highlighted in the figure below to show their locations.

Environmental Problems in the Pearl River Delta

The most pressing environmental problem in the PRD is the increasing quantity and frequency of acid rain caused by industrialization. For the past five years, the annual average PH level in precipitation has been larger than 4.80. Several cities in the PRD had more than 80% frequency of acid rain in 1998 (Cao et al, 1999, p.12), while in 1995, the frequency was around 50% (Guangdong EPA, 1995).

The water quality of major rivers in Guangdong has been declining while the urban air quality has been improved as a result of advances in energy consumption technologies (Guangdong EPA, 1999).



In the five categories of ambient freshwater quality standards defined by the Chinese government, Grades 1, 2, and 3 permit direct human contact and use as raw water for potable water systems. Grade 4 is restricted to industrial use and recreational use other than swimming. Grade 5 is restricted to irrigation. Each grade specifies an acidity level (pH) and maximum concentrations for twenty-eight major pollutants. Exceeding the pH or any of the concentration standards for a given grade disqualifies the measured water body from being designated as that grade (The World Bank, 1997b, p.91).

From the national perspective, water pollution is a much more severe problem in the northern regions of China. However, a decade of rapid urbanization has threatened the PRD so that both water quality and quantity are now problematic in major cities such as Guangzhou. The quality of the Pearl River is the worst in its branches flowing through the PRD, particularly in the urban areas. Water of the Pearl River in Guangzhou urban region can no longer be used for drinking or living purpose even after being distilled (Guangzhou Planning Bureau, 2001). More detailed analysis about specific sites will be discussed in Chapter 4. In 1997, the Guangdong government initiated a program called “the Green Water Plan” to slowly recover water resources in the province. This program will cost more than 15 billion US dollars over the next five years (www.gdepb.gov.cn, 2001).

The Guangdong EPA established their official website (www.gdepb.gov.cn) in 1998. It was the third provincial level EPA website in China. It has become a direct channel for distributing

environmental quality reports, weekly air quality reports, etc. The Guangdong Environment Monitoring Center works closely with the EPA by providing in-depth local environmental data and impact assessment reports.