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Dilemmas of China's Modernization: Population Problem and the Strategy of Sustainable
Development

A thesis
presented to
the faculty of the Department of History
East Tennessee State University

In partial fulfillment
of the requirements for the degree
Master of Arts in History

by
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May 2007

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Keywords: China's modernization, China's population, natural resources,
environment, sustainable development strategy, dilemmas

ABSTRACT

Dilemmas of China's Modernization: Population Problem and the Strategy of Sustainable
Development
by
Hongbo Tang

By reexamining the process of China's modernization centered on its population in the past half century, this paper explores the grim situation of China's population, historical factors, and the relationship between population, resources, and environment. Also, focused on controlling the size and improving the quality of China's population, this paper discusses how China's population policy coordinates with the sustainable development strategy. Based on statistics and preliminary data released by the Chinese government and international organizations, this paper analyzes specific problems and implications found under the framework of Western modernization theory and concludes that China faces a dilemma on its population problem and the sustainable development of society: China cannot improve its socioeconomic status and retain growth in population. Both the lower quality and higher quantity of China's population are the major causes of the vicious cycle of "huge increase in population -- shortage of resources -- environmental degradation".

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CHAPTER 1

INTRODUCTION

Overpopulation, energy crisis, and environmental pollution are not only the top three social problems in today's world but also the three major obstacles restricting the socioeconomic development of China. Research on the relationship between China's population and sustainable development is of great theoretical and practical significance not only to explore the road to modernization with "Chinese characteristics" but also to safeguard the world's common future. In the process of global modernization--"a kind of universal social solvent" that "increasingly involved with all human kind whether he or she wishes to or not. All nations and other entities become increasing interdependent... Under modernizing conditions, problems of coordination and controls always become critical because the scale on which coordination and control must be levied always increases."¹ That means, "in an increasing interdependent world the failure of any part of the peoples in the world, whether due to 'their own fault' or to the 'faults' of others, increasingly involve everyone else in the world."² That is why China's modernization is always spectacular worldwide as an important part of global modernization in progress. An American environmental analyst Lester R. Brown said: "China is such a large nation—in terms of both population and economy -- that its successes and failures affect us all."³

¹ Marion J. Levy, "Yes, We Have No Dilemmas" (NP 1982), 8.

² Levy, "Yes, We Have No Dilemmas," 12.

³ Lester R. Brown, *Who Will Feed China? Wake-up Call for a Small Planet* (New York: W.W. Norton Co., 1995), 11.

By reviewing the process of China's modernization and analyzing the particular situation of its population from the 1950s to the beginning of the twenty-first century, this paper examines the grim situation of China's population in the first chapter. It includes the higher quantity and lower quality of China's population, the aging society, the heavy unemployment pressure, and the gender ratio imbalance of new births. This is followed by discussing historical factors tracking the population imbalance policies from the Qing Dynasty to Mao Zedong and Post-Mao eras. The third chapter explores the problem stemming from the relationship between population, resources, and environment. This includes the pressures of China's overpopulation on its land resources-grain consumption, energy-water shortages, and serious environmental deterioration. The final chapter focuses on the quality and quantity of China's population and discusses how China's population policy coordinates with the sustainable development strategy.

Based on statistics and primary data released by the Chinese government and international organizations -- the National Bureau of Statistics, the State Family Planning and Population Commission, the World Health Organization, and the World Commission on Environment and Development-- this paper analyzes specific problems and implications found under the framework of Western modernization theory. Transforming from an agricultural society to a progressing industrial society, China faces a dilemma between the population problem and the sustainable development of society: China cannot improve its socioeconomic status and retain growth in population. The lower quality/higher quantity of China's population is the major cause of a vicious cycle of

“huge increase in population -- shortage of resources -- environmental degradation.”⁴

The population itself will face the dual pressures of survival and development in the future. From an overall point of view, creating harmony between socioeconomic status, population, natural resources, and ecological environment is the inherent requirement in developing a modern China. In order, therefore, to stop irredeemable mistakes and unstable ways in the process of China's progress, this country must balance development between socioeconomic status and population and natural resources and ecological environment. In solving this population problem, controlling the size and improving the quality of population will be the most important aspect of a sustainable development strategy.

⁴ Chen Qin, Li Gong and Qi Peifang. *The History of China's Modernization* (Nanning: Guangxi People Press, 1998), 311.

CHAPTER 2

THE PLIGHT OF CHINA'S POPULATION

It is well known that China has the largest population in the world. According to the latest report released by the China Population Information and Research Center (CPIRC) of the State Family Planning and Population Commission, China has a total population of 1.32 billion in March 2007,⁵ which accounts for over one-fifth of the population in the world. In general, when we measure a country's overall power in the world, the size of its population is important reference data. On one hand, a large population is helpful and significant for the strengthening of a country's overall power; on other hand, growth beyond the population limit will weaken a country's overall power. Overpopulation will not only deplete social wealth, but it will bring numerous social problems, resulting in poverty and backwardness. On the whole, rapid population growth is a universal challenge to nearly all developing countries. China's overpopulation has become the most notable national characteristic in its ambitious strategy of modernization. It is the top challenge facing China's future.

Compared with other problems such as the shortage of natural resources and environmental pollution, the population problem is the most urgent and essential. It has become the heaviest burden for China to bear as China moves toward modernization. The grim situation of China's population has presented the following characteristic: China has a large population with an absolute growth rate; China has entered an aging society; overpopulation brings heavy unemployment pressure on China; the gender ratio

⁵ China Population Information and Research Center (CPIRC), "China Population Clock", (10 Mar. 2007) <http://www.cpirc.org.cn/en> (accessed 10 Mar. 2007)

imbalance of Chinese new births grows fast; Chinese family structures and models change greatly; neither the distribution China's population nor the proportion of its urban and rural population are reasonable balanced; and so on.

Large Size and Rapid Growth in Quantity

China has a large population with an absolute growth rate. In the 1980s, a social study program led by Dr. Song Jian, former Chairman of the Science-Technology Commission of China, focused on calculating the relationship between population growth and capacity of natural resources and environment. This program concluded that the reasonable population of China would not exceed 680 million if China wanted to match the food standard of the United States and France. Even by taking the strictest measures to control population, however, the total population of China would reach 1.3 billion in the beginning of the twenty-first century, and is expected to exceed 1.6 billion by 2050.⁶ Ten years later, the research of Dr. Hu Angang and Dr. Wang Shaoguang indicated that 1.6 billion would be the maximum of growth in China's population; growth beyond this limit would lead to serious social problems even disturbances.⁷ Now, some Western and Chinese scholars estimate that by 2030 China's population will reach 1.6 billion due to its large population base. This means its total laborers will equal 1.15 billion and its urban population will increase to 0.7 billion. It will, therefore, be tough to provide adequate food supplies, energy supplies, employment, health care, housing, education, traffic, and other social requirements for this huge, increasing population.

⁶ Zhang Zhihong, *Population Tide and Countermeasure* (Beijing: Xuelin Press, 1984), 230-236.

⁷ Hu Angong and Wang Shaoguang, *Report of the State Situations of China*, (Shen Yang: Liaoning People's Press, 1994), 242-269.

Aging Society

With the increase of people over the age of 65, the aging society will become a major social problem of China in the first half of the twenty-first century. According to internationally recognized criteria, when the number of people over the age of 65 reaches 7% of the national population, it delineates an aging society. Official statistics of Chinese government indicate, by 1999 the number of people aged over 60 formed 10% of national population, and by 2005 the aging population (65 years and above) reached 7.7%. The data of China's fifth national population census in 2000 showed China's aging population was 88 million in 2000, accounting for 6.9% of its total population.⁸ The research of American scholars Dr. John Bongaarts and Dr. Susan Greenhalgh predicts that the number of Chinese people over the age of 65 will reach 6.7% of the national population by 2000, by 2030 14.7%, by 2040 17%, and by 2050 will be expected to reach 21%, equaling one-fifth of the national population. These increases will bring "serious challenges to China's social security system, health and medical system, and social service sector."⁹ According to the data of *World Population Prospects* released by the United Nations in 2004, the level and speed of China's aging society is higher than Dr. Bongaarts and Dr. Greenhalgh's prediction. Figure 1 shows that China's aging population will reach 7% of the national population by 2000, by 2030 16.5%, and by 2050 will be expected to reach 23.5%.

⁸ "Three Periods of the Aging Population," *Guangming Daily*, 30 Oct. 2006.

⁹ John Bongaarts and Susan Greenhalgh, "An Alternative to the One-Child Policy in China," *Population and Development Review*, 11, no. 4 (Dec. 1985), 603-604.

Percent of Total Population

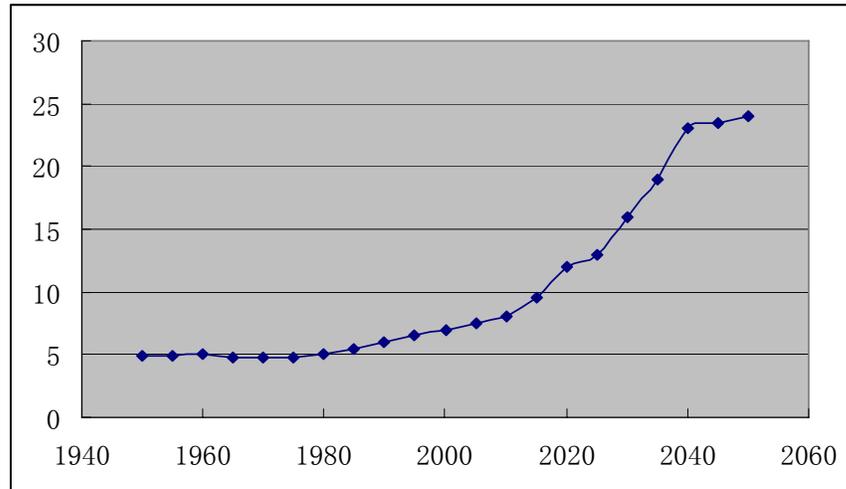


Figure 1: Percentage of Older Adults (Age 65+) in China, 1950-2050

*Source: Department of Economic and Social Affairs of the United Nations, *World Population Prospects: The 2004 Revision* (New York: The United Nations, 2005).

What makes the age structure of China's population unique is that this artificial, coercive, and extremely fast aging society originated in its unique population policy. In other words, it was the inevitable result of China's "one-child-per-family" policy implemented forcibly since the late 1970s. This policy, which was designed to eliminate the tendency towards large families, accelerated China towards an aging society within 30 years. Most developed countries enter aging societies after having experienced almost one century's fast growth of economy and relatively slow growth of population -- the United States took 75 years, Sweden 85 years, and France 115 years. Besides, most developed countries reach \$ 5,000- \$10,000 GDP per capita when they enter aging societies; China has only reached \$2,000 GDP per capita currently.¹⁰ This situation causes a dilemma: if China fails to adopt birth control regulations, it will be unable to reduce the fast growth of its population, thereby raising living standards. As a result, its current

¹⁰ Zhou Jinwei, "Resolve the Social Problem of the Aging Population," *Wenhui News*, 01 Mar. 2007.

population would reach 1.7 billion. If it adopts the “one-child-per-family” policy, China will embrace an aging society with an unbalanced age structure and a heavy burden of social security.

Chinese economist Zhai Zhenwu, professor of Renmin University, emphasizes social and economic problems caused by an aging society, such as growth of their financial support, the aging labor structure, the generation gap between young and old, etc. He states, the family planning policy affects the social security system that depends on children’s support of elderly parents. For example, elderly Chinese citizens are usually supported in “one of three ways -- by the pension system, their families or themselves.” Actually, “as the pension umbrella only covers urbanites, the larger number of elderly citizens in rural areas must depend on their families, but elderly farmers have fewer children as a result of the prevailing family planning policies.... [Those] now entering old age are receiving limited preferential treatment from the government.”¹¹ According to the report of *China Daily* in 2006, national social security system covers only a small proportion of the national population. “In 2004 only 22 million urban residents enjoyed the minimum level of social security, whereas the total number in need was at least 140 million.” This number did not include the rural residents who comprise 70% China’s total population, among whom the social security scheme only covered less than 5 million rural residents.¹²

¹¹ China Population Information and Research Center, “China to Usher in Major changes in Population Policies,” (20 Aug. 2003) http://www.cpirc.org.cn/en/enews20030820_1.htm (accessed 02 Feb. 2007)

¹² Xinhua Agency, “Five-year Plan Sets Stage for Solving Problems,” *China Daily*, 06 Jan. 2006.

