THE STATE OF CHINA'S CITIES 2014/2015

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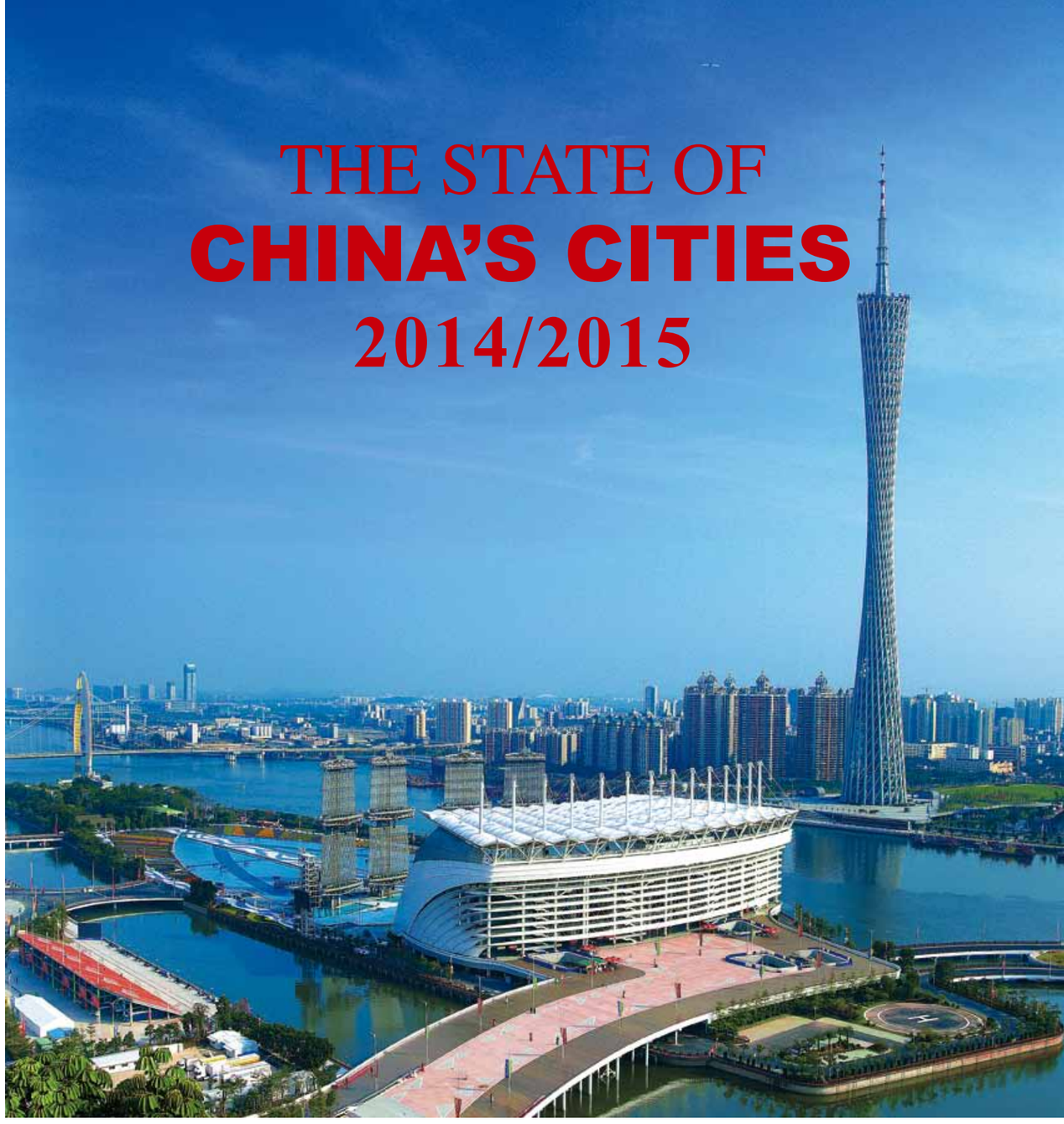

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FOR A BETTER URBAN FUTURE

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Wang Guangtao

Secretary-General, International Eurasian Academy of Sciences (IEAS)
Executive Vice President, China Science Center of International Eurasian Academy of Sciences (CSC-IEAS)
Member of the Standing Committee and Chairman of the Environment Protection and Resources Conservation Committee of the Eleventh National People's Congress, China
Former Minister of the Ministry of Construction, China

China's urban population exceeded that of rural areas in 2011, the first time in its several-thousand-year-long history and a symbol that China's urbanization has entered a totally new stage of development. On the Central Urbanization Work Conference held not long ago, the Chinese government has made it clear that "the interest of the people and human-centric urbanization should be promoted. The general quality of urban population and life quality of urban residents should be improved. The primary task should be the registration of the population capable of owning stable employment and living in cities as permanent urban residents in an orderly manner". The decision-makers, administrators, builders, researchers and citizens in China are joining hands in exploring a new path of people-oriented urbanization with Chinese characteristics. This book is a genuine record of this exploration presented to friends from all around the world.

CSC-IEAS has collaborated with China Association of Mayors and UN-Habitat in producing two issues of The State of China's Cities (hereinafter referred to as the Reports) since 2010, released the reports on the World Urban Forum and circulated them extensively within the UN system. The reports have generated great influences both at home and abroad and have drawn close attention from the academicians of IEAS and the Secretariat of IEAS headquarters. Starting from the report of this year, in an effort to further expand their international impact and improve the quality of the new report, IEAS assumes the sponsorship and the CSC-IEAS acts as the project undertaking organization. Following China Association of Mayors and UN-Habitat, Urban Planning Society of China has also been newly invited as a co-organizer. The theme of this issue of State of China's Cities, the New Path of People-oriented Urbanization, echoes with the theme of this years' World Urban Forum 7: Urban Equity in Development – Cities for Life, and demonstrates the common concern of the international community on humanistic concerns and quality of life. It is hoped that the release of The State of China's Cities 2014/2015 will help the international community to understand the urbanization process in China more fully and deeply.

February 2014

Jiang Weixin

Minister of Housing and Urban-rural Development of The People's Republic of China
Executive President of China Association of Mayors

Urbanization is a major content of the modernization drive. China has been making continuous progress in urbanization since the reform and opening up. The current urbanization rate of China has exceeded the record high of 50%, and China is stepping into the critical period of transformation and development. The first Central Urbanization Work Conference of the CPC Central Committee held in December 2013 defined the guiding principles, major goals, basic principles and key tasks in advancing urbanization in China. The Conference emphasized that the promotion of urbanization must take into consideration the fundamental situations of China, abide by the laws, make the best use of the opportunities, and solve the profound problems of imbalanced, uncoordinated and unsustainable development. Efforts shall be made to facilitate the transition of urbanization from focusing on scale and speed to quality and performance, and pursue the path of a new-type urbanization with Chinese characteristics, which puts people first, promotes the synchronous development of industrialization, informatization, urbanization and agricultural modernization, optimizes urbanization patterns and facilitates the ecological progress and the cultural conservation.

Firstly, the interest of the people should be promoted and the quality of urbanization development should be improved. Efforts should be made to strengthen the development of the urban infrastructure and public services facilities and improve the overall carrying capacity of cities and towns. Conditions shall be created to provide multiple paths of urbanization for the migrant population from rural areas, register the population capable of owning stable employment and living in cities as permanent urban residents in an orderly manner and achieve the goal of people-oriented urbanization.

Secondly, efforts should be made to ensure the synchronous development of industrialization, informatization, urbanization and agricultural modernization and maintain the matching of the speed of urbanization with the level of economic and social development. With the overall goal of building a moderately prosperous society in all respects and realizing the modernization, the industry support system shall be enhanced to ensure the synchronization between the growth of urban population and the development of industrial agglomeration and prevent the formation of slums due to high unemployment rate and ghost towns from unchecked construction.

Thirdly, efforts should be made to optimize the urbanization layout and pattern and promote the integrated development of urban and rural areas. Different rules and reasonable differences in the development of urban and rural areas shall be respected while promoting equitable

access to basic public services and building an elastic and interactive urban-rural relationship. The vitality for county development shall be stimulated and the capacities of the county administration to provide public services shall be enhanced. The practice of planning as the guidance shall be strengthened and urban development boundaries should be demarcated in a scientific way. Overall plans for various uses of available urban and rural lands should be made to keep a proper structure of production, living and ecological spaces in reasonable proportions.

Fourthly, efforts should be made to promote ecological progress and minimize the interference with and damage to the nature. The red line for ecological protection shall be delimited on the basis of constrains of the resources and environment to promote the economical and intensive utilization of various resources. The control of spatial development should be intensified and the mode of low-impact development shall be adopted. Further efforts shall be made to build low-carbon eco-cities and promote the intensive, compact and green development of the cities and towns.

Fifthly, efforts should be made to protect and promote the excellent traditional culture. The historical and cultural heritage of the cities and original style of the villages with local culture and features should be preserved.

As a report with joint efforts by China Science Center of International Eurasian Academy of Sciences, China Association of Mayors, Urban Planning Society of China and UN-Habitat, The State of China's Cities 2014/2015 is about to be released to the public. It integrates both the guidelines of the Third Plenum of the 18th CPC Central Committee and the Central Urbanization Work Conference and includes new concepts, ideas, measures and innovative cases gathered from various places in China. This report will surely become a treasured reference for all who have interest in and conduct research on China's urban development.

March 2014

Joan Clos

United Nations Under-Secretary-General
Executive Director of United Nations Human Settlements Programme

History has shown that urban development presents real opportunities for unleashing enormous economic potential, reducing inequity, and creating sustainable livelihoods for all.

Urban equality in the development agenda is based on key elements such as participation, transparency, accountability, nondiscrimination, empowerment, rule of law, and social inclusion in all matters of urban life.

Bringing urban equality into the center of development means that everyone has the right to cities and the equal access to opportunities for employment, education, and other social and public services provided by cities. It also means that more compact, better connected and integrated urban centers should be planned, built and managed to renew existing neighborhoods and improve social cohesion. It further implies that human beings should live in harmony with nature and the integrity of the earth's ecosystems should be restored, so as to ensure a quality of living that strikes the right balance between economic, social and environmental needs of present and future generations.

In an urban era of this century, Cities for Life is a vision to facilitate a better understanding of the fundamental objective of urban development. It is also a concept to confront the most important challenges and respond to them in a collective manner. The "life" itself embraces the prosperity of all cities and people. Cities for Life bring a new dimension to urban equity by focusing mainly on those more in need – the poor and marginalized, who are excluded from all opportunities needed to transform their lives in the search of individual and collective wellbeing.

Cities for Life are, from the spatial point of view, urban fabrics that build, enrich and make life and living enjoyable for every inhabitant in the city. From a more practical stand, Cities for Life connect every individual with their surroundings, creating multiple local and external interactions, and facilitating possible responses to their needs, hopes and aspirations.

UN-Habitat is working closely with its partners to tap the opportunities of urban development, address the challenges associated with the development, and build economically, socially and environmentally sustainable cities so that everyone can live in a safe city with the promise of a decent life of dignity and happiness.

The urban development is China has been rapidly increasing, making more than 450 million

people urbanized in the past three decades. In a recent initiative, the central government of China has strategized urbanization as one of the four pillars for China's new modernization drive: industrialization, information technology, urbanization and agricultural modernization. It has adopted a series of policies to address urban inequality by extending more social and public services to rural migrants; optimize urban spatial distribution by building new growth poles in central, western and northeastern China; sustain urbanization by improving the efficient use of land and other natural resources; upgrade public services and infrastructure by empowering local governments with further financial and taxing decentralization; and improve the living standards by protecting and conserving environment and ecosystems.

These strategies and policies shall facilitate China's urbanization in a more healthy way, reduce the inequality within and between cities, and improve the life of 1.3 billion people living in urban and rural areas in China. I am sure that a more healthy and sustainable urbanization process in China and in other countries will help build better cities we want, and create better life in our cities we want.

February 2014

CONTENT *

* The content of this Report only covers the Mainland China, does not cover Hong Kong SAR, Macau SAR and Taiwan.

Water Town in South of Yangtze River (Photo by Yan Changjiang)

Executive Summary

Since China's reform and opening-up to the outside world in late 1970s, China has been experiencing a period of sustained and rapid urbanization with the urbanization ratio increasing by over one percentage point each year and over ten million urban population moving into urban areas each year. The achievements from China's social and economic development have attracted world's attention. By the end of 2013, China had 658 cities, about 1600 county seats, 20,113 towns and 12,816 townships. The urban permanent residents numbered 731.11 million, and the rural residents numbered 629.61 million. By 2012, the urbanization ratio of China had largely reached the world average level.

1 People-oriented Strategy of the New Path of Urbanization

The Central Work Conference on Urbanization in 2013 pointed out that urbanization is the road China must take in its modernization drive, and promoting urbanization is an important way to address the matter of agriculture, countryside and peasantry. It is also a strong support for promoting the coordinated regional development, expanding domestic demand and promoting industrial upgrading, having immediate and far-reaching historical significance in building a moderately prosperous society in all respects and accelerating socialist modernization.

Urbanization is a natural historical process and also a process of social and economic development. The conference required that the interest of the people and human-centric urbanization should be promoted. The general quality of population and people's living standard should be improved. The primary task should be done to register the permanent population capable of owning stable employment and living in cities as urban permanent residents in an orderly manner. Efforts should be made to optimize the urban layout, establish the scientific and rational macro-layout of urbanization based on its resources and environmental carrying capacity and take city clusters as the major form to promote the reasonable division of labor, complementary function and coordinated development of large, medium-sized and small cities and towns. Efforts shall be made on ecological improvement to promote green development, circular development and low-carbon development, minimize the interference in and jeopardy to the nature and maintain the economical and intensive utilization of resources of such as land, water, and energy. Cultures should be conserved to develop beautiful cities and towns with historical stories, regional features and national specialties.