Heavy Unemployment Pressure

The growing population creates an unemployment burden for China. This growth has added to social problems in the past 30 years and will in the future continue to increase. In 2000, 30 million Chinese were unemployed in urban areas--- a high jobless rate of more than 8%. In 2003, “the official Chinese unemployment figure is 4.2%, but the World Bank says it is closer to 10% nationwide”. The main reason for the difference in figures was that “the narrow official definition of unemployment leaves out millions of people who are out of work” but did not “register with the government as unemployed.” For instance, the unemployment figures of Chinese government did not include those “off-post workers”, “unpaid but not officially laid off workers at state-owned enterprises”, “laid-off workers still contractually tied to their work units” or the “surplus rural workers”.¹³ Furthermore, between 1990 and 1995, “19.5 million people entered the labor force each year while only 7.4 million exited; from 1995 to 2000, 20.6 million people entered each year while only 9.8 million exited.” That means most of those “entering workers were without jobs if more jobs were not created.”¹⁴

A more serious situation is that the number of surplus laborers in rural areas is as high as 200 million. Those people who rush into cities for job hunting and those laid-off urban employees “simply do not possess the skills required by modern industry”. China, however, “can only create about 8 million jobs every year, while more than 200 million need jobs at the same time.”¹⁵ In the development of China's modernization, a large number of surplus agricultural laborers will transfer to the non-agricultural workforce.

¹³ Michelle Chen, “China: Who are the Unemployed?” *Asia Times*, 01 Apr. 2004,

¹⁴ Wang, Gabe T, *China's Population: Problems, Thoughts and Policies* (Brookfield, VT: Ashgate Publishing Company, 1999), 186.

¹⁵ CPIRC, “China to Usher in Major changes in Population Policies.”

Forecasters say that “the working age group (age 15-59) will not stop expanding until after 2020. By then, the number of people in this group will have reached 940 million, up from current figure 820 million.”¹⁶ It will be a great challenge for the Chinese government to increase the number of jobs and keep unemployment under control. Undoubtedly, overpopulation would cause a social crisis and hundreds of millions of the unemployed will become a greater constraint for China's modernization.

Gender Ratio Imbalance of New Births

The gender ratio imbalance of Chinese new births is growing fast. Generally speaking, the normal sex proportion between males and females in total population is relatively stable, being between 103:100 and 106: 100. The sex proportion of Chinese new-births, however, from 108 males for every 100 females in 1981 rose to 112: 100 in the fourth national demographic census in 1990, and rose again to 117: 100 in 2002, which was over 10% higher than the international warning line (107: 100). In particular, in some regions such as Guangdong and Hainan Provinces, the gender ratio of new births was as high as 130:100 and 135:100 in 2002. This “high tendency of sex proportion has not seen any decline in recent years but instead it sees a continued upward trend.” If this situation continues, the gender ratio is expected to reach 120:100 in 2010, and Chinese males will outnumber females by 43 million. A number of men will have to live as frustrated bachelors.¹⁷

This situation leads more serious social problems such as a high sexual crime rate, high divorce rate, swindling and selling women, the growth of monetary marriage, sharp

¹⁶ Marian Salzman, “Cover Story: The View from the Top,” *Brand Strategy* (Mar. 2006), 27.

¹⁷ CPIRC, “China Sees a High Gender Ratio of New-born,” (14 May 2002)
<http://www.cpirc.org.cn/en/enews20020514.htm> (accessed 04 Feb. 2007).

competition for marriage among males, and the increasing of single males, etc. Data in Table 1 are from the research of Chinese scholar Cao Guiying. They clearly demonstrates that the sex ratio of Chinese infants kept within an internationally normal scope before the 1980s, while surpassed the international warning line (107: 100) since the 1980s, and saw a continued upward trend in both rural and urban areas.

Table 1: The Sex Ratio of Infants, 1953-1995

Year	Male	Female	Sex Ratio
All China			
1953	9,716,971	9,264,877	105
1964	14,509,500	13,974,327	104
1982	10,787,028	10,022,319	108
1990	12,254,905	10,965,946	112
1995	9,274,600	7,956,200	117
Rural			
1990	9,846,920	8,787,090	113
1995	7,018,600	5,960,700	118
Town			
1990	731,060	649,130	113
1995	707,500	612,000	116
City			
1990	1,701,050	1,558,370	109
1995	1,548,400	1,383,600	112

*Sources: Cao Guiying, “Interim Report IR-00-026--The Future Population of China: Prospects by 2045 by Place of Residence and by Level of Education,” (July, 2000) www.iiasa.ac.at/Admin/PUB/Documents/IR-00-026.pdf, (accessed 03/17/2007).

Three key factors are responsible for the fast growth of the gender ratio imbalance. The first is that through the development of modern medical science and technology, parents can “detect the sex of a child early in pregnancy. Such technology has led to a massive growth in the abortion of female fetuses.”¹⁸ Data from the State Family Planning and Population Commission show results of aborting unwanted sexes: in

¹⁸ BBS News, “China's Population Growth ‘Slowing’,” (Mar. 28, 2001) <http://news.bbc.co.uk/2/hi/asia-pacific/1246731.stm> (accessed 04 Feb. 2007).

1990 the sex proportion of the first newborn children was 105: 100, that of the second newborn children was 121: 100, and that of the third was 127: 100; while in 2000 the sex proportion of the first, second, and third newborn children was 107: 100, 152: 100, and 159:100 respectively. ¹⁹ It was evident that the gender ratio of the first newborn children was normal; but, starting from the second child on, the gender ratio increased drastically. The second factor is that traditional values influence Chinese families -- especially those in rural areas-- to continue their family tree by males, not females, thus encouraging male offspring over female offspring. It is easy to understand that Chinese people's preference for male offspring has been exacerbated by the "one-child policy". The last but the most important factor is that because the social security scheme fails to cover all elderly citizens, most Chinese people -- especially those who live in rural areas -- rely on care provided by their families. Traditionally, in China "the family was the source of old-age security." ²⁰ Most elderly Chinese citizens in the countryside have a deep-rooted logic of "raising a son against old age," and traditionally live on the financial support of their sons. That is why the frequent phenomena of mistreating, discriminating against, abandoning, or even killing baby girls in some regions is prevalent. Table 2 poses Chinese people's gender preference according to Dr. Cecilia Milwertz's survey. "It is difficult to know whether people answer "unconcerned" because they feel pressure to do so. The striking statistic is that among couples that admit preference, over 63% prefers male children." ²¹

¹⁹ CPIRC, "China to Usher in Major Changes in Population Policies."

²⁰ Bongaarts and Greenhalgh, 596.

²¹ Cecilia Milwertz, *Accepting Population Control: Urban Chinese Women and the One-Child Family Policy* (Richmond, Surrey: Curzon Press, 1997), 74.

Table 2: Gender Preference

In response to the question “did you hope to have a boy or a girl when you were pregnant?”

Boy	27.5%
Girl	16.1%
Unconcerned	52.3%
No Answer	4.1%

*Source: Cecilia Milwertz, *Accepting Population Control: Urban Chinese Women and the One-Child Family Policy* (Richmond Surrey: Curzon Press, 1997), 74.

Lower Quality of Population

The lower quality of Chinese population does not meet the requirement for the development of China's modernization in the twenty-first century. China's population accounts for one-fourth of the world's illiterate or semi-illiterate population, with an average education level less than five years. According to the result of the fourth census in 1990, the illiterate and semi-illiterate population aged over 15 was 180 million, accounting for 16% of China's total population; the two-year-college graduates were only 16 million, accounting for 1.4% of its population; while the four-year-university graduates accounted for 0.6%. Usually, the low level of education leads to the low quality of population. For example, the level of China's higher education was not only far below that of developed countries but also lagged behind the average level of developing countries. The enrollment rate of higher education among Chinese people aged 20 to 24 was only 2% in 1990, compared with 38% in South Korea, 20% in Egypt, 16% in Thailand, and 10% in India.²²

²² Zhong Zhaozhan, “China's Population and the Sustainable Development of Society,” *China's Population, Resources and Environment*, no. 3 (1996), 50.

Since the 1990s, this situation witnessed positive progress. Chen Jinhua, vice chairman of the CPPCC (Chinese People's Political Consultative Conference) National Committee who spoke in the World Conference on Sustainable Development in 2000, declared that “the quality of Chinese population has improved to some extent in the past ten years.” By the end of 2000, the people who received nine-year compulsory education reached to 85% of the national population, while the illiterate adult population fell to 5%. Also, the scale of higher education had expanded significantly. “Forty-six million persons had finished university education... [And] the total number of enrollment in colleges and universities reached to 3 million in 2000.”²³ Table 3 indicates the education ratio of China's population in different levels have improved while the illiterate ratio has declined since the 1980s. China, however, has not done enough to improve the quality of its population, although it, to some extent, has succeeded in controlling the size of its population in the past 30 years.

Table 3: Education, 1964-2000

	1964	1982	1990	2000
Illiteracy, Ages 15+ (%)	52.5	34.5	22.2	8.7
Educational Attainment (%):				
Elementary School	34.1	39.9	42.3	35.9
Junior High School	5.6	20.0	26.5	34.1
Senior High School	1.6	7.5	9.0	11.2
College and University	0.5	0.7	1.6	3.6

*Sources: Thomas Scharping, *Birth Control in China, 1949-2000: Population Policy and Demographic Development* (London and New York: Routledge, 2003), 344.

Furthermore, despite the lack of professional and technical skills required by modern industry, these illiterate or semi-illiterate groups witness a higher birth rate than the well-educated groups in the continued expansion of China's population. This “one-

²³ Chen Jinhua, “China and Sustainable Development,” *News and Report of China*, no. 6, 2001, 8.

child-per-family” policy works efficiently among educated groups and relatively-developed areas, whereas it is limited in effectiveness among undereducated groups, the poor groups, and relatively-underdeveloped areas. The research of American demographers Giovanna Merli and Herbert Smith indicate that “the acceptance of policy-sanctioned family size followed a development gradient...High acceptance occurs in the most urban, industrialized county ... Acceptance is weaker among women living in the poorest county.”²⁴ A good example exists in the population of underdeveloped western regions in terms of both economy and education. Statistics of CPIRC show that between 1990 and 1998 population in ten provinces of western China grew at an average annual rate of 2.6%, doubling the national average during the same period of time.²⁵ Thus, this situation causes a vicious circle of reproduction: the poorer Chinese people are, the more children they prefer to have; the more children they have, the poorer they become. If such a trend continues, the relatively-low-quality groups will increase. How can China then improve the overall quality of its population?

Change of Family Structures and Models

After 30 years of implementing of the “one-child-per-family” policy, Chinese family structures and models have greatly changed, in particular those living in urban areas. So far, what is called “4: 2: 1 family model” is prevailing in China’s cities. With China's first single-child generation entering reproductive age, young couples who both come from one-child families have to raise a baby and care for two couples of parents.

²⁴ M. Giovanna Merli and Herbert L. Smith, “Has the Chinese Family Planning Policy Been Successful in Changing Fertility Preferences?” *Demography* 39, no. 3 (Aug. 2002), 559-560.

²⁵ CPIRC, “Population, Top Challenge in China's Western Development,” (no date) <http://www.cpirc.org.cn/en/evview1.htm> (accessed 03 Feb. 2007)

Such a situation not only presents a big challenge to China's social security system, thereby exerting influence on the development of its socioeconomic status, but also creates a heavy burden for young single-child generations in the twenty-first century. In addition, the psychosocial characteristics of the "only-child" pose another problem. Growing up being spoiled by their parents and grandparents, most of these "only children" show less attractive characteristics of stubbornness, arrogance, timidity, and most commonly, selfishness. They do not know how to share with others. It is reasonable to wonder whether they can be responsible to care for their children, parents, and grandparents, as well as the society.

Other serious population problems exist in China, such as the uneven distribution of its population and the imbalanced proportion of urban and rural population. As to the former, Chinese geographer Hu Huanyong set up a demographic-geographic boundary from Heihe, the northeastern part of Heilongjiang Province, to Tengchong, the southwest of Yunnan Province, and showed that, the eastern half of this boundary had 94% of the country's population but occupied only 43% of China's total area; whereas the western half had only 6% national population although it occupied 57% of the country's total area.²⁶As to the latter, following the development of industrialization and urbanization, the rural population was decreasing. According to the world population in 1980, the average urban population accounted for 39% of the world's population, with an average 69% urban population in developed countries and an average 29% in developing countries. China's rural population, however, constituted an absolute majority in its total population since its economy was dominated by agriculture for a long time. In 1993 the urban

²⁶ Ge Jianxiong, *History of China's Population Development* (Fuzhou: Fujian People's Press, 1991), 286-312.

population accounted for 28% of the total population, while the rural population accounted for 72%; by 2000 urban residents accounted for 36%, while rural residents accounted for 64%.²⁷ This proves that China still has a low level of modernization. Table 4 reflects by 2003 the proportion of urban residents rose to 40.53% of the national population, while rural residents reduced to 59.47%.

Table 4: Composition of China's Population, 2003

	Population(year-end figure)	Percentage (%)
National Total	1,292,270	100.0
Urban	523,760	40.5
Rural	768,510	59.47
Male	665,560	51.50
Female	626,710	48.5
0-14 years	285,590	22.1
15-64 years	909,760	70.4
65 years and over	96,920	7.5

*Source: National Bureau of Statistics of China, "National Economic and Social Development Report for 2003," Chapter 4-1, <http://www.stats.gov.cn/english/statisticaldata/yearlydata/yarbook2003> (accessed 03/16/2007)

²⁷ Liang Zai and Ma Zhongdong, "China's Floating Population: New Evidence from the 2000 Census," *Population and Development Review* 30, no. 3 (Sept. 2004), 469.

CHAPTER 3

THE HISTORICAL REASONS OF CHINA'S POPULATION PROBLEMS

Several historical factors are responsible for the above plight of China's population. Focused on the influence of the population policies, this paper will discuss China's population growth in the Qing Dynasty and Mao Zedong and Post-Mao eras respectively.

Population Policy of the Qing Dynasty and Population Growth

The large population base of China traces its history to the eighteenth century. China's population saw a slow increase throughout a long period of A.D. 0-1700. It just grew from 60 million to 140 million. The dramatic increase began at the eighteenth century. Kang-xi and Yong-zheng, the two emperors with illustrious names in the Qing Dynasty, issued two influential policies in 1712 and 1723 "Newborns will not be taxed" and the "Merger of population tax into land tax". Almost all Chinese historians praised these merciful and wise policies that lessened the burden of Chinese people. As they were implemented for nearly two centuries, they brought with China an unpredictable consequence -- China's population increased with a striking growth rate-- 2.5% per year. As a result, China's population rose to 200 million in 1762 from 100 million in 1712; then reached to 300 million in 1790; and again rose to 400 million in 1834. It accounted for over 40% of the total population of the world at that time.²⁸ In other words, China's population doubled within 50 years and doubled again within the following 72 years.

²⁸ Liang Fangzhong, *Statistic on historical population, lands and taxes of China: Qing Dynasty*. (Shanghai: Shanghai People's Press, 1980) p. 359-423.

To China's modernization, the pressure of rapid population growth was an accomplished fact and a potential challenge before China began its industrialization in the middle of the nineteenth century and became an on-going problem and a significant challenge through the whole process of its modernization in the past one and a half centuries. Such a heavy burden on Chinese society and economy can explain the serious social crisis in the nineteenth century, such as the Taiping Rebellion from 1851 to 1864, which caused by both class contradictions (such as most farmlands were collected by minority landlords whereas majority peasants lost their farmlands) and the pressure of the population boom on the arable land, resulting in a disastrous consequence: the death of over 100 million people, nearly one-third of China's total population at that time. Between 1851 and 1949, China experienced "a century of rebellion, social upheaval, and suffering" such as Opium War I (1840-42), the Taiping Rebellion (1851-64), Opium War II (1856-1860), the Boxer Rebellion (1900-01), the Sun Yetsan Revolution (1911), the Civil War I (1912-1927), the Civil War II (1927-38), the Sino-Japan War (1938-1945), the Civil War III (1946-49). As the result, the absolute growth of China's population over this century was relatively lower, increasing "only by another 100 million" on the base of its 432 million in 1851.²⁹ In other words, the frequent national and international wars kept China's population within its limits before 1949. The high reproduction rate, however, allowed China's population to recover soon. After the wars, China still kept its status as the most populous country in the world. The People's Republic of China had a population of 540 million when it was founded in 1949, among which the urban

²⁹ Ge, 6-7.

population merely reached 10.6% of the national population.³⁰

Population Growth in Mao Zedong Era

When the Chinese Communist leaders set the goal for China's modernization--- "to realize industrialization rapidly" based on "poor and blank domestic economy,"³¹ Their had to face the dilemma of "a powerful state in politics and population" and "a weak state in economy." Just as Chairman Mao Zedong said in 1957:

"You (China) have so many people and so much land, as well as abounding natural resources; you (China) also have socialist advantages-- then, if you could not surpass the United States within 50-60 years, you (China) should be expelled from the earth! Therefore, it is not only possible but also absolutely necessary to surpass the United States. If not, we Chinese nation should have a guilty conscience to all nations in the world, and our contribution to the human beings would not be great."³²

Unfortunately, they assumed optimistically they could keep the problems in control by rapid industrialization.

In addition, the development of China's society and economy after 1950 made it possible to accelerate its increasing population. With a stable society-- improvement of medical and health conditions, and development of production-- China witnessed a rapid population growth, reaching 807 million in 1969. In detail, the Government of China controlled the previous factors affecting the increase of population: wars, pestilences (such as smallpox, which resulted in mass people's deaths in previous years), regional diseases, and famines --except for the Great Famine which took place after the Great Leap Forward, the greatest man-made famine in Chinese history, which caused 38

³⁰ Jiang Tao, "Re-examine on the Population Problems of Modern China," *Guangming Daily*, 28 Feb. 1994.

³¹ Mao Zedong, *Mao Zedong Xuan-Ji* (Selected Works of Mao Zedong), Vol. 5 (Beijing: The People's Press, 1977), 174.

³² Mao, Vol. 5, 296.

million deaths of Chinese people during 1959 to 1961 and led to a negative natural population increase rate of -0.46% in 1960.³³ After the three-year food shortage crisis, however, its population growth accelerated. Although China still was a poor country, and most of its huge population lived barely above the basic subsistence level before 1980s, this did not impede the growth of population.

Another important reason is that the Chinese traditional values have led to mistakes in the policy of China's population. Ordinary Chinese people have this deep-rooted logic: "the more children, the more good fortune" and "many sons bring much riches".³⁴ China is a developing state where most people have lived in poverty until recently. Its economic level and social property are limited, and its social security system is far from being comprehensive. This basic situation has convinced ordinary Chinese people that they must rely on themselves and their family when approaching old age. In addition, the rural families feel shame if they have no sons to continue their family trees. No wonder almost all Chinese agreed with what Mao Zedong advocated in the 1960s "the more people, the stronger we are".³⁵ In addition, socialist ideology made it easy to dismiss the population threat. "For Marx, the fact that people were producers as well as consumers meant that the resource limits emphasized by the classical economists could arise under capitalism, but not under socialism."³⁶ Marx's insight into this matter has been used for making population policy by Chinese socialist leaders. Mao Zedong said in the 1950s: "even if China's population multiplies many times, she is fully capable of

³³Shen Jianfa, "China's Future Population and Development Challenges," *The Geographical Journal* 164, no. 1 (Mar. 1998): 32

³⁴Li Yinhe, *Reproduction and Village Culture in China*, (Hong Kong: Oxford Press, 1994), 36.

³⁵Mao Zedong, *Mao Zedong Xuan-Ji* (Selected Works of Mao Zedong), Vol. 3 (Beijing: The People's Press, 1977), 140.

³⁶Michael S. Teitelbaum, "The Population Threat," *Foreign Affairs* 71, no. 5 (winter 1992), 67.

finding a solution; the solution is production”³⁷ They did not realize that a person’s work created social property, while people themselves consumed social property. If a higher population consumed more social property than what they created, how could a society accumulate capital and thereby develop its economy? In other words, they failed to realize that their excessive human reproduction would severely hurt the promotion of public welfare.

Not only did the ordinary Chinese people lack awareness of the importance of birth control for a state, but also the leaders of the Chinese Government insisted on a mistaken idea concerning this issue. As early as in January 1952, Mao Zedong urged *The People’s Daily* to publish an editorial titled “Limited reproduction will lead to subjugate China”, and encouraged women to give birth rather than to promote birth control. In 1957, Dr. Ma Yingchu, a famous demographer-economist and the President of Beijing University, published “*A New Population Policy*”, which accurately indicated that, related to the weakness of China’s economic policy, overpopulation would hinder China’s productivity and the accumulation of capital and hamper the rise of the standard of living. He suggested that the Government promote birth control, which predated promotion of family planning policy of the 1970s by about 20 years. As a result, Dr. Ma was purged and severely criticized as Rightist, Anti-socialist, and Anti-communist, and his theory was criticized as an imitation of the “capitalist and reactionary Malthusian Theory.”³⁸ Another serious consequence to the state was that China embraced another peak of population growth: from 1962 to 1975, China witnessed a rise of 350 million people in its population.

³⁷ Mao, 452.

³⁸ Ge, 233-235.

Figures 2 and 3 indicate the natural growth rate and the birth/death rate in China during 1949 and 1999. Based on the data released by the National Bureau of Statistics of China, it is easy to see a rapid increase in the natural growth rate and a decline in the death rate except for the period of 1959-1961. The birth rate surpassed 2.5% before 1976 except for the same period of 1959-1961 and saw a continued downward trend since then.

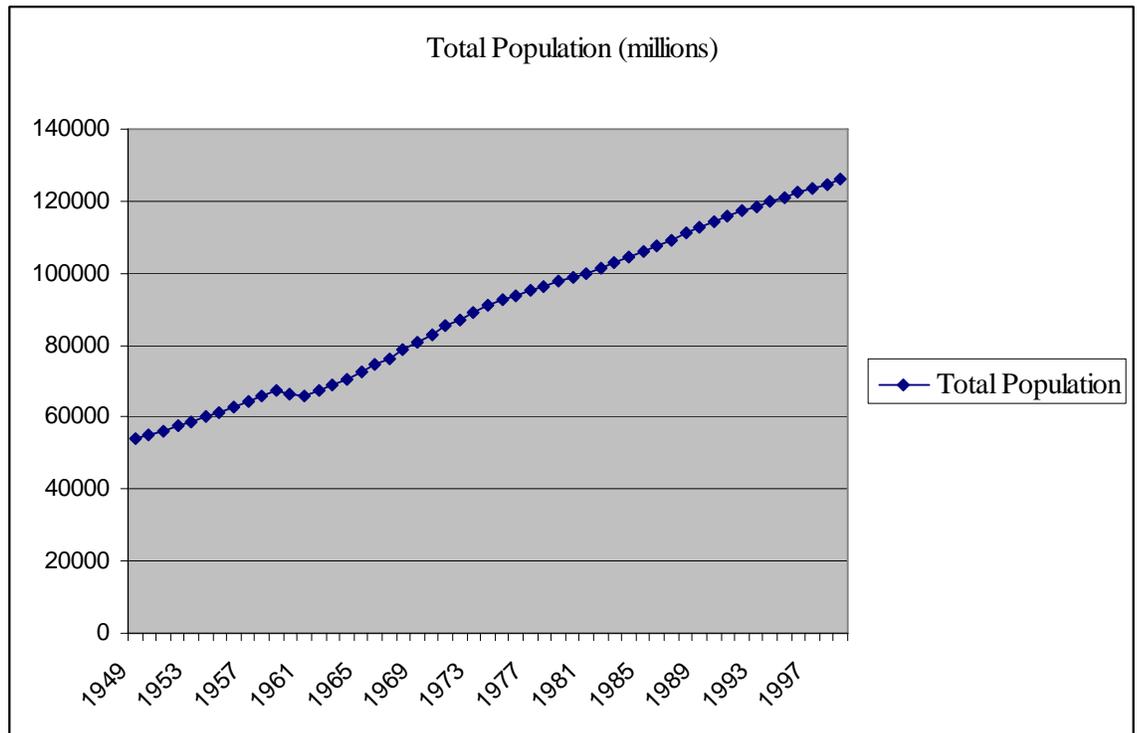


Figure 2: Natural Growth Rate in China, 1949-1999

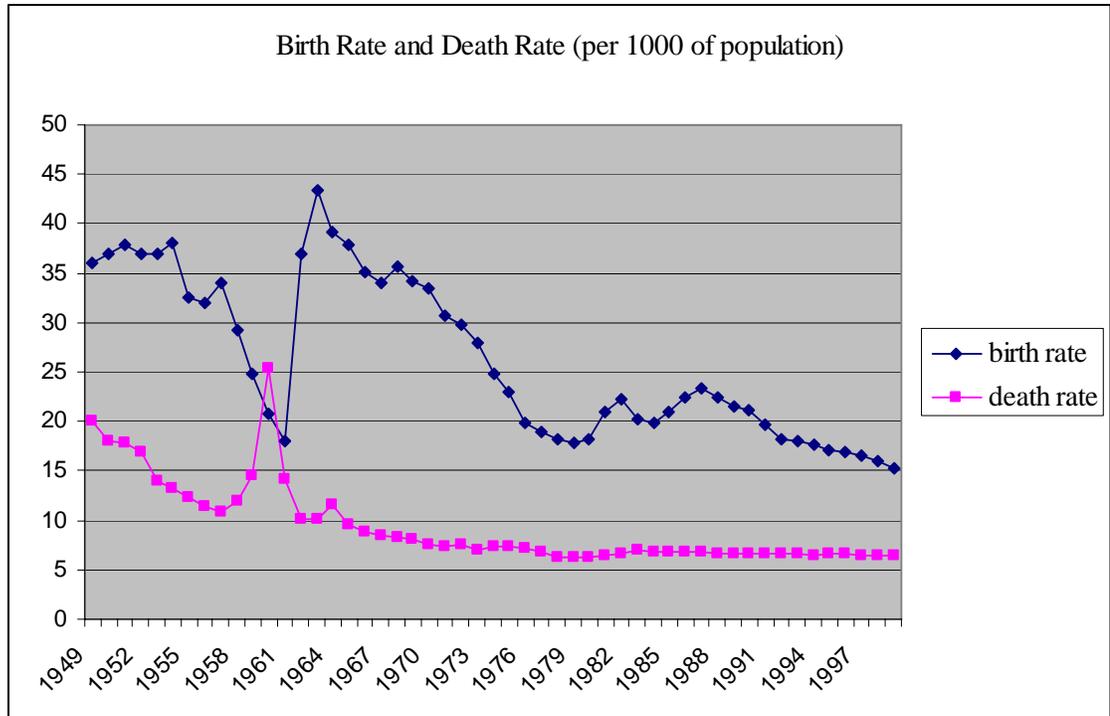


Figure 3: Birth Rate and Death Rate in China, 1949-1999

*Sources: National Bureau of Statistics of China, “China Statistical Yearbook 2000,” (14 May 2002) <http://www.cpirc.org.cn/en/year.htm> (accessed 16 Mar. 2007).