In the process of promoting urbanization, the decisive role of the market in the allocation of resources should be respected, and the functions of the government in terms of creating the institutional environment, formulating development plans, building infrastructure, providing public services and strengthening social administration should also be brought into full play. The focuses of the new path of urbanization are: China will adopt differentiated policies on household registration as urban permanent residents according to the size and conditions of the cities and promote rural migrants gaining equal access to services in cities as urban residents in an orderly way; strengthen the occupational trainings for *nongmingong* and ensure the compulsory education for the migrant children; pay attention to the urbanization of the central and western regions, enhance the construction of major infrastructure projects and guide the industrial transfers in the central and western regions; carry out in-depth the renovation of urban shantytowns and endeavor to improve the ecological and environmental quality of the cities; adopt appropriate planning and implementation and strengthen the formulation of relevant laws, rules and regulations and systems; and explore different models of urbanization development based on the local conditions.

2 Increasingly Acute Contradiction between the Speed and Quality of Urbanization Development

First of all, the urbanization speed of population has lagged behind the urbanization speed of land, which resulted in many large scale ghost towns with very high vacancy rates. Secondly, many cities in the eastern and central regions of China have suffered from frequent smog as well as other serious urban environmental problems like traffic congestion, noise pollution, unprocessed wastes piled up around the cities, and waterlogging at every rain, be heavy or light. Thirdly, the energy consumption per unit output value and the building energy consumption are much higher than the European and American countries with basically the same climate conditions, and China is facing the increasing pressure from energy conservation and emission reduction. Fourthly, resource-based and pollution-induced water shortage is becoming more and more serious; land supply-demand problem has intensified; the supply of urban energy sources always fails to meet the demand, which shows that the current comprehensive urban carrying capacity is approaching its upper limit. With the massive transformation of socio-economic structure and remarkable change of utilization method of resources and environment, the past modes of economic growth based on heavy investment, high consumption and high emission as well as the fund-raising for urban infrastructure through land dividends should be changed immediately.

3 Biggest Challenge from *Nongmingong* in the Urbanization Process of China

Nongmingong is a special group of people rapidly emerging in the process of reform and opening up; and it is a new labor force and the principal force of the industrial workers. They have increased the income in the countryside, created wealth for the cities, given impetus to the reform and development and made great contribution to the modernization drive of the country. During the past over 30 years, they have succeeded in changing their career and became non-farming workers but failed to change their identity as peasants, that is, they could not get registered as permanent urban residents. Most of them earn a low wage, live in barracks and makeshifts and cannot have access to the social security benefits as the urban residents. The challenges facing these *nongmingong* include: the employment quality needs to be enhanced to prevent frequent cases of infringements of their labor rights and interests; the scope of core public services accessible for *nongmingong* shall be further expanded. In particular, the new-generation *nongmingong*, accounting for 70% of the total *nongmingong*, are more interested in being integrated with the city, sharing the achievements of the reform and opening up and realizing the all-round development of themselves.

In 2013, the total number of *nongmingong* in China reached 269 million, including 166 million migrant *nongmingong*. The average monthly income of *nongmingong* has reached RMB 2,609 Yuan, which accounts for 50% of the per capita income of the peasants. The Chinese government has attached high importance to the issues of *nongmingong* and released a series policies and measures to promote the sustainable expansion of the job opportunities for them. The government endeavors to ensure that *nongmingong* can "have jobs when they settle down in the cities, have trainings before taking the jobs, have contracts signed before working, have access to social security insurance, have safeguard measures in obtaining labor compensations, have channels to safeguard their own rights and interests, have improvements in their residential places, have education available for their children, have cultural contents in their life and have aims in their future development", and register the qualified *nongmingong* as new urban permanent residents step by step. By 2020, the registration of about 100 million migrant rural population with permanent residence in cities as urban residents, the transformation of urban shantytowns and urban villages benefiting about 100 million people and the urbanization of about 100 million people in the central and western regions will be completed.

4 Policies on Core Public Services and Their Implementation

Core public services refer to public services designed to ensure the basic needs of all citizens for survival and development, which is dominated and provided by the government based on certain social consensus, adapted to the economic and social development level and stage. It is the citizen's right to enjoy core public services and it is the responsibility of the government to provide them. Equalization of core public services means that all citizens can get fair and equal access to core public services. The principle is an equal opportunity, rather than a simple averaging or non-differentiation. To ensure that all people enjoy their rights to education, employment, medical care, old-age care, and housing, the scope of core public services system has been defined by the state to include public education, employment services, social security, basic social services, health care, family planning, housing, public culture and other areas of basic public services.

For a long time, the problem of insufficient supply of public services and uneven development is prominent in China and the establishment and improvement of core public service system still faces many difficulties and challenges. The quantity and quality of core public services cannot meet the growing demands of the people; core public services for rural, poor areas and vulnerable groups have not been adequately ensured; institutional mechanism needs to be further improved, and the

following problems are prominent: inconsistent system design between urban and rural regions, management fragmentation, irrational allocation of resources, less type of service providers and simple method of service providing, mismatched financial resources and powers of grassroots governments, and the absence of supervision and accountability mechanism.

5 Improving Basic Public Education Service System

Objectives of the country to establish basic public education system: to ensure that all school-age children and teenagers enjoy equal rights to education and to improve the basic cultural quality of the citizen. Focus: consolidating and improving the nine-year compulsory education, making senior middle school education and one-year pre-school education universal, improving financial support policies for students from poor families, establishing a sound system of basic public education services.

Current difficulties and problems: The gap of national funding to realize standardization of compulsory schools is large and funds security for compulsory education needs to be improved; Generally there is a strong contrast on balanced education between the expectations of the masses and the reality, compulsory education levels of urban and rural areas, different regions, different schools and different groups are still uneven, and in some large and medium sized cities, the enrollment is not standardized and there are school choosing issues; Compulsory education for children living with their parents who are migrant workers has not yet fully integrated into the financial security and education development plan in the places where they live, and there are still many difficulties for these children to get equal access to compulsory education; The phenomena of *valuing knowledge rather than the ability, valuing intellectual education rather than physical education, valuing class time rather than extracurricular time* still exist in many schools, which seriously affect the healthy growth of young people and create many challenges for the implementation of quality education.

6 Strengthening Medical and Health System Reform

The main idea of the new round of medical reform is to provide basic health care as a universal public goods to people all around the country, making sure that every resident, regardless of the geography, ethnicity, age, gender, occupation, income level, are equitable to get access to basic health services through the system. The general requirements of the reform is to adhere to the direction of serving the people's health, focus on prevention and rural areas, develop both Chinese and Western medicines, work hard to strengthen the medical insurance system of overall coverage, improve the basic drug system and new mechanism of grassroots health care institutions operation, actively promote the reform of public hospitals, to plan and work for supporting reforms on equalization of basic public health services, configuration of medical and health resources, building hospitals with social capital, medical and health information technology, drug production and distribution and medical and health supervision system. Further deepening the medical and health system reform is a major practice to accelerate the transformation of economic development method, an important measure to build a modern state, protect and improve people's livelihood and promote social justice, and a comprehensive reform in both economic and social fields.

7 Developing Social Aged Care Service

China has entered the stage of rapid increase of aging population. In 2013, the population of people aged 60 years old and above was 202.43 million, accounting for 14.9% of the total population of China. It is predicted that the population of people aged 60 years old and above in China shall reach 255 million by 2020, exceed 300 million by 2025, exceed 400 million by 2033 and reach 483 million by 2050. However, the aged care service industry in China is just at its initial stage, facing challenges to adapt to new circumstances and demands. There's no overall planning for the industry development. The community aged care service facilities and beds in aged care institutions are in great shortage. Simple facilities and functions have made it difficult to provide multiple services in aged care, rehabilitation and spiritual solace. Moreover, the industry has to address such problems as unreasonable industrial distribution, unbalanced regional development, low qualified professionals, and poor regulations and market supervisions.

As required by *Opinions on Accelerating the Development of the Aged Care Service Industry* released by the State Council, a comprehensive properly-scaled aged care service system should be established by 2020 to cover both urban and rural areas and integrate home care, community care with institutional care. The aged care products and services shall be greatly enriched, and the market mechanism improved. The aged care service industry shall develop in a sustainable and healthy way. The state's main tasks to develop aged care service industry include: make overall plans for aged care services, use the public service facilities in the communities for aged care services; support by local governments to build a home-based aged care service network with enterprises and institutes as the main body and bonded by communities to meet various needs of the elderly; provide convenient services for social groups to establish aged care institutions in line with the urban and rural planning layout; bring into full play

the fundamental role of the public aged care institutions to provide free or low-charge assistance and care services to low-income old persons, and incapable or half-capable old persons in financial difficulty; actively develop aged care service industry, enhance professional services for the disabled elderly; promote the access of medical health resources into the elder care institutes, communities and homes.

8 Action Plan to Improve Air Quality in Urban Regions

Faced with the enormous pressure on the environment in urban development, Chinese Government has proposed some specific measures to prevent and control air pollution: increase the effort of comprehensive control and reduce the emission of multi-pollutants, optimize the industrial structure, promote industrial restructuring, accelerate the technology transformation, improve the innovation capability, adjust the energy structure and increase the clean energy supply, restrict environmental thresholds for investment projects and optimize industrial layout, bring into full play the role of market mechanism and improve environmental economic policies, improve legal systems and carry on supervision and management based on law, establish the regional coordination mechanism and the integrated regional environmental management, establish monitoring and warning systems to cope with heavy pollution weather, and clarify the responsibilities of the government, enterprise and society, and mobilize the public participation in environmental protection. The following goals were also proposed in the *Air Pollution Prevention and Control Action Plan*: after five years' efforts, the overall national air quality shall be improved and heavily polluted days shall be reduced dramatically; and regional air quality in Beijing-Tianjin-Hebei, Yangtze River Delta and Pearl River Delta will be turned better. Through another five years' or even longer efforts, heavily polluted days shall gradually be eliminated and the national air quality shall be improved significantly.

9 Strengthening Urban Infrastructure Construction

In order to solve the problems of insufficiency, low standard, extensive and operation and management of urban infrastructure in China, *Opinions of Strengthening Urban Infrastructure Construction of the State Council* requires: adhering to the principle of construction after planning, strengthening the scientific nature, authority and seriousness of the planning; adhering to the principle of "underground first, on-the-ground second", giving priority to the infrastructure construction closely related to people's livelihood, such as water supply, gas supply, heating, electric power, communication, public transport, logistics and distribution, disaster prevention, strengthening old infrastructure renovation; improving the construction quality, operation standard and management of infrastructure such as pipe network, drainage, fire protection, traffic, sewage and garbage treatment, eliminating hidden safety risks, strengthening the capability of cities in disaster prevention and mitigation, and safeguarding the safe city operation; on the basis of government investment, giving full play to the role of the market mechanism, to further improve price formation, adjustment and compensation mechanism for urban public utilities services; increasing the support of financial institutions, encouraging social capital to participate in the urban infrastructure construction; fully implementing the intensive, intelligent, green and low-carbon concepts of ecological civilization, improving industrialization of urban infrastructure construction, optimizing the development environment for energy-saving construction and green building construction, establishing related standards and codes, promoting energy-saving, emission reduction and pollution prevention, and improving the urban ecological and environmental quality.

10 Focusing on People and Improving the Quality of Urban and Rural Life

In 2013, the disposable income per capita of urban residents was RMB 26,955 Yuan and the net income per capita of rural residents was RMB 8,896 Yuan, with the Gini Coefficient between rural and urban residents reaching 0.473. The urban and rural residents have turned to focus on the improvement of living quality and the urban and rural spaces as a whole are becoming more beautiful, liveable and equitable. By the end of 2013, the construction of over 36 million units of urban social housing and shantytown renovation housing had been launched across the nation according to the plans, and 26 million of them had been basically completed. The construction scale of the social housing had reached the record high.

Faced with the challenges and requirements of urban transportation, local governments have tried to promote the low-carbon and green development of transport system, upgrade the service capacity and level to create the liveable and work-friendly transport environment, establish the priority to develop the diversified public transport system, guide the rational development of private cars, and build the open, smooth, low-carbon, smart, equitable, safe, modern and service-based integrated transport system.

The development of the civic society and democratic practice of community autonomy have gradually turned the communities into the organizational bases for public participation, collaborative development and win-win results. Scientific and technological progress has increased residents' diversified needs for living spaces. The exploration into and pilot projects of the

elderly-friendly communities and smart information communities have become new highlights for improving the residential quality. Urban planning and design have provided beautiful and comfortable public spaces for the citizens. The creation of urban characteristics has become an important target of urban renewal. Urban development has attached great importance to the protection and rejuvenation of historical blocks and emphasized the integration of heritage protection, improvement of living environment of urban residents and cultural rejuvenation planning with the overall development of cities. The countryside parks and wetland parks have become major people-oriented projects to carry on the ideas of ecological improvement.

11 Two Centenary Goals

The report of the 18th CPC National Congress noted that " a moderately prosperous society in all respects should be built when the Communist Party of China celebrates its centenary, and a modern socialist country that is prosperous, strong, democratic, culturally advanced and harmonious should be built when the People's Republic of China marks its centennial." These two centenary goals are the Chinese Dream of building the beautiful China and achieving the great renewal and sustainable development of the Chinese nation. They are also the goals of all the Chinese people in pursuit of happy life.

Shanghai After a Snow (Photo by Xi Wenlei)

Chapter 1 Urbanization in China

1.1 Trends in Urbanization Policies

1.1.1 Strategy of Synchronous Development of Industrialization, Informatization, Urbanization and Agricultural Modernization

The Central Committee of the Communist Party of China has always attached high priority to urbanization, and explicitly announced that China would actively yet prudently facilitate urbanization, take a new path of urbanization development, and regard urbanization as an important strategy for promoting modernization. On November 8, 2012, Mr. Hu Jintao pointed out in his reports to the Eighteenth National Congress of the Communist Party of China, "We should keep to the Chinese-style path of advancing industrialization, informatization, urbanization and agricultural modernization. We should promote in-depth integration of informatization and industrialization, positive interaction between industrialization and urbanization, and coordination between urbanization and agricultural modernization, thus promoting harmonized development of industrialization, informatization, urbanization and agricultural modernization." "We should accelerate reform of the household registration system, conduct registration of rural migrant workers as permanent urban residents in an orderly way, and endeavor to ensure that all permanent urban residents have access to basic urban public services. We should speed up the improvement of institutions and mechanisms for promoting integrated urban and rural development, with a focus on integrating urban and rural planning, infrastructure and public services. We should ensure equal exchange of factors of production between urban and rural areas and balance the allocation of public resources between them. What we aim to achieve is a new type of relations between industry and agriculture and between urban and rural areas, in which industry promotes agriculture, urban areas support rural development, agriculture and industry benefit each other, and there is integrated urban and rural development."