Family Planning Policy in Post-Mao Era

Not until 1973 did the Chinese Government implement the family planning policy by efforts of Premier Zhou Enlai, with a slogan “One is best, two at most, but never a third.” As to the specific regulations, China has limited each urban couple to one child. Rural couples are allowed to have a second child if the firstborn is a girl or two children have a four-year spacing. China’s 55 ethnic minority groups have no restriction on family size. In the 1990s, the family planning regulates limited ethnic minority couples in rural areas of minority autonomous regions to 2-3 children, but rural Tibetan people still have

no restriction on family size.³⁹ The implementing of this stringent population control policy, however, actually became effective in 1978 when “every township and town had a Birth Planning Commission” directed by the State Family Planning Commission (SFPC). Inserting the word "Population" in its name in 2003, SFPC was replaced by “the State Family Planning and Population Commission” (SFPPC) as the “inter-ministerial agency in charge of population policy formulation and implementation.” This was actually a change in the commission's functions to “tackle a much wider range of population-related problems” besides birth control.⁴⁰ Evidence showed that “the commission's work was very effective,” and the birth control policies had brought the beginning of a decrease in birth rate since the end of the 1970s. For instance, according to census results in 1990, China’s total population was 1.1 billion with a birth rate at 1.47%. In 1995 its population was 1.2 billion with a birth rate of 1.12%. By the end of 2003, the birth rate stood at 1.24% with a mortality rate of 0.64 %, leaving a natural growth rate of 0.6%.⁴¹ Let me explain these data in another way: during the first twenty years’ of the implementation of this policy it prevented 300 million peoples’ births accumulatively-- about the size of the national population of today’s United States-- and thereby “saved \$4,000 billion (yuan) of the strain on food production and other resources”; and “the number of children born to each Chinese family decreased to 1.8” in the 1990s, only reached half the number of what they had before 1975.⁴² Table 5 presented the continued upward trend of “only-child” birth rate since the Chinese Government implemented the family planning policy in 1973.

³⁹ Peng Xizhe, “Is It Time to Change China's Population Policy?” *China: an International Journal* 2, no. 1 (2004), 136-137.

⁴⁰ Xinhua Agency, “Population Timeline,” *China Daily*, 20 Aug. 2003.

⁴¹ CPIRC, “China to Usher in Major Changes in Population Policies.”

⁴² Chen Qin, 295.

Table 5: Share of First, Second, and Third or Higher-order Births in China, 1973-2000
(Percent of Birth Rate)

	1 st birth	2 nd birth	3 rd birth and above
1973	21	21	59
1980	38	27	35
1987	52	32	17
2000	68	26	6

*Source: Nancy E. Riley, "China's Population: New Trends and Challenges," *Population Bulletin* 59, no. 2 (June 2004), 16.

Thus, China claimed "a decisive victory in population control efforts by the 1990s".⁴³ The "one-child-per-family policy", however, is responsible for the plight of the gender ratio imbalance, the aging society, "4: 2: 1 family model", as well as the psychosocial defects of the only-child. In fact, this policy has been a controversial topic worldwide since the 1980s (I will discuss this very question in the final section.). For example, China's family planning policy was accused by the West of violating its people's Human Rights. Politically and academically, these accusations were challenged by many government officials and scholars. Just as anthropologist Susan Greenhalgh states, "Wedged between an anti-totalitarian, China-demonizing discourses emerging from conservative forces in the United States...Most western Feminists and Chinese specialists have avoided the topic, perhaps deeming it too politically sensitive and ideologically troubling to touch."⁴⁴ Other related problems as to the accuracy of official census figures, "floating population", and baby booms, however, appeared gradually and influenced the efficiency of China's birth control program.

⁴³ CPIRC, "China to Usher in Major Changes in Population Policies."

⁴⁴ Susan Greenhalgh, "Fresh Winds in Beijing: Chinese Feminists Speak Out on the One-Child Policy and Women's Lives," *Signs* 26, no. 3 (Spring, 2001): 847.

First, the accuracy of China's official census figures is doubtful. According to Zhu Zhixin, general director of the National Bureau of Statistics, the census figures in 2000 showed that "China's population has grown by 132 million since 1990, an increase of 11.7%; annual growth was 1.07% --down 0.4% from the rate in the 1980s." He declared: "the census showed that China's compulsory birth-control policies were effective in holding down population growth."⁴⁵ Some Western independent analysts, who "put the number of Chinese as high as 1.5 billion," however, believed that those official census figures substantially underestimated the actual growth of China's population because "many Chinese are reluctant to co-operate with the census takers." Just as Rupert Wingfield-Hayes, the BBC Beijing correspondent, reported that "serious questions remain over the accuracy of the figures...as tens of millions of people with extra children are thought to have hidden them from the census takers for fear of being punished."⁴⁶ As another example, when the result of the gender ratio of Chinese new births of 112: 100 in 1990 demographic census was published, a majority of Chinese researchers doubted the accuracy of this figure. They believed that the actual situation of gender ratio imbalance of Chinese new births was not as serious as what the figure showed. The reason the figures were higher than their estimates resulted from deceptive reporting of downplaying statistics on baby girls on purpose.⁴⁷ Undeniably, many false reports and statistics, which were made intentionally by some officials of local governments to indicate their political achievement or to avoid punishment, made China's official census figure unbelievable to the West.

⁴⁵ BBS News, "China's Population Growth 'Slowing'."

⁴⁶ BBS News, "China's Population Growth 'Slowing'."

⁴⁷ Yu Xuejun ed, *Review on the Development of China's Population: Reexamining and Prospect* (Beijing: The People's Press, 2000), 176.

Second, China's soaring rural immigration made population control difficult. With the transition to the market economy system from the planned new economy system more than 20 years ago, household registration became relaxed, and rationing has been gradually cancelled. Chinese farmers "were encouraged to engage in industrial and commercial activities and migrated to cities and towns. The number of people living in places other than their registered home towns doubled from 70 million in 1993 to 140 million in 2000."⁴⁸ Such a situation affected not only the enforcement of birth control policy but also the accuracy of census figures. The Government of China used to tightly control the family planning program by administrative means, such as food rationing, household registration, job and housing allocation, besides economical punishment. These administrative means used to be effective in the 1970s and 1980s when the Chinese society was characteristic of a rigid "dual-system of city/countryside division" -- "a system of wage and welfare rewards or rationing that favored urban residents".⁴⁹ Also, the government had absolute power to control the arrangement of all social resources at that time. From the 1990s, however, with the lessening of the government's intervening in people's economic lives in a market economy system, the official implementation of population control policy lost effect to some extent. Chinese farmers who did not benefit from previous policies had nothing to lose and, thereby, had no fear of being punished due to excessive reproduction. In particular, they had chance to flee from the land and to make lives out of their hometowns, and finally became the "floating population" who were out of the control of local governments to a large extent.

⁴⁸ Liang and Ma, 478.

⁴⁹ Chen Qin, 370-371.

Third, the regularity of population reproduction influenced the efficiency of China's birth control program. The development of population has its own periodicity and regularity, (for example, the periodicity of a baby boom usually is 20 to 30 years), which hardly yields to any artificial, coercive measures. Therefore, it is impossible to solve the long-term population problem within one or two generations. For example, owing to China's huge base of fertile population, we can not expect the appearance of a miracle like zero growth of its population before 2050, even taking the strictest "one-child-per-family" policy and the "later-longer-fewer" policy (which targeted three reproductive goals -- "later marriage, longer between first and subsequent children, fewer children."⁵⁰)

The reality is well-known: China experienced the first baby boom from 1950 to 1958 and the second from 1962 to 1975. China has just passed its third baby boom, and, demographically speaking, it expects to embrace another one between 2020 and 2040 whether it wishes to or not.

⁵⁰ Bongaarts and Greenhalgh, 586.

CHAPTER 4
THE INFLUENCE OF CHINA'S POPULATION ON NATURAL RESOURCE AND
ENVIRONMENT

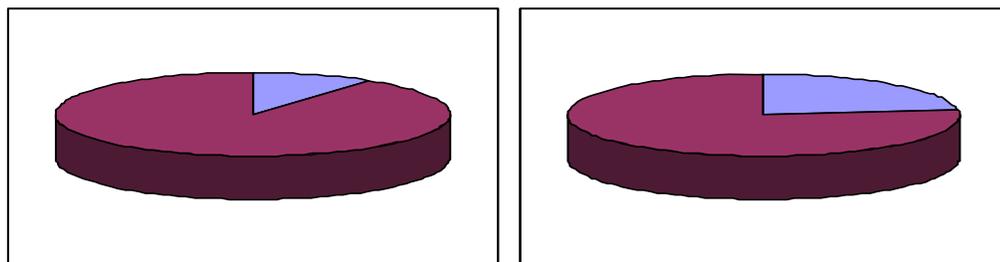
China's population problem resulted in a dilemma for its modernization: China was embarrassed by the vicious cycle of "huge increase in population -- shortage of resources -- environmental degradation." It can not continue to industrialize and retain growth in population. China's excessive population growth affected its natural resources and environment in the following aspects: land resources and grain consumption, energy and water shortage, as well as water and air pollution, desertification, soil erosion, etc.

China's Population and Land Crisis

China's overpopulation intensified its land resources' consumption. Despite the big size of China, it has a small amount of cultivated land per capita due to its large population base. What makes the shortage of land resources more serious is that, because of a massive loss of arable land to non-farm uses by factories, roads, shopping centers, and housing during industrialization and urbanization, China's area of arable land is shrinking rapidly: "from 112 million hectares in 1957 and 104 million in 1965 to about 96 million in 1990 (less than two-third that of India). The per capita arable area has fallen by half since 1957"⁵¹--from 0.18 hectares cultivated land per capita in 1949 to 0.08 hectares in 1990, which ranks among the lowest in the world, and only equals one-fourth of the current average level of the world. Furthermore, one-third of China's farmland has

⁵¹ Alain Marcoux, "Linkages between Population, Natural Resources and Environment in China, Philippines, Indonesia and Viet Nam," (March 1996) <http://www.fao.org/sd/wpdirect/wpan0004.htm> (accessed 23 Feb 2007).

soil erosion with a result of an annual loss of about 5 billion tons of soil.⁵² Between 1990 and 1994, China's farmland "dropped from 90.8 million hectares to 85.7 million. This decline of 5.6% in four years, combined with a population growth of 59 million (4.9%), reduced the grain harvested area per person by a striking 10.5%."⁵³ Industrialization and urbanization undoubtedly were dominant factors in the shortage of land resources in the past 30 years: it is estimated that 0.3 million hectares of arable land are lost annually to urbanization; the rapid population growth of China, however, also was responsible for the intensification of the shortage of cultivated land per capita. For example, at the lower level of industrialization and urbanization in progress before the 1970s, China's per capita arable area kept on shrinking even if the Chinese Government succeeded in opening up lots of virgin soil. However, the increase in farmland was offset by the growth of its population simultaneously. This resulted in the development of a limited amount of farmland that could not match the increase in its population. Figure 4, 5, and 6 show the imbalance situation of China's huge population and its limited land resource, especially in terms of the arable land and per capita cultivated land.



Ratio of China's land in the world Ratio of China's population in the world

Figure 4: China's Land Resource and Population

⁵² Cultivated Land Protection Programme of China ed. "The Serious Situation of Cultivated Land Protection and Policy Suggestion," *China Land Science*, no. 1(1997), 2-9.

⁵³ Tony Walker, "China Determined to Head off Farmland Crisis," *Financial Times*, 02 Mar. 1995.

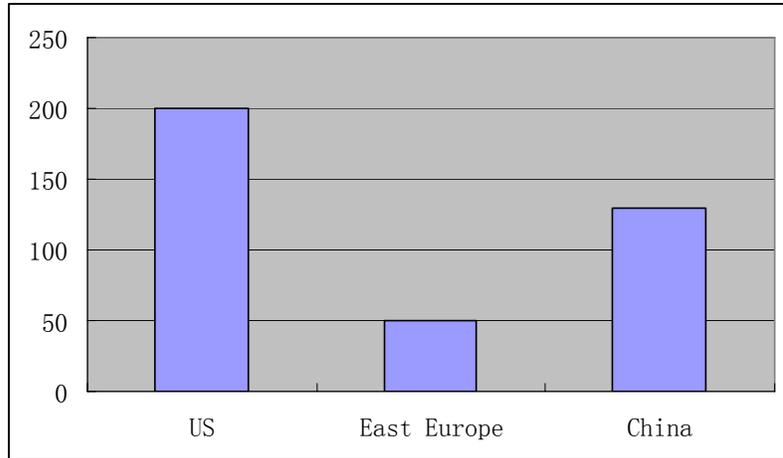


Figure 5: China's Arable Land

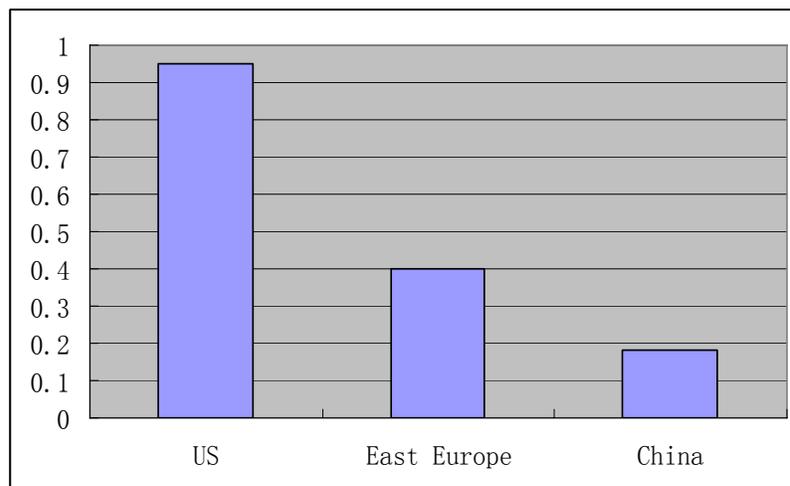


Figure 6: Per Capita Cultivated Land in China

*Source: Li Weixiong, "Family Planning in China," *Ethic in Medicine* 10, no. 1, (Sep. 1998), 26-33.

Among China's 320 million hectares of grassland area, 87 million hectares of grasslands are degraded, and 5 million are threatened by desertification. Yang Chaofei, officer of the State Environmental Protection Administration, worried about the plight of China's grasslands, which per capita area is only about one-third of the world average level and "more than one third of the rangelands are overgrazed...Some 90% of China's grassland is degrading to various extents, and the desertification of land has enlarged

from 2,100 square kilometers each year in the middle 1980s to 3,436 square kilometers by the end of 1990s.”⁵⁴ Also, China’s “consumption of forest products exceed stock growth by 20 million cubic meters annually”. Although China has endeavored to encourage forestation and the protection of forests in recent years, its forest coverage rate has just reached 13.4% -- only 0.11 hectares forest per capita, which equals to 11% of the world average level.⁵⁵

China’s Population and Energy Crisis

China’s excessive population growth has led to serious energy shortages. Generally speaking, China is a country deficient in energy,⁵⁶ such as fossil oil and natural gas. Considering its huge population base, the per capita mineral resources are merely a half of the world’s average. Excluding coal, the richest mineral resources of China, China still witnesses a large energy gap. In 1993, China consumed 1.1 billion tons of coal and 1.4 billion tons of crude oil, which equaled to 0.9 ton standard coal per capita; while the United States consumed 10 tons per capita, Japan consumed 4 tons, and Germany consumed 5.6 tons. In 2000, China was short of 14-15 billion tons of standard coal to reach the level of moderately developed countries, which consumed 3-5 tons per capita.⁵⁷ In other words, China's energy production should be improved 3-5 times to meet its need, even if its population stopped to increase.

⁵⁴ Xinhua Agency, “Ecological Environment in China Faces Severe Challenges,” *China Daily*, 25 Oct. 2003.

⁵⁵ Zhong, 49.

⁵⁶ Chen Qin, 292.

⁵⁷ Zhong, 50.

With China's population increasing constantly and its industrialization and urbanization in progress, however, the level of limited resources consumption per capita will continue to decline while the level of the demand for resources will soar in the future. So far, China has become the number one country in the world in terms of steel, coal, and copper consumption, and the number two country in terms of crude oil and electricity consumption, while "China's GDP accounted for only 4% of the world."⁵⁸ As its shortage of some resources (such as iron ore, aluminum, and copper) gets close to or exceeds its limit, China can not rely on domestic natural resources to support its economic development. By 2010 China is expected to depend on foreign resources for 60% crude oil, 57% iron ore, 80% aluminum, and 70% copper.⁵⁹ Faced with such a heavy pressure, neither China's natural resources nor the world's resources are able to sustain China's development. Let me take oil as an example. The U.S.-China Economic and Security Review Commission predicts that China's projected oil production during 1990-2020 is very limited, unable to meet the need of the rapid growth of its oil consumption. Refer to Figure 7.

⁵⁸ Pan Yue, "Strategic Environmental Assessment and Sustainable Development," *Environmental Education*, no. 8 (2006), 44.

⁵⁹ Pan Yue, 40; Vaclav Smil, "China's Energy and Resource Uses: Continuity and Change," *The China Quarterly*, Special Issue: China's Environment, no. 156 (Dec. 1998), 948-949.

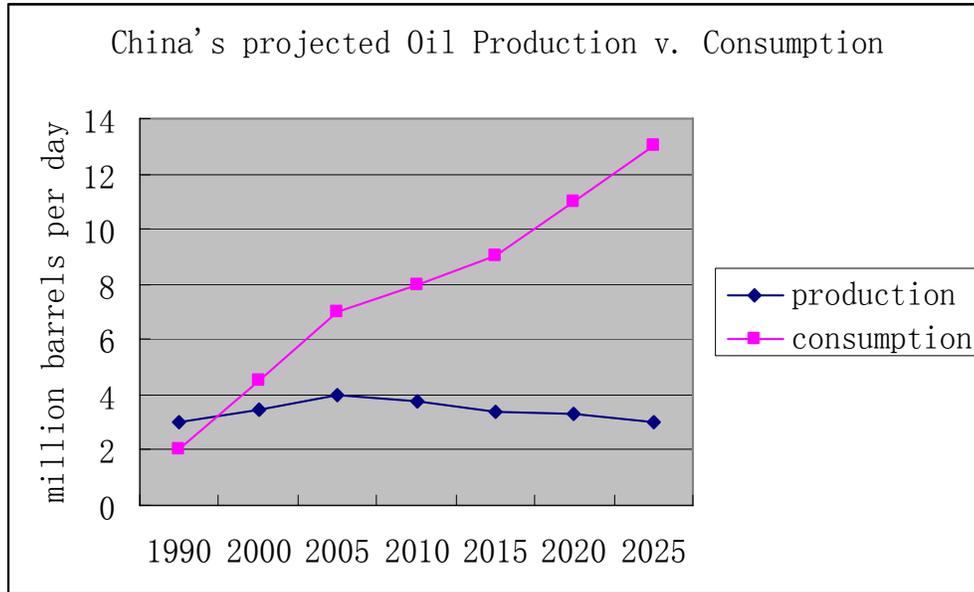


Figure 7: China's Projected Oil Production v. Consumption, 1990-2020

*Source: U.S.-China Economic and Security Review Commission: *2004 Annual Report*, Chapter 6. (April 2004) http://www.uscc.gov/annual_report/2004/04reportpage12.pdf (accessed 29 Mar. 2007).

China's Population and Water Crisis

China's excessive population growth has led to a water shortage. The annual runoff volume of China's rivers is among the top five worldwide, but in terms of water resource per capita, China is indeed a water-scarce country. It shares merely a quarter of the world's average of water resource per capita, a third of the United States, and a seventh of the former Soviet Union. Statistics of the Ministry of Water Resources in 2003 noted that, China's water consumption is as high as 2,800 billion cubic meters, accounting for one-fifth of the country's total water resources and a half of its usable water resources; and furthermore, "the utilization rate of water resources is at 60% for the Huai River, 65% for the Liao River, 62% for the Yellow River and as high as 90% for the

Hai River, all surpassing the internationally accepted warning line of 30% ~40%.”⁶⁰ That means China does not leave much usable water resources to exploit in the future. In 2000 China was short 2,000 additional water treatment plants to solve its shortage of 100 billion cubic meters, including more than 20 billion cubic meters of water shortage in cities. According to the forecast of Mr. Alain Marcoux, senior officer of Food and Agriculture Organization of the United Nations, if China’s population increases consistently, its current “modest supply of water resources (2,400 cubic meters per capita per year, less than a third of the world average) is expected to drop to 1,800 cubic meters in 2025,”⁶¹ and its water shortages will become increasingly acute in the future. *People’s Daily* warned: “China’s water shortage will hit dangerous limits by 2030, when its population reaches 1.6 billion.”⁶² Dr. Lester R. Brown also warned the world: “China’s water shortage could shake world food security.”⁶³

There is an uneven distribution of water resources in China. The supply is “heavily concentrated in the sparsely populated southwest of China”. The northwest area of China, which forms 47% of China’s land, only has 7% of the country’s total water resources. Eighty-two percent of surface water and 70% of the groundwater resources are in the regions south of the Yangtze River. The North China Plain and the Northern coastal cities witness the most serious water shortage.⁶⁴ Besides, “with increasing water use by agriculture, industries and cities, inland resources are overextended. More than 200 major cities lack adequate water, and some 50 of them face acute shortages. Beijing

⁶⁰ Xinhua Agency, “Ecological Environment in China Faces Severe Challenges.”

⁶¹ Alain Marcoux.

⁶² Jiang Xia, “Water Diversion Project Ready for Construction in 2002,” *People’s Daily*, 15 Nov. 2001.

⁶³ Lester Brown, “China’s Water Shortage Could Shake World Food Security,” *World Watch* 11, no. 4 (Jul-Aug. 1998), 10.

⁶⁴ Zhong Zhaozhan, 47.

is seeking new sources of supply hundreds of kilometers away.”⁶⁵ In other words, both rapid rise of water demand related excessive population growth and the uneven distribution of water resources related to the unbalanced distribution of population are responsible for China’s water crisis.

China’s Population and Grain Crisis

China’s grain produce can not meet the demand of its rapidly growing population. China used to be proud of its great achievement in feeding 22% of the total population in the world with 7% of the total farmland in the world. After rapid shrinking of cropland to non-farm use in the past half century, however, the contradiction between grain supply and demand has become increasingly acute since the beginning of the twenty-first century. In 1994, Dr. Lester R. Brown published his international influential paper “*Who will feed China?*” He predicted that China would have great trouble in feeding its massive people in the future based on the logic below:

“If countries become densely populated before they industrialize, they inevitably suffer a heavy loss of cropland... If industrialization is rapid, the loss of cropland quickly overrides the rise in land productivity, leading to a decline in grain production... [And a rise in] the consumption of livestock products and the demand for grain. Ironically, the faster industrialization proceeds, the more rapidly the gap widens between rising demand and falling production.”⁶⁶

He cited the example of Japan to prove that China would not avoid a massive loss of cropland to non-farm use, even if the Chinese government worked as strenuously as Japan did to protect its cropland. When Japan finished the industrialization and urbanization by the 1980s, its “grain land area has shrunk by half during the last four

⁶⁵ Alain Marcoux.

⁶⁶ Brown, *Who Will Feed China?* 13-14

decades” and thereby had to depend on imported grain from 25% of its grain consumption in the 1950s to more than 70% in the early 1990s.⁶⁷ Such a view challenged the official view of China’s food prospect and was criticized by the Chinese Government as an evidence of a “Chinese threat to the world”. In an international conference on the environment issues held in Norway in February 1995, the Chinese Ambassador to Norway, Xie Zhenhua, said that Brown’s analysis was “off-base and misleading” and declared, “We are giving priority to agriculture productivity. Our family planning program has been successful. Science and teleology and economic growth will see us through... unequivocally that China does not want to rely on others to feed its people and that it relies on itself to solve its own problems.”⁶⁸

By 2006, Brown still disagreed with the strong commitment to “self-sufficiency” of the News Office of the State Council of China --“Chinese people will feed themselves.”⁶⁹ Based on his latest research, he affirmed that China “may become a major importer of grain which could influence global markets”, and argued:

“Among the basic commodities--grain and meat in the food sector, oil and coal in the energy sector, and steel in the industrial sector --China (totally) consumes more than the United States of each of these except for oil. It consumes nearly twice as much meat (67 million tons compared with 39 million tons) and more than twice as much steel (258 million to 104 million tons)...but what if China reaches the U.S. consumption level per person? If China’s economy continues to expand at 8 percent a year, its income per person will reach the current U.S. level in 2031. If at that point China’s per capita resource consumption were the same as in the United States today, then its projected 1.45 billion people would consume the equivalent of two thirds of the current world grain harvest. China’s paper consumption would be double the world’s current production. There go the world’s forests.”⁷⁰

⁶⁷ Brown, *Who Will Feed China?* 64, 92.

⁶⁸ Brown, *Who Will Feed China?* 16-17.

⁶⁹ News Office of the State Council of China, “The Food Issues of China,” *People’s Daily*, 25 Oct. 1996.