1.1.2 National Strategy for the New Path of Urbanization

On December 15, 2012, the Central Economic Work Conference of CPC Central Committee explicitly announced that "advancing urbanization proactively and steadily, and improving the urbanization quality" should be one of the major tasks of the economic work of 2013. The conference noted that urbanization is a historic mission for the modernization of China and embraces the greatest potential for fueling domestic demand. China should focus on the improvement of urbanization quality, divert it into our advantages, maximize what is good and minimize what is bad, and steer the urbanization to a path of healthy development. China should make scientific and reasonable urban planning. The government should make scientific urban planning for large cities, medium-and small-sized cities, and city clusters, make them complementary with regional economic development and industrial layout and accommodated with the resources and environment carrying capacity. The government should identify it a major task to turn eligible workers

Night view of the city (Photo by Xi Zi)

who have left agricultural work to become urban residents and do well in it. China should also incorporate the concepts and principles of ecological civilization into the whole process of urbanization, and take a new path of intensive, smart, green, and low-carbon urbanization.

1.1.3 Overall Planning for Urbanization

During December 12th-13th, 2013, the Central Urbanization Work Conference of CPC Central Committee was held in Beijing and President Xi Jinping made keynote speech in the conference. The conference pointed out that urbanization is the road China must take in its modernization drive, and promoting urbanization is an important way to address agricultural, rural and farmer problems. It is also a strong support for promoting the coordinated regional development, expanding domestic demand and promoting industrial upgrading, having immediate and far-reaching historical significance in building a moderately prosperous society in all respects and accelerating socialist modernization.

The conference held that it's unprecedented in the development of human history that urbanization would be realized in such a giant developing country like China who has a population of 1.30 billion. The urbanization, with correct targets, in right direction and on the new path, will help unleash the great potential of domestic demand and improve the labor productivity. It can break down the dual urban-rural structure, promote social equity and common prosperity, and benefit the world economy and biological environment.

The conference required that as a natural historical process, urbanization is inevitable in the socio-economic development of China. The promotion of urbanization must be based on the fundamental situations of China's being in the primary stage of socialism, abide by the laws, make the best use of the situation, and turn urbanization into a development process as natural as possible. China needs to take proactive yet steady and down-to-earth moves, maintains a clear sense of directions, and takes steady steps and concrete measures in pushing forward urbanization.

The conference required that focus should be made on the central task of improving the quality of urbanization development and the urbanization level of the population with residence registration. The efficiency should be improved in the use of urban land, increase of the population density in built-up areas, and reduction of energy consumption and carbon dioxide emission. High priority should be attached to biological security, expanding the proportion of green and biological spaces consisting of the woods, lakes and wetlands, and enhancing the conservation capacity and environmental capacity of water sources. Continuous efforts should be made to improve the environmental quality, reduce the total emission volume of major pollutants, keep the pace of development under control, increase the capability to resist and mitigate natural disasters and enhance the protection of historical cultural relics.

The conference required that the interest of the people and human-centric urbanization should be promoted. The general quality of urban population and life quality of urban residents should be improved, and the primary task should be the registration of the permanent population capable of owning stable employment and living in cities as permanent urban residents in an orderly manner. Efforts should be made to optimize the urban layout, establish the scientific and rational macro-layout of urbanization based on its resources and environmental carrying capacity and take city clusters as the major form to promote the reasonable division of labor, complementary functions and coordinated development of large, medium-sized and small cities and towns. Efforts shall be made on ecological improvements to promote green development, circular development and low-carbon development, minimize the interference in and jeopardy to the nature and maintain the economical and intensive utilization of such resources of land, water, and energy, etc. Cultures should be conserved to develop beautiful cities and towns with historical stories, regional features and national specialties.

The conference emphasized that in the process of promoting urbanization, the decisive role of the market in the allocation of resources should be respected, but the functions of the government in terms of creating the institutional environment, formulating development plans, building infrastructure, providing public services and strengthening social administration should be brought into full play. While the Central Government makes major strategic policies and defines the overall planning and strategic layout of urbanization, the local governments shall proceed from the actual situations to implement the overall planning, create the corresponding plans and conduct the construction and management in a creative way. The conference also proposed the 6 major tasks for promoting urbanization.

Yichang, Hubei Province (Photo by Liu Junfeng)

Box 1-1: 6 Major Tasks Proposed at Central Urbanization Work Conference in Beijing

Firstly, urbanite status shall be given to migrant population from rural areas. The primary tasks are solving the household registration as urbanite residents of migrant population who have moved from rural areas to work in cities and improving the quality and capabilities of migrant workers in blending with the cities. The urban industrial system of respective specialties shall be developed to strengthen the coordination between cities in their specialization and division of labor, and enhance the capability of medium-sized and small cities to undertake industrial transfers. All the restrictions of designated towns and small cities on household registration shall be lifted; the restrictions on household registration in medium-sized cities shall be relaxed in an orderly manner rational conditions for household registration in large cities shall be identified and the population scale of extra large cities shall be brought under strict control. The government should promote the registration of eligible rural workers as permanent urban residents on a voluntary basis and in a classified and orderly manner.

Secondly, the utilization efficiency of urban development land shall be improved. The thought of holding fast to the bottom line, restructuring and deepening the reform shall be pursued to put strict control on the increment of land for development, liquidize the remnant land, optimize the structure, improve the efficiency, and substantially enhance the intensive utilization of the urban development land. The Red Line of farmland must be strictly maintained, which means not only the quantity but also the quality. It should be ensured that the space for production is used intensively and efficiently, the living space is livable and proper in size, and the ecological space is unspoiled and beautiful, so as to form the rational structure of spaces for production living and ecological systems. An effort should be made to reduce the industrial lands, increase the land areas for living, especially for residential purposes, appropriately, take concrete measure to protect the agricultural spaces including the arable lands, garden plots and vegetable plots and demarcate the ecological red line. In addition, the bottom line shall be maintained and early pilot projects shall be carried out when promoting the reform of the land system.

Thirdly, a diverse and sustainable fund guarantee mechanism shall be established by: (1) improving the local taxation system, gradually defining the local principal taxes and establishing a mechanism dovetailing fiscal transfer payment with the urbanized agricultural population; and (2) establishing and improving the issuance and management system of local bonds, promoting the reform of policy-oriented financial institutions, and encouraging private capital to participate in the investment and operation of urban public facilities.

Fourthly, the layout and forms of urbanization shall be optimized. The national development priority zones plan has proposed the "two longitudinal axes and three horizontal axes" of urbanization strategy, and will keep to it before the completion. Various city clusters will be gradually formed in central and western regions relying on the market drive and national planning and guiding, and become important growth poles to drive the development of central and western regions and northeastern regions. China should set the rational pace of development under control, demarcate the urban growth boundaries for each city, especially the extra large cities, as soon as possible, put the cities in the natural environment and leave the green mountain and clear water to the urban residents.

Fifthly, the level of urban development, which is where the urban vitality lies, shall be improved. As for urban development, China should first of all determine the functions of the cities, make appropriate planning and take concrete measures to build it and avoid detours. China should make the best use of the special landscapes of existing mountains and waters, etc., and integrate urban growth into nature to the extent that city residents should be able to see the mountains and the water and remember their nostalgia. Modern factors in urban development should be introduced while preserving and promoting the excellent traditional culture, and carrying forward the historical and cultural heritage of the cities and efforts shall be made to integrate the ideas on making people's life more comfortable and embody the ideas in every detail. The urban development quality management system must be established. When promoting the integrated urban and rural development, attention shall be made to preserve the original features of the villages, be cautious in chopping trees, refrain from filling up the lakes and avoid tearing down houses, and try to improve the living condition of the resident on the original forms of the villages.

Sixthly, the management of urbanization shall be strengthened. Efforts should be made to formulate and implement the national plan on new urbanization and enhance the overall planning and coordination of major policies, and ensure that local governments will study and raise practical recommendations on promoting urbanization. China should foster a group of urban management officials who are also experts in building and managing the cities with scientific attitudes, advanced ideas and expertise. The spatial planning system shall be established to promote the reform of the planning system, and the legislation on planning shall be accelerated. The urban planning shall gradually turn from the expansion to setting urban development boundary and optimizing the spatial structure, and it shall maintain the continuity.

Lizhi Bay, Guangzhou (Photo by Liu Jianwei)

1.2 Urbanization Level

1.2.1 Urbanization Level

(1) By the end of 2013, the permanent urban population of China was 731.11 million, and the permanent rural population was 629.61 million, with the urban population accounting for 53.73% of the total population.

By the end of 2012, China had 657 administratively designated cities, including 4 municipalities directly under the central government, 15 sub-provincial cities, 270 prefecture-level cities and 368 county-level cities, where the total area of administrative regions of the cities at various levels accounted for about half of China's land area. The number of the designated towns also increased to 19881. Among the 289 cities at/above prefecture level, there were 127 cities with the year-end total population of over 1 million and 14 cities with the year-end total population of over 4 millions.

(2) Eastern coastal areas enjoy high level of urbanization, and central and western regions are speeding up their urbanization

Different areas in China differ a lot in terms of urbanization level. According to the urbanization rates of various provinces and cities of China in 2011, the difference between Guizhou, the province with the lowest urbanization rate, and Beijing, the city with the highest urbanization rate, was 55 percentage points. The average urbanization level of eastern costal regions of China is higher than the central and western regions: in 2011, the average urbanization level of eastern region was 66.48%, higher than the level of central and western regions (46.53) by nearly 20 percentage points. Judging by the changes of urbanization level, the urbanization of the central and western regions picked up speed after Year 2000 and increased by 17 percentage points, which is 3.74 percentage points higher than that of the eastern region (13.26 percentage points).

Table 1-1: Number of Cities at and Above Prefecture Level, 2012

Total number of cities at and above prefecture level	289
Number of cities at/above prefecture level with the year-end total population of above 4 million in urban districts alone	14
Number of cities at/above prefecture level with the year-end total population of 2 million to 4 million in urban districts alone	31
Number of cities at/above prefecture level with the year-end total population of 1 million to 2 million in urban districts alone	82
Number of cities at/above prefecture level with the year-end total population of 500 thousand to 1 million in urban districts alone	108
Number of cities at/above prefecture level with the year-end total population of 200 thousand to 500 thousand in urban districts alone	50
Number of cities at/above prefecture level with the year-end total population of less than 200 thousand in urban districts alone	4

(Source: National Bureau of Statistics)

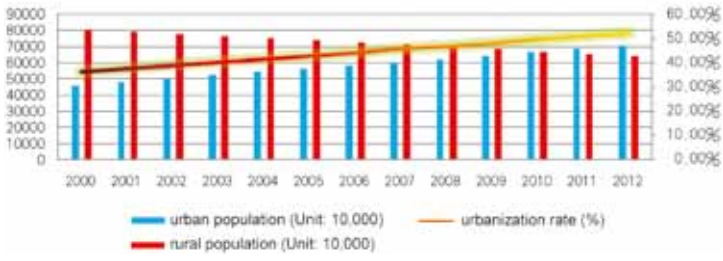


Figure 1-1: Trend of Urban and Rural Population Changes in China (2002-2012)
(Source: China City Statistical Yearbook 2013)

New Urban District of Rizhao (Photo by Li Long)

1.2.2 Forecast on Urbanization Level

In the studies on the trends of China's urbanization, research institutions and scholars differ on their forecast on the future urbanization level of China. Overall, the optimistic forecasts believe that the urbanization rate will reach about 60% or even higher by 2020, and around 70% by 2030.

1.2.3 Population Growth in Different Types of Cities

Different types of cities in China differ greatly from each other in terms of functions, mechanism for urban development, growth potential and comprehensive carrying capacity, due to different levels of regional development. Therefore, the forecast on urban population growth must be in line with the general trends of national and regional urban population and based on the functions of the cities to study the feature of population changes in representative cities, and find out the rules of population change in different types of cities.

(1) Regional center cities usually have fast-growing population, and they are the core carriers in promoting the rapid development of urbanization in China.

The research on the feature and law of population growth in 34 city samples including the municipalities directly under the central government, provincial capitals and sub-provincial cities, finds that regional center cities usually have fast-growing population, with an annual average growth rate of 3.3%, which is far higher than the national average level.

(2) Resource-dependent cities have slow-growing population, and the proportion of their urban population in the total population of China has been dropping.

China now has a total 262 mining cities, and 67 of them have insufficient backup mineral resources available for development and are in the decline stage. An analysis on 41 representative resource-dependent cities in the northeastern region, central region and western region of China shows that from 1991 to 2007, the proportion of the population of the 41 cities in the total population of China has dropped to 3.52% from 4.84%.

(3) Population in agriculture-dependent cities witnesses stable growth.

An analysis on 33 representative cities in the major grain producing areas of China finds that from 1991 to 2007, the proportion of urban population of the 33 sample cities in the total urban population of China has basically remained stable by increasing from 2.65% to 2.72%.

Box 1-2: Basic Information About Xixian New Area and Gui'an New Area

Located between the built-up areas of Xi'an city and Xianyang City of Shaanxi Province, Xixian New Area covers an area of 882 square kilometers, including 7 counties (districts) and 23 towns and street offices of Xi'an and Xianyang. In the *Official Reply of the State Council on Establishment of the Xixian New Area in Shaanxi*, the State Council pointed out that the development of Xixian New Area is regarded as an important measure in the in-depth implementation of the western development strategy, explore and practice the Chinese model human-centric path of urbanization, promote the integration of Xi'an and Xianyang, and play a positive role in building Xi'an into a modern city with rich historical and cultural features, and expanding the depth and width of China's western development drive.

Located in rural-urban continuum of Guiyang and Anshun of Guizhou Province, Gui'an New Area covers an area of 1795 square kilometers, including 4 counties (cities and districts) and 20 towns of Guiyang and Anshun. The State Council explicitly announced that Guizhou Province should take the development of Gui'an New Area as an important measure in the in-depth implementation of the western development strategy, explore ways for fast development as an underdeveloped area and accelerate the innovation to develop the open inland economy and promote the rapid and healthy development of Guizhou.