⁷⁰ Lester R. Brown, Interview by *The Progressive Forum*, 26 Apr. 2006, <http://energybulletin.net/15705.html>. (accessed 01 Mar. 2007)

Figure 8 shows the trend of China's land use and grain trade changed with the development of industrialization and urbanization from the 1950s to the 1990s. It clearly indicates that "there is a negative relationship between arable land area and industrialization and urbanization." During the period 1952-1997, the arable land area declined by 12%, while population more than doubled. The ratio of non-agricultural GDP to agricultural GDP, an indicator of industrialization, increased 4 folds and the share of urban population rose from 14% to 26%. It appears that "industrialization and urbanization are among the most important factors explaining the decline of China's agricultural land use." It also shows that "the circles in the grain trade balance are related to fluctuations in the sown area."⁷¹

⁷¹ Zhang Xiaobo; Tim D. Mount; Richard N. Boaster, "Industrialization, Urbanization and Land Use in China", *Journal of Chinese Economic and Business Studies* 2, no. 3 (Sep. 2004), 209-210.

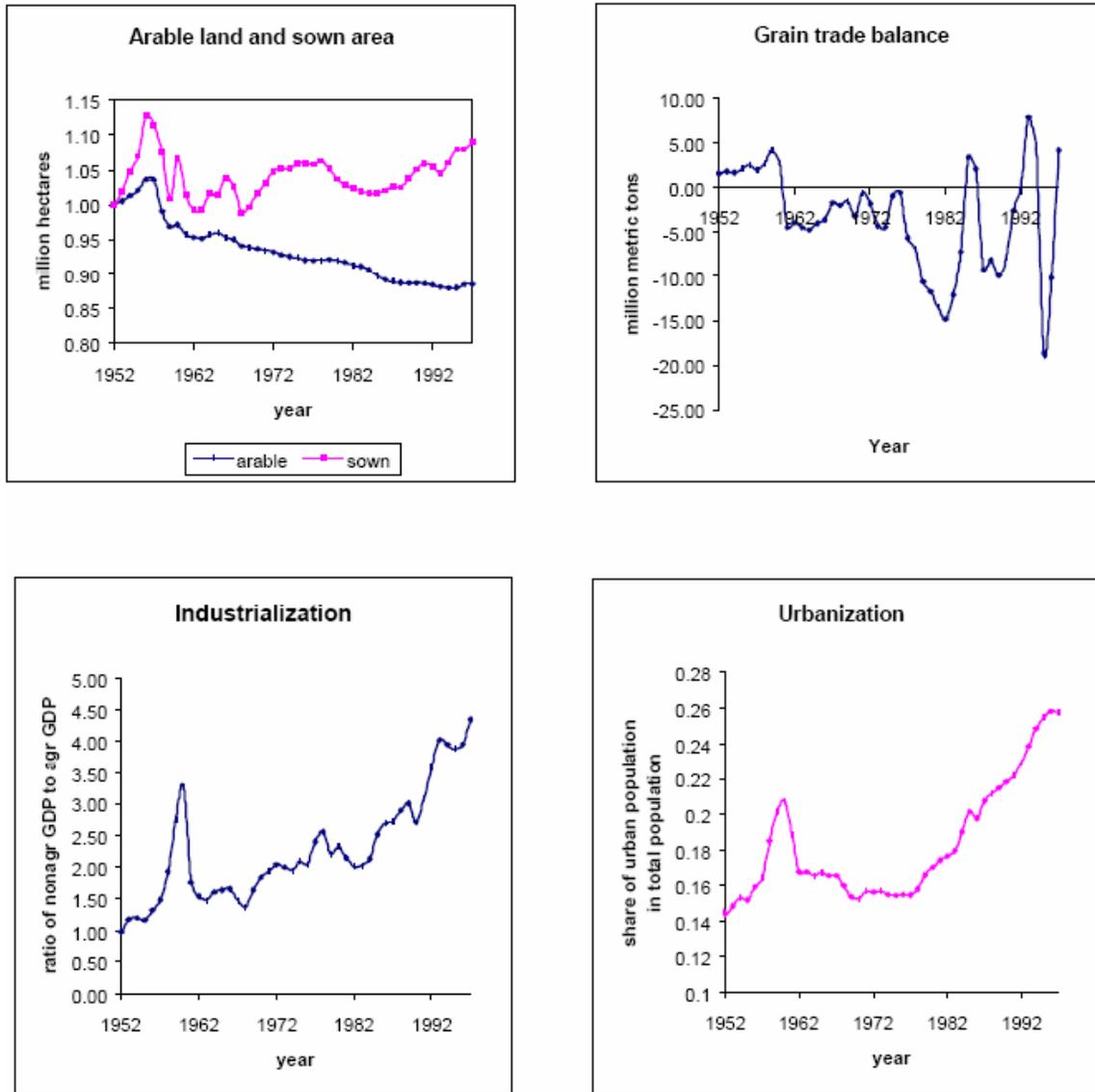


Figure 8: China's Land Use, Grain Trade, Industrialization, and Urbanization

*Source: Zhang, Xiaobo; Tim D. Mount; Richard N. Boaster, "Industrialization, Urbanization and Land Use in China", *Journal of Chinese Economic and Business Studies* 2, no. 3 (Sep. 2004), 213.

China's Population and Environmental Deterioration

Not only has China's population problem caused the shortage of natural resources, but it is also responsible for the serious deterioration of the environment. As early as the 1960s, some Western developed countries like Britain and the United States,

experienced the vicious cycle of “increase of economy -- shortage of resources -- environmental degradation” in their process of modernization. At that time, China was experiencing a high growth of population and a low increase of economy during the Cultural Revolution. China ignorantly claimed that Western environmental hazards were resulted from “the incurable disease of the capitalist system, in which exists irreconcilable contradictions in the production of natural resources between the private ownership of means of production and the social production.” China predicted it would not see the occurrence of environmental hazards because “socialism eliminated the private ownership and thereby guaranteed the national economy to be well planned.”⁷²

In Mao Zedong era, his slogan “the fight against heaven, the fight against earth and the fight against people are endlessly interesting”⁷³ encouraged China. Chinese materialists expressed a presumptuous attitude to natural laws and scientific regulars and gradually formed the conception: “humans should exploit resources and can conquer nature if armed with Mao Zedong thought and ‘science’”.⁷⁴ Thus, they could ask for things they want from nature endlessly and never worry about any punishment from nature. A good example can be found in the Great Leap Forward of 1958 when Mao ambitiously, but vainly, attempted to develop the economy by accelerating the pace of exploitation. In short, China was unrealistically optimistic before 1980s when it over-exploited natural resources to develop the national economy, taking the risk of environmental degradation.

⁷² Mao, Vol. 3, 162.

⁷³ Mao, Vol. 3, 77.

⁷⁴ Richard Louis Edmonds, “The Environment in the People's Republic of China 50 Years On,” *The China Quarterly*, Special Issue: The People's Republic of China after 50 Years, no. 159 (Sep. 1999), 640.

From the perspective of modernization, American Sociologist Dr. Marion J. Levy distinguished countries and nations of the world into “relatively modernized and relatively non-modernized societies” and three categories: the first comers such as England, France, and the United States; the second comers such as Germany, Japan, and Russia; the latecomers like all developing countries.⁷⁵ Almost all latecomers have to “relied more heavily on borrowing from foreign models and on rapidly adding to or replacing existing structures” instead of a gradual transformation within a long period.⁷⁶ As a typical “latecomer” in the process of global modernization, however, P. R. China followed the modernization model of the Soviet Union during the first 30 years and then embraced to the traditional modernization model of Europe and the United States after the end of the 1970s, and finally repeated the same, if not worse, environmental hazards they had suffered before. China had many profound lessons during the previous process of modernization due to lack of environmental considerations. A typical case can be found in China’s “Third-line Program” in the 1960s -1970s. In its western regions, China settled its heavy industry, military industry, chemical industry, energy industry, and electricity base, all of which were heavily polluting industries that sharply affected the fragile ecological environment. The Government largely ignored the considerations of the environmental element in the planning and decision-making. An example is limited freshwater resources in the western region was unable to support such a large-scale development activity. As a result, generations of Chinese found it extremely difficult to restore the ecological environment in its western regions.

⁷⁵ Marion J. Levy, *Modernization: Latecomers and Survivors*. (New York and London: Basic Books Inc., 1972), 5-6; *Modernization and the Structure of Societies: A Setting for International Affairs*, (Princeton: New Jersey: Princeton University Press, 1966), 9-16.

⁷⁶ Gilbert Rozman ed, *The modernization of China* (New York: The Free Press, 1981), 4.

Today, a dilemma of China's modernization is approaching: China's rapid expansion in economy and population is suffering a serious shortage of natural resources and posing a major threat to the environment. The simple fact is that, due to its huge population, both China's economic development and people's livelihood have consumed enormous natural resources and, thereby, pose serious environmental problems: from water pollution to air pollution, from desertification to soil erosion. Statistics show that "water pollution covers 90% rivers of China; soil erosion affects one-third of China's cultivated land; and air pollution hurts 400 million Chinese' respiratory systems."⁷⁷ The reports released by the World Health Organization (WHO) in 1997 and 1998 noted that China accounted for half of the twenty most polluted cities in the world and seven of the ten respectively. ⁷⁸ Let me take coal as another example. As China's main energy for the country, coal is responsible for 70% of China's emissions of soot, 90% of the SO₂ emissions is from coal fuel. It causes serious air pollution, especially acid rain and soot in densely populated cities and industrial areas. China's emissions of SO₂ are as high as 17 million tons annually, causing acid rain in the south of the Yangtze River and east of the Tibetan Plateau. For instance, Chongqing and Liuzhou see a rate of over 70% acid rain with PH value of 4.0, which greatly harm agriculture, forests, people, and buildings. ⁷⁹

⁷⁷ Qu Geping, *Environment and Development of China* (Beijing: China Environment Science Publishing House, 1992), 101.

⁷⁸ Energy Information Administration, "China: Environmental Issues," (Feb, 2000) www.eia.doe.gov/emeu/cabs/chinaenv.html (accessed 22 Nov. 2006).

⁷⁹ Zhong, 50.

CHAPTER 5
POPULATION POLICY AND THE SUSTAINABLE
DEVELOPMENT STRATEGY

Strategy of Sustainable Development

As early as in the 1960s to 1970s, the West began to be concerned about the sustainable development issues by reexamining its modernization process: in the past 200 years, the Western modernization, with industrialization at the core, experienced what the Chinese call a “black process” characteristic of economic development and environmental pollution first, remediation and environmental protection later. In other words, after human beings exploited nature and used nature resources to develop the economy, they had to pay perhaps more than ten times the cost to recover the loss of ecological environment. Thus, many Western scholars and environmental protection organizations advocated “Green Development”. These include Rachel Carson and her book “*Silent Spring*” (1962), and the famous Club of Rome and its reports “*Limits to Growth*” (1972) and “*Mankind at the Turning Point*” (1974). Finally, the United Nations confirmed the scientific concept of the “sustainable development” in the 1980s with its famous report “*Our Common Future*” (1987), in which defined “the sustainable development” as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.⁸⁰ Furthermore, the World Summit Outcome Document in 2005 defined the “sustainable development policies” referring to “the interdependent and mutually reinforcing pillars of sustainable development as economic development, social development, and environmental

⁸⁰ World Commission on Environment and Development, *Our Common Future* (Oxford and New York: Oxford University Press, 1987), 8.

protection.”⁸¹

Not until the 1980s, however, did only a few Chinese intellectuals who had a sense of responsibility for China’s future advocate this issue. These included Mr. He Bochuan and his book “*China in Valleys: Problems, Dilemmas and Choices.*” A few official institutes studied this topic, including the Analysis Program of Chinese Academy of Sciences and its report “*Survival and development.*” After entering the 1990s, when its overpopulation, energy crisis, and environmental pollution became greater and greater obstacles restricting its economic development, the Government of China realized how necessary and important the sustainable development strategy was and adopted it in its planning and decision-making. The Chinese government signed the “*Rio Declaration*” passed by the United Nations Conference on Environment and Development in 1992 and followed to formulate the “*China’s Agenda 21,*” which declared the sustainable development strategy would be “an important strategy for China’s modernization that we must always adhere to in twenty-first century.”⁸² It is necessary to note that China took an environmental protection policy based on a low level of economy, with only \$400 income per capita annually, whereas the West adopted it at average \$3000 income per capita annually.

During the *Ninth Five-Year Plan* (1996-2000), the Chinese Government formulated a series of laws and amendments on population control, natural resources, and environmental protection, such as “*Compulsory Education Amendment*” (1997), “*Marine*

⁸¹ Wikipedia, “Sustainable Development,” (21 March 2007) http://en.wikipedia.org/wiki/Sustainable_development (accessed 24 Mar. 2007).

⁸² Xinhua Agency, “Priority Programme for China’s Agenda 21,” (Oct. 1998) <http://www.acca21.org.cn/pp5-1.html> (accessed 01 Mar. 2007).