(4) New areas experience rapid expansion in land use.

New areas mainly refer to various isolated mining and industrial areas, development areas, industrial parks and urban clusters of individual functions. According to statistics, the total land area utilized by industry-oriented new areas has reached as high as 50,000 square kilometers, far higher than the 40,000 square kilometers for urban construction purposes. According to partial statistics, by the end of February 2013, China had 100 various new areas under construction, including 6 approved by the central government, 38 approved by the provincial governments, and 64 approved by the municipal governments. In January 2014, the central government of China approved the establishment of Xixian New Area of Shaanxi Province and Gui'an New Area of Guizhou Province.

1.3 Evaluation on Urbanization Quality

1.3.1 Urban Carrying Capacity

Urban comprehensive carrying capacity refers to the threshold value land and resources of a certain city to support the number of population and intensity of various human activities under certain economic, social and technological levels and under certain restriction of resources and environment. It is the combination of resources carrying capacity (mainly including the land resources carrying capacity, water resources carrying capacity and mineral and energy resources carrying capacity), ecological environment carrying capacity and socio-economic carrying capacity.

(1) Water resources carrying capacity: Resource-based and pollution-induced water shortage is becoming more and more serious.

In 2010, the water resource per capita of China was 2100 m^3, 28% of the global per capita level and ranked the 125th in the world. Over 400 cities in China suffered from water shortage, including 114 cites facing severe water shortage. The shortage of water resources has created a rigid bottleneck for China's urbanization.

(2) Land resources carrying capacity: Land supply-demand problem has intensified.

By 2011, the urban built-up area of China had exceeded 40,000 square kilometers, about 25,000 square kilometers of which were newly developed after 1990. While the red line for protecting farmland must not be crossed and the land for ecological construction must be guaranteed, and the rural residential land witnessed no remarkable decrease, the sown areas in rural areas have seen consecutive sharp decrease, posing a serious threat to China's grain security.

(3) Mineral and energy resources carrying capacity: Excessive demand and insufficient supply will become the barrier for future development.

China's per capita reserves of major mineral resources are seriously lower than the world average. Among them, China's per capita reserve of iron ore is 17% of the world per capita level, petroleum resources at 11%, and natural resources at 4.5%. The serious insufficiency of mineral resources has resulted in the serious dependence of China on imported resources. With the further development of urbanization and industrialization and the further consumption of urban resources and energy sources, the innate deficiencies of mineral and energy resources carrying capacity will become the barrier for development.

(4) Ecological environment carrying capacity: serious urban and regional environmental pollution endangers the mental and physical health of residents.

In 2012, the total volume of wastewater emission in China was 68.48 billion tons, and over 90% of the urban waters across the country were polluted to different degrees. In addition, the frequent regional complex air pollutions have caused extensive impact and attracted high public attention. In 2012, the particulate matter less than 2.5 ($PM_{2.5}$) density in all major big cities of China exceeded the new national standard on air quality (annual average density of 35mg/ m^3). The annual average number of smog days in Beijing-Tianjin-Hebei region, Yangtze River Delta and Pearl River Delta, exceeded 100 days, and over 200 days in serious cases. Smog has become a serious environmental crisis of China. Also it is becoming more and more serious and cannot be cured within a short period of time.

1.3.2 Urbanization Quality Evaluation on Different Scales

(1) Rough mode of urbanization development on the national level

In the rapid urbanization process in China and with the massive transformation of socio-economic structure and remarkable change of utilization method of resources and environment, the rough mode of urbanization development emerged with various problems.

First of all, the urbanization speed of population lagged behind the urbanization speed of land. The statistics of 2000- 2011 showed that the annual average growth rate of national urbanization level was about 1%, the urban population of 260 cities at/above prefecture level in China grew by an average of 4.4% each year, and the area of built-up districts grew by an average of 6.9% each year, which resulted in many large scale ghost towns with

Haixinsha Island and Pearl River New City (Photo by He Yongdang)

very high vacancy rates like Ordos, Hebi and Kunming. By the end of May 2010, a total of 2815 parcels of idle land with an area of 169,500 mu had been reported to the authorities.

Secondly, serious environmental pollution and increasingly serious traffic congestion. Smog appeared in many cities of China and many cities faced such serious problems as water environment, noise pollution and unprocessed wastes piled up around the cities. In 2011, the light-duty vehicles in China exceeded 100 million and traffic jams started to spread from extra large cities to large cities and small cities.

Thirdly, high energy consumption and increasing pressure from energy conservation and emission reduction. The energy consumption of rural residential unit of China is 50%-100% higher than that of the West European countries and North American countries with the same climates. In recent years, the urban waste water discharge amount and solid waste output have been increasing by an annual growth rate of 5%-8%.

(2) Great differences in urbanization quality on the national level with higher urbanization quality in eastern provinces

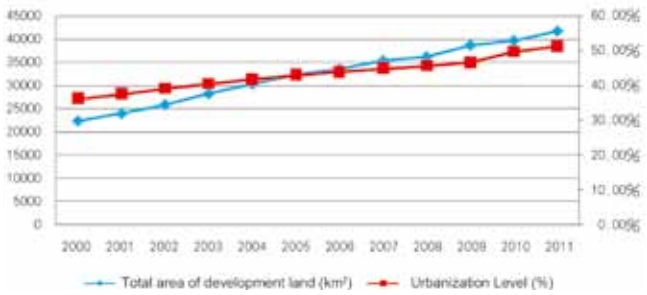


Figure 1-2: Changes of China's Urbanization Level and Built-up Urban Area, 2000-2011

The urbanization quality indexes at the provincial level, by using the data of statistical yearbook 2012 and analysing the four first-class indexes of economic development, overall urban and rural planning, regional coordination and environmental protection and 12 second-class indexes and using the Delphi Method to determine each index weight. The results show that Zhejiang, Jiangsu and Shandong are the top three provinces of China in terms of urbanization quality and Yunnan, Guizhou and Gansu are the last three provinces.

Table 1-2: Ranking of Chinese Provinces by Urbanization Quality

Province, Municipality and Autonomous Region	Economic Development	Overall Urban and Rural Planning	Regional Coordination	Environmental Protection	Evaluation on Urbanization Quality	Ranking
Zhejiang	29.4	45.5	10	7.9	92.8	1
Jiangsu	29.1	41.7	8	8.4	87.2	2
Shandong	26.6	40.3	8	8.2	83.1	3
Heilongjiang	21.8	45.5	6	6.7	80	4
Liaoning	22.2	40.8	8	7.5	78.5	5
Jilin	21.1	39.2	10	6.8	77.1	6
Fujian	24.6	38.3	6	8.1	77	7
Hubei	21.5	40.1	6	7	74.6	8
Shanxi	18.9	37.2	10	6.8	72.9	9
Guangdong	27.8	35.8	2	7.2	72.8	10
Jiangxi	17.7	36.8	10	8	72.5	11
Henan	21.4	35.5	8	7.5	72.4	12
Hebei	21.1	33	8	7	69.1	13
Inner Mongolia	22	33.7	6	7.3	69	14
Sichuan	19.1	35.5	4	9.1	67.7	15
Anhui	20.8	35.4	4	7	67.2	16
Hunan	21.2	32.3	6	7.2	66.7	17
Guangxi	19.3	31.4	8	7.8	66.5	18
Ningxia	17.6	33.5	6	7.3	64.4	19
Shaanxi	18.4	24.7	8	7.6	58.7	20
Yunnan	17.1	25.8	6	8	56.9	21
Guizhou	14.2	27.4	8	7.1	56.7	22
Gansu	15.6	28.4	4	6.2	54.2	23

Note: 1. Being cities by themselves, the municipalities directly under the central government are not included in the provincial level urbanization quality evaluation. 2. Xinjiang, Qinghai, Hainan and Tibet are not included in the ranking due to lack of relevant data.

Crowded street of Shanghai (Photo by Zhang Heping)

(3) Urbanization quality of cities at prefecture level shows remarkable regional features and scale features.

The regional features of urbanization quality are mainly manifested in the remarkable higher urbanization quality indexes in the eastern region than the northeastern, central and western regions, which is basically in line with the economic development levels of different regions, i.e. areas with higher economic development levels usually have higher urbanization quality and areas with comparatively lower economic development levels usually have lower urbanization quality. As shown in Figure 1-3, the mean of urbanization quality index of the Eastern Region, Northeastern Region, Central Region and Western Region is 0.5419, 0.4860, 0.4631 and 0.4644 respectively. When we look at the ranking of the cities by urbanization quality indexes, 17 of the top 20 cities are in the eastern region (85% of the top 20 cities) and only one northeastern city and 2 western cities appear in the top

Table 1-3: Urbanization Quality Index Grouped by Regions and Scale

Grouping		Number of Cities	Urbanization Quality Index				
			Mean	Standard Deviation	Median	Min	Max
Grouped by Regions	Eastern Region	87	0.5419	0.0813	0.5262	0.3786	0.7763
	Central Region	81	0.4631	0.0480	0.4572	0.3655	0.6067
	Western Region	84	0.4644	0.0608	0.4603	0.3214	0.7054
	Northeastern Region	34	0.4860	0.0535	0.4724	0.4148	0.6265
Grouped by Scale	Megacities	28	0.5920	0.0810	0.6087	0.4668	0.7763
	Extra Large Cities	31	0.5368	0.0712	0.5399	0.4148	0.6889
	Large Cities	87	0.4825	0.0551	0.4718	0.3786	0.6263
	Medium-sized Cities	112	0.4680	0.0603	0.4618	0.3214	0.7054
	Small Cities	28	0.4496	0.0407	0.4410	0.3377	0.5177
All cities at prefecture level		286	0.4902	0.0726	0.4735	0.3214	0.7763

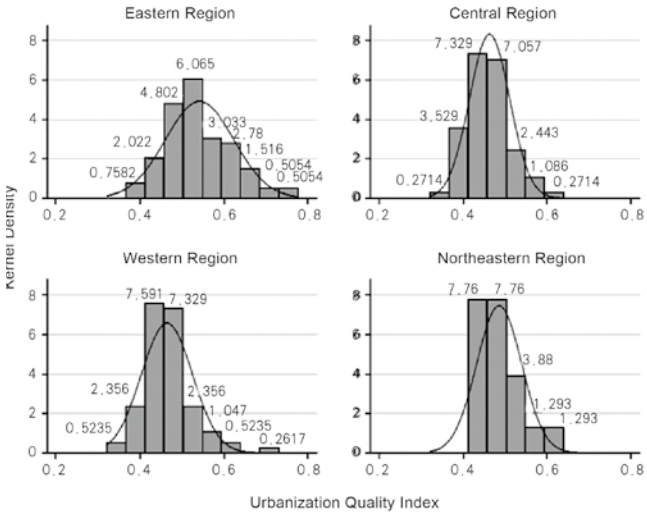


Figure 1-3: Histograms of Urbanization Quality Index by Regions

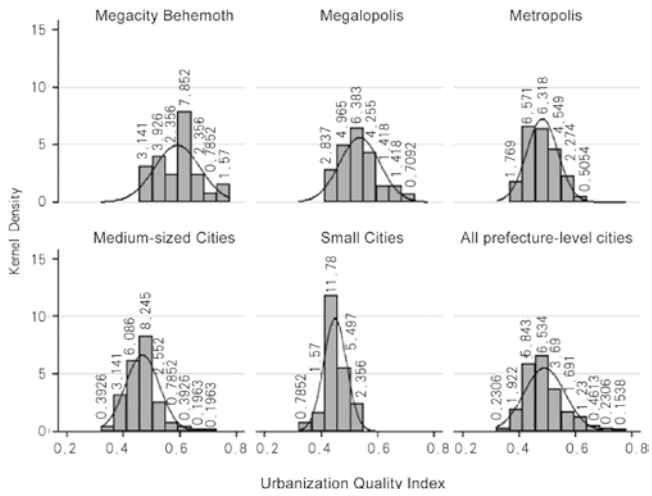


Figure 1-4: Histograms of Urbanization Quality Index by Scales

20, while there are only 3 eastern cities, 8 central cities (40%) and 9 western cities (45%) among the last 20.

The scale feature of the urbanization quality is mainly demonstrated that most cities with higher urbanization quality indexes are cities with a larger population scale. As shown in Figure 1-4, the mean of urbanization quality indexes for cities with a population over 2 million, 1 million to 2 million, 500 thousand to 1 million, 200 thousand to 500 thousand, and below 20 thousand is 0.5920, 0.5368, 0.4825, 0.4680 and 0.4496 respectively. When looking at the ranking of the cities by urbanization quality indexes, 11 of the top 20 cities are cities with a population of over 2 million (55%), and there are also 5 cities with a population of 1 million to 2 million (25%), 1 city with a population of 500 thousand to 1 million, 3cities with a population of 200 thousand to 500 thousand, while there are 15 cities with a population of less than 500 thousand (75%) and 5 cities with a population of 500 thousand to 1 million among the last 20.

1.3.3 Indexes of China Habitat Award

The Ministry of Housing and Urban-Rural Development (former Ministry of Construction) established the China Habitat Award in 2010 to honor the cities that have made great progress in pursuing the concept of scientific development featuring a people-oriented approach, coordinated and sustainable development in urban development and management, correct view of political achievements, urban and rural infrastructure and ecological environment development, substantial improvement the human habitat environment, resources-saving and environment-friendly socialist harmonious society, and making outstanding contributions to building a moderately prosperous society.

The current evaluation index system of China Habitat Award includes 6 first-class indexes, 24 second-class indexes and 60 third-class indexes, which can be classified into quantitative indexes and qualitative indexes. The quantitative indexes covers 18 items including the housing standards, population density, municipal infrastructure, and green coverage level, etc., and stipulates that each index shall be increased each year. The qualitative indexes including 25 criteria including the complete urban planning system and urban-rural development and management, emergency safeguard mechanism for each item of infrastructure, development of public transport as a priority, healthy property market, and complete housing security system, environmental protection, restoration of natural ecology, and the historical, cultural and natural resources protection, etc. In order to avoid the repetition of relevant indexes and facilitate the management by different competent authorities, the Award applicants are required to have obtained such titles of Water-Saving City, National Model City for Environmental Protection and National Garden City. The China Best Practice Award for Habitat has established 18 themes including the improvements of housing situation of residents, residential technology research and achievements transformation, and community public management and services, all of which are Qualitative Habitat Evaluation Indexes.