Environmental Protection Law” (1999), and “*Air Pollution Prevention Law*” (2000), etc. In its *Tenth Five-Year Plan* (2000-2005), *Eleventh Five-Year Plan* (2006-2010), and *2010 Long-Term Goals for National Economic and Social Development*, the Government developed clear policy objectives of the above issues guided by sustainable development principles. Jiang Zemin, former Chairman of the Central Committee of CCP, addressed a seminar in March 2001:

“Population control, resources and environmental protection will be three crucial issues in China's march toward becoming a great power in the new century. Failure in handling them may postpone the achievement of China's set goals in terms of social and economic development... The next few years will be a crucial stage for China to stabilize its birth rate at the current low level and improve population quality... Resource-related works should better serve the country's sustainable development. Protection and rational utilization of resources are to be granted equal importance by administration departments... [China should use] new technologies and a complete monitoring system to curb the country's long-standing environmental pollution, while guaranteeing healthy economic development.”⁸³

One year later, former Premier Zhu Rongji emphasized a similar problem in his “*Report on the Work of the Government*”:

“It is a must to adhere to the basic state policy on family planning and implement the Population and Family Planning Law. The government will pay particular attention to improving family planning work in rural areas and among the floating population; keep the birth rate low... Efforts will be made to protect and rationally use land, mineral resources, fresh water, marine resources, forests, pastures and climatic resources in accordance with the law; implement a system of rigorous management of arable and forest land; and focus on saving water and energy... Efforts to protect the ecological environment and to prevent and control pollution will be intensified, [and the government will] continue to put more money in environmental protection.”⁸⁴

⁸³ CPIRC, “President on Population Control, Resources and Environmental Protection,” (11 Mar. 2001) <http://www.cpirc.org.cn/en/enew0312-1.htm> (accessed 06 Feb. 2007)

⁸⁴ CPIRC, “Premier on sustainable development strategy,” (05 Mar. 2002) <http://www.cpirc.org.cn/en/enews20020305.htm>, (accessed 06 Feb. 2007)

The above discussion indicated approval of what Lester Brown said: “the world is now on the demographic and economic path that is environmentally unsustainable” and the interdependence between population and the sustainable development strategy.⁸⁵ In the process of modernization, all countries must face the relevant population problem, either the constraints or the challenges of their population on their economic development. The Western countries have realized the quality of economic development on the basis of effectively controlled population and generally enhanced quality of population. Obviously, China still has a long way to go to compete with the West in its process of modernization. Figure 9 indicates that China's fertility rate has declined greatly since the 1980s, closing to the level of developed countries like the USA, UK, and Japan and reaching an extraordinarily low rate for a developing country.

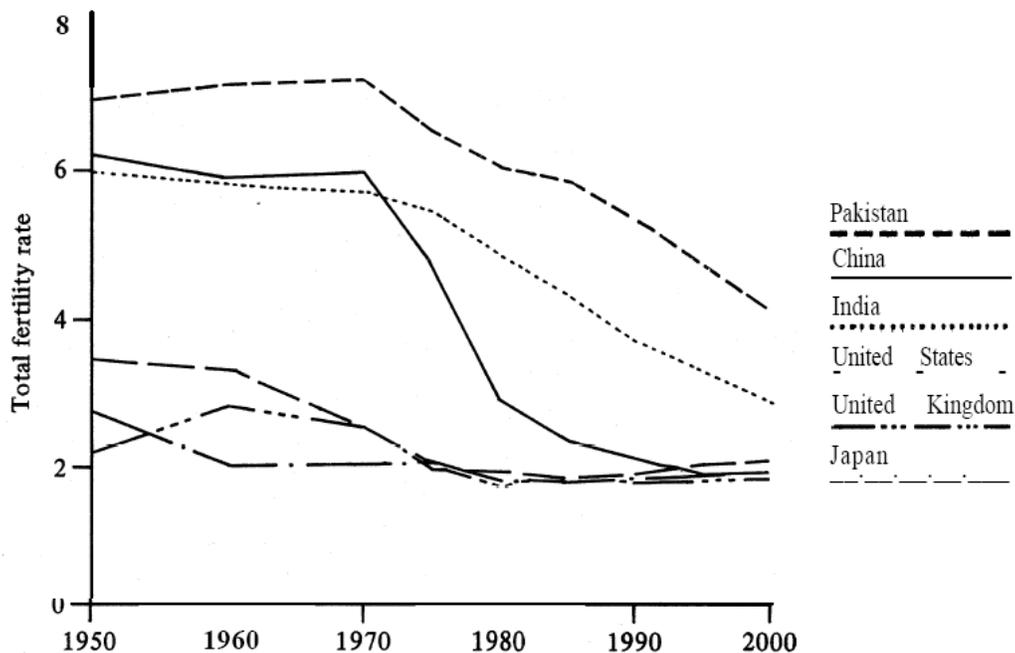


Figure 9: Total Fertility Rate of China and Selected Countries, 1950-2000

*Source: Yang Quanhe, “The Aging of China’s Population: Perspectives and Implications”, *Asia-Pacific Population Journal* 3, no. 1(1988), 62.

⁸⁵ Brown, *Who Will Feed China?* 19.

Future Population Policy of China

Given that China's population problem is in a challenging position in sustainable development, then, how to deal with it so to keep the pace of China's modernization? I agree with the view of Zhang Weiqing, Minister of SFPPC:

“The key task for the two new set-ups is to map mid- and long-term population development plans’ which focus on the control, quality, structural adjustment and distribution of the population, as well as employment and human resources development... The foremost work of the program will be to draft China's first five-year population development plan, which will be an important part of China's 11th Five-Year Plan (2006-2010).”

For the detailed tasks of his commission, Zhang listed six most important points:

1. “Start piloting reforms in 19 prefectures across the country on the establishment of a nationwide social security system to encourage family planning;
2. Set up a mechanism to enforce family planning and provide related services for migrant rural laborers in the cities;
3. Work on a detailed proposal to include funding for population and family planning purposes in the country's public finance systems;
4. Establish a nationwide data bank on women of childbearing age and promote e-government work concerning family planning;
5. Designate a number of rural areas to stage massive activities to help young women and families in difficulties created by the implementation of the family planning policies;
6. Promote co-operation with the United Nations and other international exchanges on reproductive health and other population-related issues.”⁸⁶

A majority of Chinese experts agree that population control and the promotion of quality of population are the top two tasks in China's strategy of sustainable development. In my opinion, however, at least at present, the former should be the dominant and urgent step in China's mid--term and long-term population development plans; whereas the latter is the equally significant one.

⁸⁶ CIPRC, “China to Usher in Major Changes in Population Policies.”

Control of Population Growth

The World Commission on Environment and Development had paid special attention to the population problem 30 years ago and concluded: “Rapidly growing population can increase the pressure on resources and slow any rise in living standards; thus sustainable development can only be pursued if population size and growth are in harmony with the changing productive potential of the ecosystem.”⁸⁷ Given that China’s population size and growth has surpassed the carrying capacity of the ecosystem and has become the top and fundamental constraint of the social and economic development, it is reasonable for the Chinese Government to have population control as its top priority. Only under the prerequisite of lower fertility and slower population growth will China improve the quality of its population gradually and further lay a solid foundation for easing the overall pressures on the resources and environment. This plan also enhances the potential development of the socioeconomic system. At this stage, therefore, population control should be considered as the urgent and critical step among a series of the sustainable development measures. Specifically, the Chinese Government should consider the two aspects below--

First of all, no matter whether mid-term or long-term objectives, China should continue to strengthen family planning programs and establish strict control over its population reproduction in the coming years. On one hand, list population control in the medium-term and long-term plans of national economic development as well as the annual plans of governments at all levels. It should have an equally important position as economic development. On another hand, in accordance with the problems caused by

⁸⁷ World Commission on Environment and Development, 9.

previous population control policy, such as the gender ratio imbalance, unemployment pressures, the aging population, and the immigration of farmers, the new policy makers should consider some proper readjustments such as shifting the focus of the present policies to readjust the population structure.

So far, however, many Chinese scholars have not stopped arguing about the cost and the risk of readjustment. For example, on the proposal “China should relax its strict family planning policy, changing the current policy of ‘one-child-for-per-couple’ to the policy of ‘two-children-for-per-couple’,” Zeng Yi, professor of Beijing University, suggested that “women should be allowed to have their second babies at an age between 32 and 34... [It] may help slow down China's pace into an aging society and postpone the arrival of a population peak of 1.48 billion people to the year 2038.” But a group of experts disagreed with him. For instance, Chinese economist Dr. Fan Gang pointed out: “a relaxed family planning policy in China will lead to an additional population of 100 million or 200 million, a big challenge to the employment... The readjustment will surely bring about an unexpected expansion of population in China, which will terminate the low-birth rate.” Yu Xuejun, director of Policy and Law Department of SFPPC, noted that “the readjustment will be based on the cost of increased population, which may result in many new problems including environment, employment and social securities... It needs a scientific decision [for the government] on the balance between the advantage and cost of a readjustment to the family planning policy.”⁸⁸

⁸⁸ CPIRC, “Family Planning Becomes Controversial Topic,” (30 Dec. 2005) <http://www.cpirc.org.cn/en/enews20051230.htm> (accessed 06 Feb. 2007).

It is essential to strengthen the coordination of government departments.

Population control is a complex task that cannot be handled by SFPPC itself. SFPPC also is in charge of drafting various policies involving rewards, social security, preferential treatment and financial aid to encourage family planning, and of implementing population-related regulations and laws. Obviously, it demands concerted efforts and cooperation from other government departments and all walks of life, even involving the cooperation with many international organizations. Now, the SFPPC is devising a comprehensive population control administration mechanism, which involves over a dozen departments including health care, education, public security, housing, labor, finance, human resources, and so on. The Chinese Government still needs to enhance social, economic, and cultural motivations for birth control in its multifaceted population policy.

In fact, it is rather difficult for the Chinese Government to increase investment in the social security networks, public hygiene, healthcare, universal education, public cultural affairs, and other population-related branches. Despite the fact that the entire economy of China has made marked progress during the past 30 years, China still stays at a relatively low level of economic development. Data showed the per-capita GDP of China was \$1,270 in 2004, far below the world average GDP \$5,500,⁸⁹ thereby, its limited economic power can hardly afford to go above its massive budget. Another fact is that among most officials of governments at all levels the economic development policy is always more important than population policy, even though they claim to insist on strategy of sustainable development on public. As to the relationship between economic

⁸⁹ Xinhua Agency, "Five-year Plan Sets Stage for Solving Problems."

growth and environment, there is “a divergence of opinion” between the urban and rural bureaucrats. Chinese urban bureaucrats support environmental protection as “a new form of co-existence between humans and nature”, whereas “rural Chinese leaders espouse environmental reform but stress the predominance of economic growth.”⁹⁰ American sociologist scholar of modernization, Marion J. Levy, criticized some “political leaderships under modernized conditions, and especially those of latecomers to modernization, are increasingly faced with populations who know economic growth is possible,” and they insist on such a shortsighted view: if some policy cannot achieve economic growth, “no matter how valuable the policy may be on other grounds, it cannot succeed.”⁹¹

Promotion of the Quality of China’s Population

As this paper discussed above, sustainable development involves the development of economy, population, resources, and the environment, among which the all-around development of the human is its ultimate goal. In short, the essence of sustainable development is the development of the human itself, which is based on the needs of people, targets to the all-round development of the human and focuses on the promotion of the quality of population. Actually, what this paper has discussed above is directed towards humans “whose well-being is the ultimate goal of all environment and development policies.”⁹² Then, what is the quality of population? It mainly refers to physical quality, moral quality, and cultural and intellectual quality, which is the core

⁹⁰ Richard Louis Edmonds, “Studies on China’s Environment,” *The China Quarterly*, Special Issue: *China’s Environment*, no. 156 (Dec. 1998), 726.

⁹¹ Levy, “Yes, We Have No Dilemmas,” 11.

⁹² World Commission on Environment and Development, xiv.

quality of population, including people's cultural knowledge, science and technology level, labor skills, and manufacturing experiences acquired in social practice. In short, the quality of population is an essential and key element affecting the sustainable development of society and determines the quality of sustainable development. In detail, its great significance for China's strategy of sustainable development should be stressed by the following three aspects-----

First, the high-quality population plays a decisive role in the control of population growth and in reducing population pressures in the government's multifaceted population policy. Statistics show the higher education level of parents, the lower fertility rate; in contrast, the lower education level of parents, the higher fertility rate. Besides, this cultural and intellectual quality of parents has a strong positive correlation with that of their children. Countless facts in China have evidenced that the low-quality population is a heavy resistance to the sustainable development. For example, in China's underdeveloped areas, undereducated population is responsible for the vicious circle of "the economic poverty -- population explosion --ecological deterioration." Thus, it is necessary to increase government's investment in nine-year compulsory education and higher education. Only by improving cultural and intellectual quality of population can Chinese people reduce fertility. That is a fundamental way to solve China's population problem and to promote the sustainable development of society.

Second, the high-quality population is of great benefit to protecting the environment. Generally speaking, the more cultural and intellectual knowledge people have, the more scientific regulations and economic law they will understand and master.