Residential buildings in Tiexi District, Shenyang (Photo by Liu Baocheng)

Table 1-4: Top 20 and Last 20 Cities at and Above Prefecture Level by Urbanization Quality Index

City	Urbanization Quality Index		Urban Development Quality Index		Urbanization Efficiency Index		Urban-rural Coordination Index		By region	By scale
	Value	Ranking	Value	Ranking	Value	Ranking	Value	Ranking		
Shenzhen	0.7763	1	0.7702	6	0.5606	5	1.00	1	E	1
Beijing	0.7522	2	0.8593	1	0.5328	10	0.8288	5	E	1
Shanghai	0.7235	3	0.8017	2	0.5715	4	0.7713	12	E	1
Karamay	0.7054	4	0.7284	14	0.4814	17	0.8988	2	W	4
Foshan	0.6889	5	0.6833	34	0.6233	1	0.7621	14	E	2
Zhongshan	0.6769	6	0.6820	35	0.5587	6	0.7883	9	E	4
Dongguan	0.6734	7	0.7131	19	0.5044	13	0.7894	8	E	2
Xiamen	0.6526	8	0.7774	4	0.3928	48	0.7461	17	E	2
Suzhou	0.6495	9	0.7744	5	0.3750	57	0.7576	15	E	1
Guangzhou	0.6484	10	0.7651	7	0.5500	7	0.5912	102	E	1
Tianjin	0.6445	11	0.7201	18	0.4697	19	0.7186	25	E	1
Nanjing	0.6376	12	0.7266	15	0.3556	65	0.8010	6	E	1
Changzhou	0.6363	13	0.7009	27	0.4521	24	0.7344	20	E	2
Wuxi	0.6344	14	0.7555	8	0.3979	44	0.7093	29	E	2
Dalian	0.6265	15	0.7407	11	0.4205	33	0.6803	45	NE	1
Dongying	0.6263	16	0.7121	20	0.5309	11	0.6073	91	E	3
Zhoushan	0.6255	17	0.6753	42	0.3909	49	0.7937	7	E	4
Qingdao	0.6221	18	0.7359	12	0.4711	18	0.6215	78	E	1
Hangzhou	0.6218	19	0.7834	3	0.4541	23	0.5739	116	E	1
Urumqi	0.6176	20	0.6654	47	0.2760	130	0.8955	3	W	1
Zhoukou	0.4060	267	0.5201	230	0.2018	243	0.4580	229	C	4
Shangrao	0.4041	268	0.5736	162	0.2166	217	0.3656	276	C	4
Zhumadian	0.4008	269	0.5657	171	0.2100	231	0.3717	272	C	4
Xiaogan	0.3999	270	0.4689	273	0.2393	187	0.4685	222	C	4
Anqing	0.3999	271	0.5313	215	0.2664	142	0.3583	279	C	3
Ya'an	0.3939	272	0.4573	278	0.2238	210	0.4795	211	W	4
Loudi	0.3936	273	0.5991	121	0.2152	222	0.2980	285	C	4
Shaoyang	0.3936	274	0.5249	225	0.2113	227	0.4007	266	C	3
Chengde	0.3915	275	0.5408	205	0.1445	284	0.4393	242	E	3
Pu'er	0.3909	276	0.5303	218	0.1788	265	0.4173	256	W	5
Baiyin	0.3898	277	0.5764	160	0.1594	280	0.3714	274	W	4
Zhaotong	0.3868	278	0.4557	279	0.2859	116	0.3958	269	W	4
Jieyang	0.3858	279	0.4855	264	0.2293	200	0.4092	262	E	3
Dazhou	0.3853	280	0.5619	177	0.1883	253	0.3468	280	W	4
Liaocheng	0.3786	281	0.5309	216	0.2436	182	0.3105	284	E	3
Hechi	0.3784	282	0.5380	209	0.1755	269	0.3684	275	W	4
Wuzhou	0.3719	283	0.5491	196	0.1919	252	0.3154	282	W	4
Huaihua	0.3655	284	0.5584	184	0.1626	279	0.3110	283	C	4
Lincang	0.3377	285	0.4603	276	0.1838	255	0.3281	281	W	5
Ulanqab	0.3214	286	0.4704	272	0.2023	241	0.2420	286	W	4

Notes:
1. By Region: E: Eastern Region; W: Western Region; C: Central Region; NE: Northeastern Region.
2. By Scale: 1: Megacities; 2:Extra Large Cities; 3: Large Cities; 4: Medium-sized cities; 5: Small Cities.

Table 1-5: Evaluation Index System of China Habitat Award

First-class Index	Second-class Index	Third-class Index	Index Criteria	
A. Living Environment	A1 Housing and community	Housing security rate (%)	⩾ 80%	65%-80%
		Completion of social housing Construction plan	100%	⩾ 90%
		Construction of supporting community facilities	Various supporting facilities including education, medical, sports and cultural facilities, convenience services and public toilets.	
		Redevelopment of urban villages and shanty towns	Shanty towns are basically eliminated in built-up areas, and the residents shall be appropriately relocated and property management services provided. Reformation plans for urban villages are formulated and implemented accordingly.	
	A2 Municipal infrastructure	Urban population with access to tap water (%)	⩾ 95%	
		Quality of urban water supply	The water shall conform to the standards in the testing by health and quarantine authorities according to the *Drinking Water Sanitary Standard* (GB5479-2006).	
		Urban population with access to gas (%)	⩾ 98%	
		Municipal domestic wastewater treatment	Centralized processing rate is 10% higher than the national average level; sewage collection pipelines is ready and in operation; operating load rate of sewage processing plant is higher than the national average level; and the sludge is effectively disposed of.	
		Municipal solid waste treatment	Non-hazardous treatment rate of solid wastes is 20% higher than the national average level; waste treatment facilities meet the Class II and above in non-hazardous treatment grading; safe operation; trial of waste sorting and recycling.	
		Urban drainage	Urban drainage facilities are constructed according to the plans; the built-up areas adopt the split-flow of rainwater and sewage, and the rainwater drainage system are constructed according to the high limits of Design Code for Outdoor Wastewater Engineering (GB50014-2006); drainage systems are managed by specially designated authorities and maintained by specific financial funds.	
		Internet users (household/100 persons)	⩾ 10	
	A3 Traffic	Average daily commute time	⩽ 30 minutes	30~40 minutes
		Share of public transport (%)	⩾ 30%	
		Pedestrian and bicycle transportation system	Special plans are formulated and implemented and the complete pedestrian and bicycle transportation systems established. The share of pedestrian and bicycle transportation is ⩾ 40%.	

First-class Index	Second-class Index	Third-class Index	Index Criteria	
A. Living Environment	A4 Public services	Rational distribution of primary schools	The primary schools are evenly distributed with the service area radius not exceeding 500 meters.	
		School safety	School buildings and campuses of nurseries, primary and secondary schools meet safety requirements; good public order is maintained on and around the school campuses and all necessary traffic signs for warning signs, speed limit and no horning, are installed; there areno operation venues for billiards or electronic game machines, cyber cafes, peddlers' market or vendors' stands within or around the campus.	
		Per capita land area of public sports facilities (m^2)	⩾ 0.15	
		Number of health service centers (stations) per 10,000 population	⩾ 0.3	
		Number of hospital beds per 10 000 population	⩾ 40	
		Number of public library books per 10 000 population	⩾ 16000	
		Per capita land area of public cultural and entertainment facilities (m^2)	Per capita land area of such facilities as cultural centers, libraries, museums, youth places, etc. (land for facilities already constructed and launched in operation) ⩾ 0.8m^2	
B. Ecological Environment	B1 Urban ecological system	Protection of ecological environment	The ecological sensitive areas including the natural landscape, vegetation and water system within the urban area are effectively protected; river channels have their banks built and bottom treatment done according to ecological principles and are free from large-scale hard-surface slope and concrete lining.	
		Urban biological diversity	The Urban Biodiversity Protection Plan is made and biological species survey within the urban area is done.	
	B2 Urban afforestation	Afforestation coverage in the city (%)	⩾ 40%	
		Urban green space coverage (%)	⩾ 40%	35%~40%
		Per capita urban public green area (m^2)	⩾ 12	
		Public green space service area radius (%)	⩾ 80%	
		Tree-lined roads in the city (%)	⩾ 70%	
	B3 Environmental quality	Urban air quality (%)	The number of days with air pollution index (API) ⩽ 100 account for ⩾ 80% of total number of days of each year.	The number of days with air pollution index (API) ⩽ 100 account for 60%-80% of total number of days of each year.
		Quality of urban surface water (%)	100% and there is no water body below Class IV within the urban area.	
		Average indicator of urban noise (dB)	⩽ 60dB	

First-class Index	Second-class Index	Third-class Index	Index Criteria
C. Social Harmony	C1 Social security	Collection rate of social security insurance premium	⩾ 90%
		Minimum subsistence allowance of urban residents	The minimum subsistence allowance is higher than the average level of cities of the same type in the province and is provided to all eligible people
	C2 Undertakings for old persons	Preferential policies on the old people	Comprehensive preferential policies on the old people concerning medical care and transport, etc. are made and effectively implemented.
		Number of beds in social welfare homes per 100 senior citizen	⩾ 2
	C3 Undertakings for disabled persons	Service and safeguard system for disabled persons	The comprehensive service and safeguard systems for disabled persons are established and effectively implemented.
		Installation of non-barrier facilities	All non-barrier facilities in the public places including the major roads, parks and public buildings, etc. are well managed and maintained.
	C4 Social security for migrant workers	Social security policies for migrant workers	Comprehensive social security policies for migrant workers are made and effectively implemented.
	C5 Public participation	Public participation in planning, construction and management	The public participation system concerning planning, construction and management, etc. is made and effectively implemented.
	C6 Historical and cultural heritage and urban features	Good preservation of historical and cultural heritage	Cultural heritage and historical blocks in the city are effectively protected.
		Urban landscape features	Special plans on urban landscape features are approved and achieve excellent results. The urban landscape patterns are clear and distinct in its features. Newly-built buildings bear local features.
D. Public security	D1 Urban management and security of municipal infrastructure	Urban management	The digital urban management system is established and in operation for over one year with the claim settlement rate ⩾ 90%; urban management is highly efficient and in good order.
		Safe operation of municipal infrastructure	Files for municipal infrastructure including urban underground pipeline networks, roads and bridges are well maintained; the operation and management system is comprehensive; the supervision is well maintained and the urban safe operation is guaranteed.
	D2 Social security	Mortality rate of road traffic accidents (person/10,000 vehicles)	⩽ 10 persons/10,000 vehicles
		Rate of occurrence of criminal case (%)	⩽ 5%
	D3 Disaster prevention	Effective city emergency shelter area per capita (m^2)	⩾ 2
		State of readiness of urban public fire-fighting facilities (%)	100%
		Urban flood control and drainage management	The urban flood control and drainage management facilities meet corresponding fortification standards. Comprehensive flood discharging facilities are equipped in key urban areas, traffic hubs, underground public spaces, etc. and are effectively maintained.
	D4 Urban emergency response	Establishment of urban emergency response system	The comprehensive emergency response system is established, and local emergency response plans are be made and practiced.

First-class Index	Second-class Index	Third-class Index	Index Criteria	
E. Economic development	E1 Income and consumption	Annual per capita disposable income of urban residents (RMB10,000 Yuan)	⩾ 1.8	
		Engel's Coefficient (%)	⩽ 36%	
	E2 Employment	Registered unemployment rate (%)	⩽ 4.3%	
	E3 Capital input	Capital input in municipal public facilities construction (%)	The investment in fixed assets in municipal public facilities construction is ⩾ 5% of the total investment in fixed assets of the city during the same period	
	E4 Economic structure	Share of the tertiary industry in GDP (%)	⩾ 55%	40%~55%
F. Resources saving	F1 Energy saving	Energy consumption per unit of GDP (ton of SCE/10 000 Yuan)	⩽ 1.6	
		Proportion of energy efficient buildings (%)	Severe code and code zones: ⩾ 40%; hot summer and cold winter zones: ⩾ 35%; and hot summer and warm winter zone: ⩾ 30%.	
		Percentage of fee collection of residential housing by heat metering in northern heating regions (%)	⩾ 25%	
		Percentage of renewable energy use (%)	⩾ 15%	⩾ 10%
	F2 Water resources saving	Water consumption per unit GDP (cubic meter/RMB 10,000 Yuan)	⩽ 100	
		Utilization of reclaimed water (%)	⩾ 30%	
		Recycling of industrial water reuse rate (%)	⩾ 90%	
		Urban water conservancy planning	Water conservancy plans and substantial results are obtained.	
	F3 Land saving	Urban population density (person/square kilometer)	⩾ 10000	
Integrated dismissal	Major incidents concerning safety, pollution and damage to the ecological environment in past two years which have resulted serious negative influences shall be the overriding reason for disqualifying the city concerned from becoming a winner of this Award.			

1.4 Land Issue in Urbanization

1.4.1 Land System

(1) Land ownership system

The land public ownership of China includes the ownership by the whole people and collective ownership by the farmers. The ownership by the whole people adopts the form of state ownership, i.e. the state represents all the nationals to exercise the right to possess, use, seek profits from and dispose of the land. The land collectively owned by the farmers is operated and managed by the collective economic organization or villagers' team or committee.

The urban land is owned by the state. Except the land owned by the state as stipulated by the laws, the land in the rural areas and suburban areas of the cities are collectively owned by the farmers. The rural residential land and land and hilly land allotted for private use are collectively owned by farmers. The state-owned urban land is under unique ownership and the land use right is exclusively exercised, which means that without the authorization from the state, no organization or individual has the right to exercise the right. At the same time, the ownership and management rights of the urban land can be separated from each other, and the state can delegate certain powers and functions of the ownership, e.g. the land use right of urban land, to specific land users to exercise.