Correspondingly, they will increase awareness of the ecological environment protection. In contrast, the low scientific and cultural quality of population is often accompanied by the waste and abuse of natural resources and a lower economic efficiency, which means that the economic development has to pay more for natural resources and will produce heavier pollution. In addition, the cultural and intellectual quality of population affects life styles and consumption patterns. The high-quality population who has the awareness of ecological environmental protection will lead to establish a reasonable consumption pattern and a modest size consumption to reduce harmful and frivolous consumption gradually and, thereby, will slow down the consumption pressures of population growth.

Third, the cultural and intellectual quality of population affects the industrial structure. A typical example can be found in China's township enterprises. During the past 30 years, massive township enterprises have developed quickly based on traditional modes of production. Owing to the lower education of laborers and lack of professional and technical skills, the population can only engage in primary, labor-intensive production such as coal mines, mining and smelting, paper making, printing and dyeing, building brick kilns, electroplating industries, and so forth instead of technology-intensive industries. While these township enterprises have become the most simple and efficient employment opportunities for China's undereducated population, they have caused a massive amount of resources waste, energy consumption, and serious environmental pollution. If China has massive high-quality population, it can transmit its production systems from the high-energy-consuming industries, high-resources-consuming industries, and heavy-pollution industries to the low energy-consuming, light-pollution, or even pollution-free industries required by the sustainable development, such

as information technology industry and biochemistry industry. These industries avoid sacrificing natural resources and ecological environment.

CHAPTER 6

CONCLUSION

To summarize, both promoting the quality of population and controlling the size of population are the most critical ways to solve China's population problem in its strategy of sustainable development. Of course, to solve China's population problem is a complex and comprehensive system, which needs to further explore the political, economic, and social structure of China, its cultural and digressive practices, as well as how power operates through them, so that we can understand how this arduous policy is made possible.

When I reexamine the modern history of China, I regret to admit that China has committed a number of mistakes and has experienced an unstable way in the past half century on its way toward modernization. Especially on the population problem, its policies have resulted in irretrievable consequences. Based on the above discussion on China's population problem and the strategy of sustainable development, I believe readers will agree with my conclusion: in facing the dilemma of improving the economy and controlling the growing population, it is wise for China to adopt and implement the strategy of sustainable balanced development between its socioeconomic status and population, and natural resources and ecological environment. Among a series of measures to realize the strategy of sustainable development, China's population problem should be considered as urgent and essential. Otherwise, as many Western and Chinese scholars have warned the Chinese government before, the above problems, which have blocked the normal process of China's modernization before, will seriously threaten the further development of its modernization in the future.

BIBLIOGRAPHY

- Alain Marcoux. "Linkages between Population, Natural Resources and Environment in China, Philippines, Indonesia and Viet Nam." March 1996.
<http://www.fao.org/sd/wpdirect/wpan0004.htm> (accessed 23 Feb 2007).
- BBS News. "China's Population Growth 'Slowing'." Mar. 28, 2001.
<http://news.bbc.co.uk/2/hi/asia-pacific/1246731.stm> (accessed 04 Feb. 2007).
- Bongaarts, John, and Susan Greenhalgh. "An Alternative to the One-Child Policy in China." *Population and Development Review* 11, (1985): 585-617.
- Brown, Lester R. *Who Will Feed China? Wake-up Call for a Small Planet*. New York: W.W. Norton Co., 1995.
- . "China's Water Shortage Could Shake World Food Security." *World Watch* 11, no. 4 (Jul-Aug. 1998): 10-16.
- . Interview by *The Progressive Forum*. 26 Apr. 2006.
<http://energybulletin.net/15705.html> (accessed 01 Mar. 2007)
- Cao, Guiying, "Interim Report IR-00-026--The Future Population of China: Prospects by 2045 by Place of Residence and by Level of Education." July, 2000.
www.iiasa.ac.at/Admin/PUB/Documents/IR-00-026.pdf, (accessed 03/17/2007)
- Chen, Jinhua. "China and Sustainable Development," *News and Report of China*, no. 6, (2001) 6-9.
- Chen, Michelle. "China: Who are the Unemployed?" *Asia Times*, 01 Apr. 2004.
- Chen, Qin, Li Gong and Qi Peifang. *The History of China's Modernization*. Nanning: Guangxi People Press, 1998.
- China Population Information and Research Center (CPIRC). "China Sees a High Gender Ratio of New-born." 14 May 2002.
<http://www.cpirc.org.cn/en/enews20020514.htm> (accessed 03 Feb. 2007).
- . "China to Usher in Major Changes in Population Policies." 20 Aug. 2003.
http://www.cpirc.org.cn/en/enews20030820_1.htm (accessed 02 Feb. 2007).
- . "Family Planning Becomes Controversial Topic." 30 Dec. 2005.
<http://www.cpirc.org.cn/en/enews20051230.htm> (accessed 06 Feb. 2007).
- . "Population, Top Challenge in China's Western Development." (no date)
<http://www.cpirc.org.cn/en/eview1.htm> (accessed 03 Feb. 2007)

- ."Premier on Sustainable Development Strategy." 05 Mar. 2002.
<http://www.cpirc.org.cn/en/enews20020305.htm> (accessed 06 Feb. 2007)
- ."President on Population Control, Resources and Environmental Protection," 11 Mar. 2001. <http://www.cpirc.org.cn/en/enew0312-1.htm> (accessed 06 Feb. 2007)
- Department of Economic and Social Affairs of the United Nations ed. *World Population Prospects: The 2004 Revision*. New York: The United Nations, 2005.
- Edmonds, Richard Louis. "The Environment in the People's Republic of China 50 Years On." *The China Quarterly*, Special Issue: The People's Republic of China after 50 Years, no. 159 (Sep. 1999): 640-649.
- ."Studies on China's Environment." *The China Quarterly*, Special Issue: *China's Environment*, no. 156 (Dec. 1998): 725-732.
- Energy Information Administration. "China: Environmental Issues." Feb, 2000.
www.eia.doe.gov/emeu/cabs/chinaenv.html (accessed 22 Nov. 2006).
- Ge, Jianxiong. *History of China's Population Development*. Fuzhou: Fujian People's Press, 1991.
- Greenhalgh, Susan. "Fresh Winds in Beijing: Chinese Feminists Speak Out on the One-Child Policy and Women's Lives." *Signs* 26, no. 3 (spring, 2001): 847-886.
- Hu, Angong and Wang Shaoguang. *Report of the State Situations of China*. Shen Yang: Liaoning People's Press, 1994.
- Jiang, Tao. "Re-examine on the Population Problems of Modern China." *Guangming Daily*, 28 Feb. 1994.
- Jiang, Xia. "Water Diversion Project Ready for Construction in 2002." *People's Daily*, 15 Nov. 2001.
- Levy, Marion J. *Modernization and the Structure of Societies: A Setting for International Affairs*. Princeton: New Jersey: Princeton University Press, 1966.
- . *Modernization: Latecomers and Survivors*. New York and London: Basic Books Inc., 1972.
- ."Yes, We Have No Dilemmas." No publish, 1982.
- Li, Weixiong, "Family Planning in China," *Ethic in Medicine* 10, no. 1 (Sep. 1998), 26-33.
- Li, Yinhe. *Reproduction and Village Culture in China*. Hong Kong: Oxford Press, 1994.

- Liang, Fangzhong. *Statistic on historical population, lands and taxes of China: Qing Dynasty*. Shanghai: Shanghai People's Press, 1980.
- Liang, Zai and Ma Zhongdong. "China's Floating Population: New Evidence from the 2000 Census." *Population and Development Review* 30, no. 3 (Sep. 2004): 467-488.
- Mao, Zedong. *Mao Zedong Xuan-Ji* (Selected Works of Mao Zedong). Vol. 3 and 5. Beijing: The People's Press, 1977.
- Merli, M. Giovanna and Herbert L. Smith. "Has the Chinese Family Planning Policy Been Successful in Changing Fertility Preferences?" *Demography* 39, no. 3 (Aug. 2002): 557-572.
- Milwertz, Cecilia. *Accepting Population Control: Urban Chinese Women and the One-Child Family Policy*. Richmond Surrey: Curzon Press, 1997.
- National Bureau of Statistics of China ed. "China Statistical Yearbook 2000." 14 may 2002. <http://www.cpirc.org.cn/en/year.htm> (accessed 16 Mar. 2007)
- . "National Economic and Social Development Report for 2003." Chapter 4-1. <http://www.stats.gov.cn/english/statisticaldata/yearlydata/yarbook2003> (accessed 03/16/2007)
- News Office of the State Council of China. "The Food Issues of China." *People's Daily*, 25 Oct. 1996.
- Pan, Yue, "Strategic Environmental Assessment and Sustainable Development." *Environmental Education*, no. 8 (2006): 39- 45.
- Peng Xizhe. "Is It Time to Change China's Population Policy?" *China: An International Journal* 2, no. 1 (2004): 135-149.
- Protect Farm Land Program Of China ed. "Report on the Current Situation of Farm Land Protection and Suggestions on Policies." *Chinese Land Science*, no.1 (1997): 2-9.
- Qu, Geping. *Environment and Development of China*. Beijing: China Environment Science Publishing House, 1992.
- Riley, Nancy E. "China's Population: New Trends and Challenges." *Population Bulletin* 59, no. 2 (June 2004), 3-36.
- Rozman, Gilbert ed. *The Modernization of China*. New York: The Free Press, 1981.
- Salzman, Marian. "Cover Story: The View from the Top." *Brand Strategy* (Mar. 2006): 25-28.

- Scharping, Thomas. *Birth Control in China, 1949-2000: Population Policy and Demographic Development*. London and New York: Rutledge, 2003.
- Shen, Jianfa. "China's Future Population and Development Challenges." *The Geographical Journal* 164, no. 1 (Mar. 1998): 32-40.
- Smil, Vaclav. "China's Energy and Resource Uses: Continuity and Change." *The China Quarterly*, Special Issue: China's Environment, no. 156 (Dec. 1998): 935-951.
- Teitelbaum, Michael S. "The Population Threat." *Foreign Affairs* 71, no. 5 (winter 1992): 63-78.
- U.S.- China Economic and Security Review Commission. *2004 Annual Report*, Chapter 6. April 2004. http://www.uscc.gov/annual_report/2004/04reportpage12.pdf (accessed 29 Mar. 2007).
- Walker, Tony. "China Determined to Head off Farmland Crisis." *Financial Times*, 02 Mar. 1995.
- Wang, Gabe T. *China's Population: Problems, Thoughts and Policies*. Brookfield, VT: Ashgate Publishing Company, 1999.
- Wikipedia. "Sustainable Development," 21 March 2007. http://en.wikipedia.org/wiki/Sustainable_development (accessed 24 Mar. 2007).
- World Commission on Environment and Development. *Our Common Future*. Oxford and New York: Oxford University Press, 1987.
- Yang Quanhe. "The Aging of China's Population: Perspectives and Implications." *Asia-Pacific Population Journal* 3, no. 1(1988): 55-74.
- Yu, Xuejun ed. *Review on the Development of China's Population: Reexamining and Prospect*. Beijing: The People's Press, 2000.
- Xinhua Agency. "Ecological Environment in China Faces Severe Challenges," *China Daily*, 25 Oct. 2003.
- . "Five-year Plan Sets Stage for Solving Problems." *China Daily*, 06 Jan. 2006.
- . "Population Timeline." *China Daily*, 20 Aug. 2003.
- . "Priority Programme for China's Agenda 21." Oct. 1998. <http://www.acca21.org.cn/pp5-1.html> (accessed 01 Mar. 2007).

Zhang, Xiaobo, Tim D. Mount and Richard N. Boisvert. "Industrialization, Urbanization and Land Use in China." *Journal of Chinese Economic and Business Studies* 2, no. 3 (Sep. 2004): 207-224.

Zhang, Zhihong. *Population Tide and Countermeasure*. Beijing: Xuelin Press, 1984.

Zhong, Zhaozhan. "China's Population and the Sustainable Development of Society," *China's Population, Resources and Environment*, no. 3 (1996):47-51.

Zhou, Jinwei. "Resolve the Social Problem of the Aging Population." *Wenhui News*, 01 Mar. 2007.

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 Tibetology*, no.3 (1994), 45-48.
 Tang, Hongbo. "Sino-Tibet War and British Invasion."
 Journal of Tibet Ethnology College, no.1 (1995),
 59-65.

Tang, Hongbo. "Study on the Ninth Panchen Lama's Escaping from Tibet". *Tibet Studies Series*, no.8 (1996), 67-71.

Tang, Hongbo. "Review on the Second Tibet War." In *View of Historical Studies* (Jinan: Shandong Education Press, 1997), 109-114.

Tang, Hongbo. "New Culture Movement and China's Modernization." Annual Conference of Shaanxi Historical Associate (Xi'an, May 1999).

Tang, Hongbo. "Western Development and China's Modernization." *Journal of Northwest University*, no.4 (2001), 68-71.

Tang, Hongbo, Zhou Weizhou, Han Xiang eds. *Tang Dynasty Dictionary: Ethnology (Chapter 6)* (Jinan: Shandong Education Press, 2001), 448-501.

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