(2) Land use system

According to the current laws, the state may grant the land-use rights to the land users with charge and within a certain period

of time. The grant can be achieved in the form of allocation, contract, bidding, auction and signboard listing. The land user may transfer, lease, mortgage the land use right or use it for other economic activities within the term of the land use. But the government will take back the land and the buildings on it gratis. According to relevant regulations, the extension of land use term may be applied for when the land shall continue to be used. Under special circumstance and for the need of public interests, the state may revoke the land use right in advance according to the legal procedures and with certain compensation.

As for specific uses of the land, the Land Administration Law of the People's Republic of China classifies the land into three types: the land for farm use, the land for development use and the land unused, where the land for farm use can be further classified into cultivated land, garden, wooded land, grassland, and other land for farm use; the land for development use shall be subject to the second-class types of urban land classification and is generally classified land used for residential, public facilities, industries, warehouses, out-board transportation, roads and squares, municipal utilities, green space, and special purposes.

With the continuous expansion of the cities, the existing land for development is no longer sufficient for the needs of urban development and land for farm use has become an important source of newly-added land for development. According to the existing land-use regulations, the government monopolizes the primary land market and the conversion of the land from non-construction purpose to construction purpose must be examined and approved by the government. This gives the government, especially the local governments, great power of discourse in land transaction and their preference determines the final allocation pattern of proceeds from land use.

(3) Land tax system

The major tax types of land taxes include the farm land occupation tax, urban land use tax, land appreciation tax, urban real estate tax and deed tax, all of which are sources of fixed income of the local governments. Among them, the farm land occupation tax and urban land use tax adopt the stipulated tax rates, the land appreciation tax adopts the four level progressive rates of 30-60%, and the urban real estate tax and deed tax are levied on the housing property and the housing ownership transaction respectively.

In addition to the land taxes mentioned above, the most important land income is the land transfer fees. The land transfer fees are the total amount of land transfer transaction fees collected by the land administrative authority of local governments at various levels when transferring the land-use rights. The unit price of the land for public welfare projects is kept under certain limit through such means as agreements. The land for other projects is transferred through auction, bidding or signboard listing. The transaction value of land is the market price of the land. The land transfer fees and the land taxes constitute the governments' revenues from the land.

1.4.2 Optimization of Spatial Structure of State-owned Land

The total area of urban development land in China increased from 14,000 square kilometers to 41,800 square kilometers during the 20 years from 1991 to 2011. These 20 years witnessed great changes in China's economic structure and modes of industrial development. Consequently, with the profound transformations of the mechanism and systems, the composition of various types of state-owned land spaces also underwent structural changes.

First of all, the percentage of land for production use, including the industrial land and warehouse land, dropped, with the proportion of industrial land in the total area of urban development land dropped to 20.86% in 2011 from 25.13% in 1991 and the proportion of warehouse land dropped to 3.78% from 5.97% during the same period. Nevertheless, the industrial and warehouse lands still account for a higher proportion compared with the international standards, which is closely

Box 1-3: Current Status of Industrial Development Zones

After the reformation, reorganization and even bankruptcy of the state-owned or township enterprises which started in mid-1990s gradually came to an end, local governments, especially the local governments of the coastal areas, launched large programs to build various types of industrial development zones. The results of the national clean-up and rectification of development zones in July 2003 showed that the number of various development zones in China reached 6866 with the designated area of 38,600 square kilometers. The urban industrial and manufacturing land of China reached 7900 square kilometers in 2004. The development zones rectification by the central government reduced the number of zones to 1568 by the end of 2006 with the designated area reduced to 9949 square kilometers. But the functions and spaces of these development zones underwent basically no change despite the fact that these industrial and manufacturing land was no longer called "development zones". The urban industrial and manufacturing land still witnessed a substantial increase. By 2011, the industrial, manufacturing and warehouse land of China reached 10,300.75 square kilometers, accounting for 24% of the total urban development land.

Urban Industrial Park Photo (by Chen Yujie)

Table 1-6: Composition of Urban Development Land in China, 1991-2011

Year	Residential (%)	Public facilities (%)	Indus-tries (%)	Ware-houses (%)	Intercity transportation (%)	Roads and squares (%)	Municipal utilities (%)	Green space (%)	Special purpose (%)	Total area of land for development (km^2)
1991	34.27	8.86	25.13	5.97	5.97	5.64	2.8	5.62	5.49	14011
1992	32.96	10.82	24.95	5.91	5.91	6.06	3.06	6.07	4.26	14958
1993	32.47	11.11	24.48	5.7	5.7	6.46	3.13	6.7	3.99	16588
1994	33.7	10.34	23.94	5.32	5.32	7.86	3.64	6.51	3.64	17939
1995	33.76	10.42	23.58	5.14	5.14	8.16	3.52	6.54	3.67	19264
1996	32.62	10.9	23.39	5.25	5.25	7.47	3.12	7.77	3.7	20214
1997	32.25	10.9	23.14	5.14	5.14	7.72	3.14	8.32	3.52	20791
1998	32.6	11.05	22.43	5.04	5.04	8.1	3.25	8.3	3.42	21379
1999	32.42	11.09	22.29	4.97	6.22	8.06	3.33	8.3	3.32	21524
2000	32.21	11.36	22.04	4.73	6.4	8.21	3.41	8.36	3.28	22439
2001	32.89	11.67	21.1	4.6	6.38	8.59	3.48	8.46	2.83	24026
2002	32.28	11.59	21.5	4.17	6.28	8.83	3.71	8.6	3.03	25972
2003	32.03	12.07	21.48	4.01	5.76	9.32	3.4	9.21	2.72	28308
2004	31.61	12.25	21.79	3.87	5.58	9.71	3.42	9.28	2.49	30406
2005	30.76	13.31	21.62	3.56	4.43	10.63	3.53	9.93	2.23	32520
2006	30.94	12.97	21.95	3.34	4.42	10.81	3.43	10.04	2.1	33659
2007	30.75	12.74	21.89	3.35	4.41	10.98	3.41	10.31	2.16	35469
2008	31.13	12.52	22.28	3.17	4.32	11.28	3.35	9.99	1.96	36295
2009	31.13	12.52	22.28	3.17	4.32	11.28	3.36	9.99	1.96	38727
2010	31.20	12.15	21.86	2.99	4.39	11.77	3.49	10.21	1.95	39758
2011	31.53	12.17	20.86	3.78	4.45	11.33	3.55	10.66	1.67	41805

Source: China Urban Construction Statistical Yearbook 2012

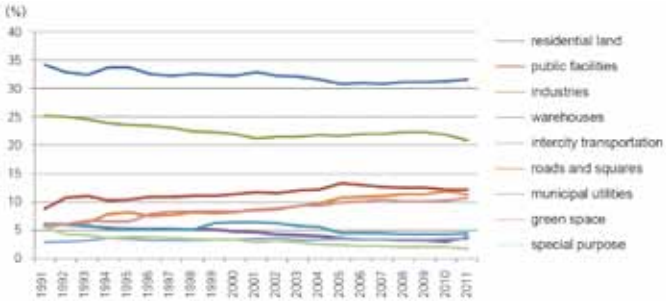


Figure 1-5: Composition of Different Types of Land Uses in Total Urban Land Development, 1991-2011

Table 1-7: Planning Standards for Urban Land Development

Type of land uses	Percentage in urban land development
Residential	25.0~40.0
Administration and public services	5.0~8.0
Industrial, manufacturing	15.0~30.0
Road, street and transportation	10.0~25.0
Green space and square	10.0~15.0

Source: Classification and Standards for urban Land Development (GB 50137—2011)

Waterfront residential housing in Wuxi (Photo by Yan Changjiang)

related to the overall strategy on economic development and the formulation of the standards on land use. In the *Code for Classification of Urban Land Use and Planning Standards of Development Land* of China, the industrial and manufacturing land shall account for 15%-30% of the urban development land while it is 10%-15% in the planning standards of foreign cities of the world.

Secondly, the proportion of land for improving urban quality and quality of living, including the land for municipal utilities, roads, streets, and transportation, and urban green space, witnessed substantial increase. The proportion of the municipal utilities land increased to 12.17% in 2011 from 8.86% in 1991, with the absolute area increasing nearly threefold by 3846 square kilometers. The expansion of roads, streets and squares was quite remarkable: its proportion in the total urban development land increased by 5.69 percentage points, and the absolute area expanded nearly six-fold to 4736 square kilometers in 2011 from 790 square kilometers in 1991. The percentage of urban green space in urban development land also showed an increase of nearly 5 percentage points during the same period. According to the *Code for Classification of Urban Land Use and Planning Standards of Development Land* (GB50137—2011) released in 2012, the scale of the residential land and industrial and manufacturing land is within the reasonable range of use, while the scale of the public utilities land is moderately above the standard.

1.4.3 Land Use Efficiency

The current urban and rural development land of China is about 240,000 square kilometers, of which five-sixths are collective non-farming development land in rural areas, and the remaining one-sixth are urban development land. From 1991 to 2011, the urban development land of China increased from 14,000 square kilometers to 41,800 square kilometers, and the per capita area of development land increased from 35.8 square meters to 118 square meters.

The land demarcated to new areas are transferred for development after the land is obtained from the farmers through land appropriation and turned into urban development land. As for the land leasing, local governments adopt different practices for industrial, manufacturing, commercial, business facilities and residential land. As far as the land for commercial, business facilities and residential purposed is concerned, many local governments have established the land reserve centers to monopolize the primary urban land market, and maximize the land leasing fees by restricting the supply of the commercial, business facilities and residential land, and adopted the competitive "bidding, auction and signboard listing" for land transfer, while a majority of the industrial and manufacturing land leasing are completed through agreements. Although the Ministry of Land and Resources of China stipulated in 2006 that

Figure 1-6: Variation of Urban Development Land Area in China, 1991-2001

Source: China Urban Construction Statistical Yearbook 2012 (Note: Urban development land area of Shanghai Municipality was not included for 2005 and 2009.)

Table 1-8: Transfer of Residential, Commercial and Industrial, Land for Uses in Key Cities of China, 2011

Land uses	Granted area (km^2)	Land leasing fee (RMB1.00 billion Yuan)	Average land leasing fee (RMB1.00 billion Yuan/ km^2)
Industrial	244.12	100.810	0.413
Commercial	50.28	287.922	4.006
Residential	171.29	686.225	5.725

the industrial and manufacturing land must be included in the scope of granting through "bidding, auction and signboard listing", many local governments choose to put the industrial and manufacturing land up for leasing to interested parties in an effort to attract industrial investment at remarkably low land leasing fees. Moreover, local governments sometimes refund a part of the land leasing fees (equal to the value of investment) to the enterprises. In order to compensate the deficiencies from the granting of industrial and manufacturing land through agreement, some local governments choose to subsidize the deficiencies with the income from the commercial and residential land granting. Take year 2011 as an example, according to the statistics of 30 key cities selected by the Ministry of Land and Resources, the unit leasing price of industrial and manufacturing land was RMB 0.413 billion Yuan/ square kilometer, while the unit leasing price of residential and commercial land was RMB 4.006 billion Yuan/ square kilometer and RMB 5.726 billion Yuan/ square kilometer.

1.4.4 Reform of the Land Acquisition System

Chinese government has decide to establish a unified construction land market for both urban and rural areas. On the premise that it conforms to planning and its use is under control, Rural collectively-owned profit-oriented construc-

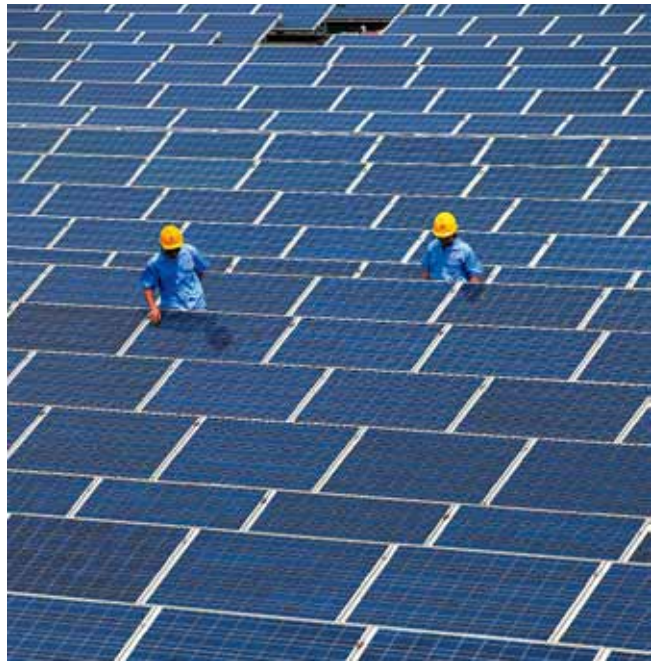
tion land should be allowed to be sold, leased and appraised as shares, and enter the market with the same rights and at the same prices as state-owned land. The scope of land acquisition should be narrowed, the procedures for land appropriation should be regulated, and the rational, regular and multiple security mechanism should be improved for farmers whose land is acquired. The scope of compensated use of state-owned land should be broadened, and land appropriation for non-public welfare projects reduced. A mechanism for the distribution of incremental benefits from land should be established to take into account the interests of the state, the collective and the individual, and appropriately raise individual income from such benefits. The secondary market for land leasing, transfer and mortgage should be improved. [1]

1.5 Industries in Urbanization

1.5.1 Industry Categories: Focusing on new and high-tech industries and embracing the globalization

Upon entry into the 12th five-year plan period, the central government has promulgated various policies on encouraging and promoting the development of relevant industry categories, defined the priority fields for industrial development and proposed specific requirements on the urban industrial development.

In 2007, the state released the *Guidelines of Prioritized Hi-tech Industrialization Areas in 2007*, and defined the following nine industries for prioritized development: IT, bio-technology, aviation and aerospace, new materials, advanced energy technology, modern agriculture, advanced manufacturing technology, energy conservation and environmental protection, the comprehensive utilization of resources and the ocean technology. In early 2009, in an effort to alleviate the difficulties faced by the enterprises and increase the sustainability of development, the central government formulated and released the adjustment and revitalization plan for ten key sectors of automobile, iron and steel, electronics and IT, logistics, textiles, equipment manufacturing, non-ferrous metals, light industry, petrochemical and ship-building, and proposed hundreds of policies, measures and implementation details. In 2011, the competent governmental authorities released the *Guidelines of Prioritized Hi-tech Industrialization Areas in 2011*, which defined the 137 key fields of new and high-tech industrialization for prioritized development in the following 10 industries: IT, bio-technology, aviation and aerospace, new materials, advanced energy technology, modern agriculture, advanced manufacturing technology, energy conservation and environmental protection, the comprehensive utilization of resources, the ocean technology and high technology services. In September 2012, the State Council issued the *Development Plan for National Strategic Emerging Industries during the 12th Five-Year Plan Period* and charted the following key fields for prioritized development: energy conservation and environmental protection, new-generation of information technology, biology, high-end equipment manufacturing, new energy, new materials and new-energy vehicles.



Workers inspect photovoltaic power generation units
(Photo by Liang Xiaopeng)

Taihu New City, Wuxi (Photo by Liu Gang)

1 Source: Quoted from the *Decision of the Central Committee of the Communist Party of China on Some Major Issues Concerning Comprehensively Deepening the Reform* adopted at the Third Plenum of the 18th Central Committee of the Communist Party of China.

1.5.2 Industrial Space: Remarkable Trends in Balanced Development

The central and western regions' successful undertaking of industrial transfer will give a profound stimulus to the local urban development. The *Guiding Opinions of the State Council on Central and Western Regions' Undertaking of Industrial Transfer* of 2010 pointed out that the central and western regions should give play to their own advantage of industrial bases, labor forces and resources to undertake and develop local industries with competitive edge according to the local conditions. Among them, the labor-intensive industries, energy and mineral development and processing, agricultural product processing, equipment manufacturing, modern services, high technologies and processing trade should become the key industries for prioritized development.

The undertaking of industrial transfer will directly increase the scale of foreign direct investment (FDI) in the central and western regions. In 2011, the utilized FDI in the western region reached as high as US$11.571 billion, 4.49 times of the level of Year 2000. Since 1999, the utilized FDI in the western region has grown at the annual average growth rate of 17.24%, higher than the national average of 8.14%. Under the influence of the international financial crisis, the annual growth rates of utilized FDI in the eastern and central regions dropped by 0.96% and 28.26% respectively in 2009, while the western region still maintained the annual growth rate of 7.41%. In 2011, the annual growth rate of utilized FDI in western region was still higher than the eastern and central regions by 20.73 and 13.98 percentage points respectively.

1.5.3 City-Industry Integration: Interaction between Industries and City Development

For a long period of time in China, the urban space and resources have been mobilized on the basis of the industrial needs, neglecting the interaction between industries and city development. The emphasis on production and industries and indifference to residents' living conditions and urban development has resulted in the separation, dislocation and even serious contradiction between industrial distribution and urban spaces in certain areas, which has blocked the further development of the industries and the cities as well. With China's industrialization entering the mid- and late stage, the traditional ideas and approaches on industrial distribution and planning have failed to satisfy the needs of coordinated urban development. The new vision of city-industry integration has made it necessary to adjust the ideas and approaches for integrated planning and development.

Hongcun, Anhui Province (Photo by Fangye Guangde)

(Photo by Sun Zhongnan)

Chapter 2 *Nongmingong* in China

Nongmingong is a special group of people that have emerged in the past thirty-some years in China. Since the reform and opening up to the outside world and with the deepening of marketization reform, the barrier for the flow of labor force between rural and urban areas was destroyed, and millions of farmers and their children left their villages, flocked to the cities and became a new type labor force indispensable for the modernization of China. They have succeeded in changing their career and became non-farming workers but failed to change their identity as farmers, that is, they failed to get registered as permanent urban residents. Most of them earn a low wage, live in barracks and makeshifts and cannot have access to the social security benefits as the urban residents. This special group was first called Farmer Labors or Migrant Rural Labors and the Xinhua News Agency standardized the name as *nongmingong*, i.e. the laborers who have their household registration as farmers in the rural areas but have long lived in the urban areas and worked in the secondary and tertiary industries to earn their income. They can be roughly classified into two types: the first type is the local *nongmingong* who shift from farming to other trades within the rural area and mainly work in the township enterprises in their own towns or villages or the nearby factories, shops or government agencies, and live in their own home. The second type is the migrant *nongmingong* who shift from farming to other trades outside their hometowns and work in the factories, government agencies, commercial and service organizations, in the cities. The second type of the *nongmingong* who shift from faming and leave their hometowns is the group that needs close attention in the current urbanization progress.

According to statistics, the urbanization rate of China was 53.73% in 2013. A survey of the National Bureau of Statistics found that the percentage of population with non-farmer household registration (Hukou) accounted for less than 40% of the total population of China, which is about 15 percentage points lower than the urbanization rate. This 15 percentage points to a large extent are those *nongmingong* who are not registered as permanent urban residents. By the end of 2012, the total number of *nongmingong* of China reached 262.61 million, a 3.9% year-on-year increase by 9.83 million. Among them, there were 163.36 million migrant *nongmingong*, a 3.0% year-on-year increase by 4.73 million; 129.61 million household *nongmingong*, a 3.0% year-on-year increase by 3.77 million; 33.75 million family *nongmingong*, a 2.9% year-on-year increase by 0.96 million; and 99.25 local *nongmingong*, a 5.4% year-on-year increase by 5.10 million.

Table 2-1: The Number of *Nongmingong* in China 2008-2011
(10,000 Persons)

Year	2008	2009	2010	2011	2012
Total *Nongmingong*	22542	22978	24223	25278	26261
1. Migrant *Nongmingong* (long distance)	14041	14533	15335	15863	16336
(1) Household *Nongmingong*	11182	11567	12264	12584	12961
(2) Family *Nongmingong*	2859	2966	3071	3279	3375
2. Local *Nongmingong* (short distance)	8501	8445	8888	9415	9925

Yichang holds job fairs for *nongmingong* and migrant workers returning home and disabled persons in February 2014
(Photo by Zhang Guorong)

Sewers work in the garment factory (Photo by Zhang Qiang)

2.1 Situation of *Nongmingong* in Urban Area

2.1.1 Migration of Floating Population & of *Nongmingong*

2.1.1.1 New-generation *Nongmingong* have Become the Main Force of Population Migration.

According to the A Monitoring Survey Report on Migrant Workers in 2012 released by the National Bureau of Statistics, young adults account for the majority of the *nongmingong*, with those in the 16-20 years old age group accounting for 4.9% of the total, 21-30 years old group accounting for 31.9%, 31-40 years old group accounting for 22.5%, 41-50 years old group accounting for 25.6% and 50 above years old group accounting for 15.1%. The percentage of *nongmingong* less than 40 years old has been decreasing year by year, dropping from 70% in 2008 to 59.3% in 2012, while the average age of *nongmingong* has increased from 34 to 37.3 during this period. According to the Sixth National Population Census in 2010, the new-generation floating population has exceeded 50% of the floating population with the total reaching 118 million. The results of the national dynamic monitoring of floating population show that the average age of floating population was about 28 in 2012 and over 50% of the working-age floating population were born after 1980. Compared with their former generation, the new-generation floating population leaves their hometowns at an earlier age, migrates for a longer distance and for more diversified reasons and more loves the big cities. 75% of the new-generation leaves their hometowns to find a job when they were about 20 years old. Over 70% of the new-generation floating population who are interested in settling down in cities wish to settle down and get registered as permanent urban residents in large cities.

The migration of the new-generation floating population has turned from migration of individual laborers to family migration. Over 60% of married new-generation floating population lives in the working place together with all the core family members. However, most families are not able to migrate all their core family members once for all. Nearly 70% of the families migrate their family members by several times and the most common practice is that their spouses come first, followed by all or some of their children. The family migration can easily give the floating population a sense of belonging and enhance their feeling of happiness. The migrants are experiences the transition from pendulum migration to stable life and employment in cities, and over 60% of the migrant population haven't changed their jobs in the recent three years. The new-generation floating population represents the new trends of change in population migration and mobility in terms of quantity, direction and structure of the migration.

Table 2-2: Composition of *Nongmingong* (%)

	2008	2009	2010	2011	2012
16-20 years old	10.7	8.5	6.5	6.3	4.9
21-30 years old	35.3	35.8	35.9	32.7	31.9
31-40 years old	24	23.6	23.5	22.7	22.5
41-50 years old	18.6	19.9	21.2	24	25.6
Over 50 years old	11.4	12.2	12.9	14.3	15.1

Box 2-1: New-generation *Nongmingong*

The new-generation *nongmingong* who were born after 1980 account for about 61% of the migrant *nongmingong*. Compared with the old former generation of *nongmingong*, the new-generation *nongmingong* has gradually lost their farming skills. Among *nongmingong* in the age group of 16-20, only 4% have participated in the farming technical trainings and for *nongmingong* of 21-30 years old, there are only 6.2%. Three-fourths of the new-generation *nongmingong* have never engaged in farming. They have received higher level education, focus on personal career development and are more likely to choose careers that are not so hard. They pay more attention to improving their personal living quality and have a stronger will to be integrated into the urban life. What they want has undergone an obvious change from simply economic gains to stable residence, social security and public services, etc.

(Photo by Wei Liang)

2.1.1.2 Spatial Features of *Nongmingong* Exporting Places

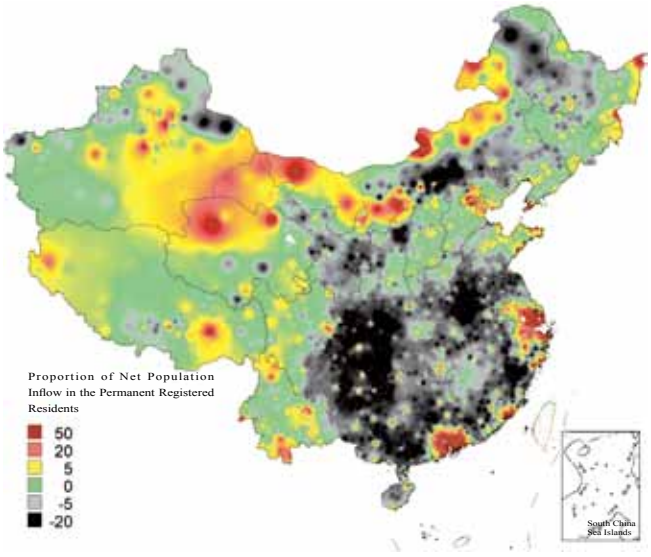
The eastern region[1] has the largest inflow of the *nongmingong*, followed by central and western regions. In 2012, the eastern region had 111.91 million *nongmingong*, accounting for 42.6% of the total; the central region had 82.56 million, accounting for 31.4% of the total, and the western region had 68.14 million, accounting for 26.0% of the total.

Nongmingong to the central and western regions grew faster than those to the eastern region. In 2012, the number of *nongmingong* inflows into the eastern region increased by 3.7% (4.01 million) as compared to 2011; the central region by 4.0% (3.14 million) and the western region by 4.1% (2.68 million).

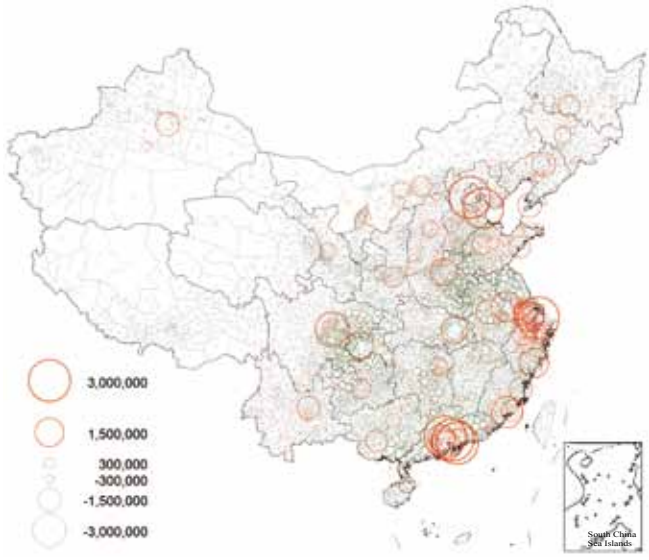
Nongmingong of the eastern region mainly migrate by a short distance, and *nongmingong* in the central and western regions mainly migrate by a long distance. In the eastern region, the migrant *nongmingong* account for 20.2% of the total and the local *nongmingong* account for 34.7% of the total; and as for the central region, it's 24.3% and 12.9% respectively; and as for the western region, it's 19.2% and 9.5% respectively.

2.1.1.3 Temporal and Spatial Features of *Nongmingong* Flows

The eastern coastal areas are the major destination of *nongmingong* flows, especially the Yangtze River Delta, Pearl River Delta and Beijing-Tianjin corridor areas. There were 169.80 million *nongmingong* working in the eastern region in 2012,



Map 2-1: Proportion of Net Population Inflow in the Permanent Registered Residents of the County, City and District Units of China, 2010
[©/ The above data are extracted from the data of the National Population Census 2010 and the map is taken from the National Fundamental Geographic Information System Database (similarly hereinafter)]



Map 2-2: Spatial Distribution of Net Population Inflow in the County, City and District Units of China, 2010
(©/ The above data are extracted from the data of the National Population Census 2010 and the map is taken from the National Fundamental Geographic Information System Database)

Table 2-3: Regional Composition of *Nongmingong* (%)

	2012			2011		
	Eastern Region	Central Region	Western Region	Eastern Region	Central Region	Western Region
Nongmingong	42.6	31.4	26	42.7	31.4	25.9
1 Migrant *Nongmingong*[2]	31.5	36.7	31.8	31.6	36.6	31.8
2 Local *Nongmingong*	60.8	22.9	16.3	61.4	22.7	15.9

1 Eastern region includes 11 provinces (municipalities): Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan; the central region includes 8 provinces: Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei and Hunan; and western region includes 12 provinces (municipality and autonomous regions): Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang.

2 Migrant Nongminggong refer to the rural labor forces who have worked for six months or more outside their own towns during the year of investigation. Local *Nongmingong* refer to the rural labor forces who have engaged in non-agricultural activities (including local non-farming employment and non-farming self-employed activities) in their own towns for 6 months or more. Family *Nongmingong* refer to the case where the rural labor forces and their families leave their original places of residence and settle down in places outside their original towns.

accounting for 64.9% of the total *nongmingong*; 47.06 million *nongmingong* working in the central region, accounting for 18.0% of the total; and 44.79 million *nongmingong* in the western region, accounting for 17.1% of the total. The major places of employment of *nongmingong* were such places as Guangdong, Zhejiang, Jiangsu, and Shandong, etc., where the Yangtze River Delta employed 59.37 million *nongmingong* and the Pearl River Delta employed 51.99 million *nongmingong*, accounting for 22.6% and 19.8% of the total *nongmingong* of China.

Judging by the places of employment of the migrant *nongmingong*, 10% of them worked in the municipalities directly under the central government; 20.1% in the provincial capital cities; 34.9% in the cities at the prefecture level; and 23.6% in the county-level cities. The percentage of *nongmingong* working in the municipalities and provincial capital cities dropped by 0.7 percentage point as compared to 2011 and the percentage of *nongmingong* working in cities at the prefecture level increased by 1 percentage point as compared to 2011. There were only 0.3% migrant *nongmingong* worked in Hong Kong, Macau, Taiwan and overseas.

The number of *nongmingong* working in the central and western regions increased very fast. The number of *nongmingong* working in the eastern region increased by 4.43 million or 2.7% as compared to 2011; the number increased by 2.68 million or 6.0% (0.3 percentage point on the national scale) in the central region and the number increased by 2.63 million or 6.2% (0.4 percentage point on the national scale). The percentage of *nongmingong* working in Guangdong, Zhejiang, Jiangsu, Shanghai, Hebei, and Chongqing, etc. has dropped as compared to 2011. While the total *nongmingong* working in the Yangtze River Delta and Pearl River Delta areas increased, their percentage dropped on the national scale. The *nongmingong* working in the Yangtze River Delta area increased by 1.9% or 1.09 million as compared to 2011, and the *nongmingong* working in the Pearl River Delta area increased by 2.5% or 1.27 million as compared to 2011, with their growth rate higher than 2011 by 1.6 and 2.4 percentage points respectively. The percentages of the *nongmingong* working in the Yangtze River Delta and Pearl River Delta areas in the total *nongmingong* of China dropped by 0.5 and 0.3 percentage point respectively as compared to 2011.

The intra-provincial migration scale and inter-provincial migration scale of *nongmingong* were basically the same. However, most intra-provincial migration appeared in the eastern region and the inter-provincial migration was dominant in the central and western regions. In 2012, the intra-provincial migrant *nongmingong* reached 86.89 million persons, accounting for 53.2% of the total migrant *nongmingong*, while the inter-provincial migrant *nongmingong* reached 76.47 million persons, accounting for 46.8% of the total. 83.7% of the migrant *nongmingong* chose intra-provincial migration, and 16.3% of them chose inter-provincial migration; while 66.2% of the *nongmingong* in the central region and 56.6% of the *nongmingong* in the western region chose inter-provincial migration.

The percentage of the *nongmingong* choosing inter-provincial migration has witnessed a steady decrease. Among the migrant *nongmingong*, the number of intra-provincial migrants increased in 2012 by 2.99 million (3.6%) as compared to 2011; the number of inter-provincial migrants increased by 1.74 million (2.3%) during the same period and the percentage of the *nongmingong* working outside their own provinces dropped by 0.3 percentage point as compared to 2011. As high as 51% of the migrant *nongmingong* chose to work outside their own provinces in 2009.

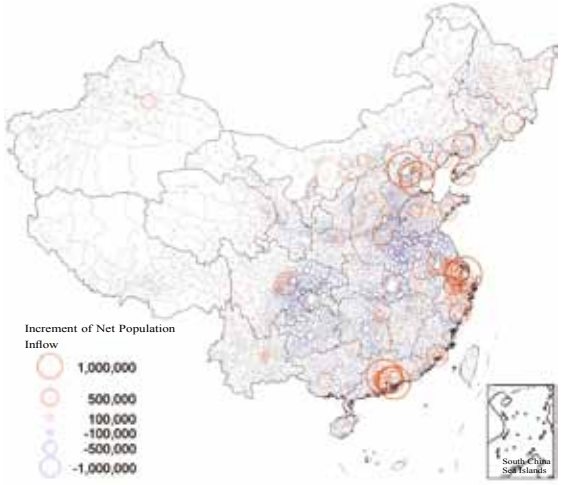
Map 2-3: Amount of Population Inflow from Other Provinces in the County, City and District Units of China, 2010
(©/ The above data are extracted from the data of the National Population Census 2010 and the map is taken from the National Fundamental Geographic Information System Database)

Table 2-4: The Distribution of Migrant *Nongmingong* in Different Regions (%)

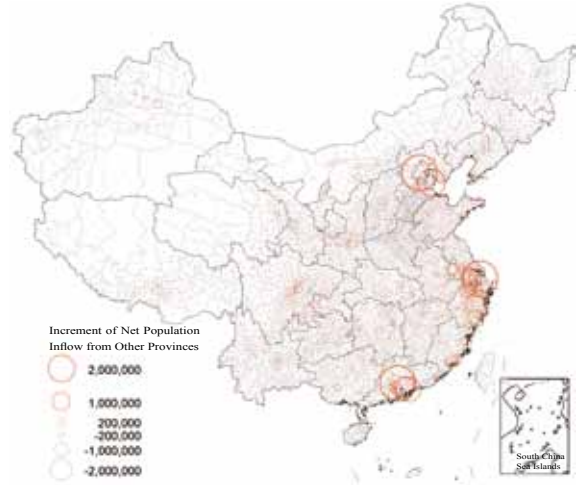
	2011			2012		
Region	Outside the township in the County	Outside the County in the province	Inter- provincial	Outside the township in the County	Outside the County in the province	Inter- provincial
Nationwide	20.2	32.7	47.1	20	33.2	46.8
East	32.1	51.3	16.6	32	51.7	16.3
Central	13	19.8	67.2	13.1	20.7	66.2
West	15.4	27.6	57	15.4	28	56.6

Map 2-4: Amount of Population Inflow from within the Province in the County, City and District Units of China, 2010
(©/ The above data are extracted from the data of the National Population Census 2010 and the map is taken from the National Fundamental Geographic Information System Database)

Map 2-6: Increment of Net Population Inflow from within the Province in the County, City and District Units of China, 2000-2010
(©/ The above data are extracted from the data of the National Population Census 2000 and 2010 and the map is taken from the National Fundamental Geographic Information System Database)



Map 2-5: Increment of Net Population Inflow in the County, City and District Units of China, 2000-2010
(©/ The above data are extracted from the data of the National Population Census 2000 and 2010 and the map is taken from the National Fundamental Geographic Information System Database)



Map 2-7: Increment of Net Population Inflow from Other Provinces in the County, City and District Units of China, 2000-2010
(©/ The above data are extracted from the data of the National Population Census 2000 and 2010 and the map is taken from the National Fundamental Geographic Information System Database)

2.1.2 Employment and Life of *Nongmingong*

2.1.2.1 Employment of *Nongmingong*

Most of the *nongmingong* entering the cities for employment are young and middle-aged labors in the age group of 15-49 years old, and they are strongly complementary with the urban labors in their fields of employment. Due to the limitations of their backgrounds, *nongmingong* mainly work in such industries as construction, sanitation engineering, and catering services. According to the statistics of 2012, their employment in the industrial fields was dominant, followed by the service industry. 54.1% of the *nongmingong* worked in the manufacturing sector and construction sectors, with the manufacturing sector accounting for 35.7% and the construction accounting for 18.4% of the employment. As for the service industries, the wholesale and retail accounted for 9.8% of the employment, the transportation, storage and postal services accounted for 6.6%, lodging and catering accounted for 5.2%, and the resident and other social services accounted for 12.2%. Since 2008, the employment ratio of the industrial fields has kept rising: while the employment ratio of the manufacturing sector has dropped from 37.2% to 35.7%, and the ratio of the construction has risen from 13.8% to 18.4%.

Most *nongmingong* working in the eastern region are mainly employed in the manufacturing sector, and in the central and western regions in the service industries. 44.6% of the *nongmingong* worked in the manufacturing sector in the eastern region in 2012, which is a 0.2 percentage point lower as compared to 2011; and the employment ratio of the manufacturing sector in the central and western regions were 23.2% and 15.4% respectively. In 2012, the employment ratio of the construction industry in the eastern, central and western regions witnessed an increase of 0.5, 0.8 and 1 percentage point respectively as compared to 2011.

There is a higher ratio of employed *nongmingong* than the self-employed ones and the former has been increasing faster than the latter one. Among the migrant *nongmingong*, the employed *nongmingong* account for 95.3% while the self-employed ones account for 4.7% only. Among the local *nongmingong*, the employed ones account for 72.8% and the self-employed ones account for 27.2%. The self-employed *nongmingong* mainly works in the wholesale and retails, accounting for 38.9%, followed by 19.3% in the transportation, storage and postal services and 11.9% in the manufacturing sector. The ratio of self-employed *nongmingong* in the migrant *nongmingong* and local *nongmingong* has been dropping: the ratios of local self-employed *nongmingong* and migrant self-employed *nongmingong* dropped by 0.9 and 0.5 percentage point as compared to 2011.

Table 2-5: Major Distribution of *Nongmingong* by Industry (%)

	2008	2009	2010	2011	2012
Manufacturing	37.2	36.1	36.7	36	35.7
Construction	13.8	15.2	16.1	17.7	18.4
Transportation, Storage and Postal Services	6.4	6.8	6.9	6.6	6.6
Wholesale and Retails	9	10	10	10.1	9.8
Lodging and Catering	5.5	6	6	5.3	5.2
Resident and Other Social Services	12.2	12.7	12.7	12.2	12.2

Table 2-6: Proportion of Employed and Self-employed *Nongmingong*, 2012 (%)

	Employed	Self-employed
Local *Nongmingong*	73	27
Migrant *Nongmingong*	95	5

The average monthly net income of *nongmingong* engaged in self-employment in the Wangjing Market was RMB 4,020 Yuan, which is 1.7 times of the average monthly net income of RMB 2,395 Yuan of *nongmingong* in the eastern region in 2011, and even approaching the average salary of Beijing urban employees of RMB 4,672 Yuan.

Map 2-8: Employment-Residence Space Distribution of Self-employed *Nongmingong* in Wangjing Market, Beijing

Photo: Self-employed *Nongmingong* in the Farmers Market of Beijing (Photo by Chen Yulin)
(©/ Chen Yulin. Disturbance Effect of Space Urbanization on the Registration of *Nongmingong* as Permanent Urban Residents-A Study on the Case of Demolition of Beijing N Covered Market. Not published.)

2.1.2.2 Income of *Nongmingong*

Nongmingong generally have a low income. By the end of 2012, the average monthly income of the migrant *nongmingong* was RMB 2,290 Yuan, an increase of 11.8% (RMB 241 Yuan) as compared to 2011, but the increment witnessed a decrease of RMB 118 Yuan or 9.4 percentage points over the same period of 2011. By region, the average monthly income of *nongmingong* working in the eastern region was RMB 2,286 Yuan, an increase of 11.4% or RMB 233 Yuan as compared to 2011; it was RMB 2,257 Yuan in the central region, an increase of 12.5% or RMB 251 Yuan as compared to 2011, and RMB 2,226 Yuan in the western region, an increase of 11.8% or RMB 236 Yuan as compared to 2011. This showed an income convergence of the *nongmingong* in the eastern, central and western regions. In addition, the average monthly income of the *nongmingong* working overseas was RMB 5,550 Yuan.

The average income of different industries differs a lot, with a lower average income level in the lodging and catering services and service industries. By major industries in which the migrant *nongmingong* were employed, *nongmingong* working in the transportation, storage and postal services and construction industry enjoyed a higher average monthly income of RMB 2,735 Yuan and RMB 2,654 Yuan respectively; and *nongmingong* working in the service industries, lodging and catering service and manufacturing sector had a lower average monthly income of RMB 2,058 Yuan, RMB 2,100 Yuan and RMB 2,130 Yuan respectively.

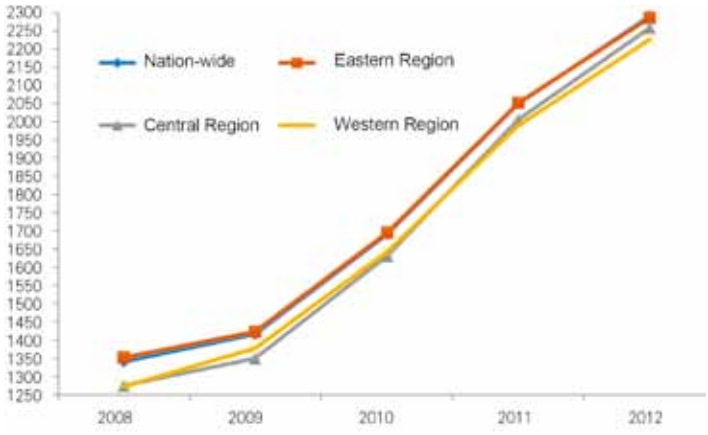


Figure 2-1: Monthly Income Level of Migrant *Nongmingong* in Different Regions (RMB Yuan/ Person)

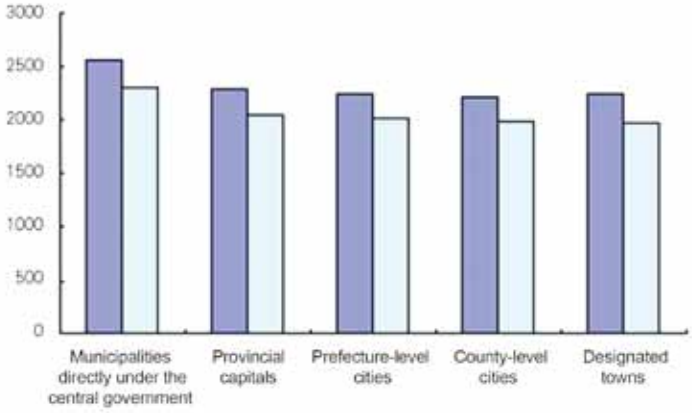


Figure 2-2: Monthly Income Level in Different Regions (RMB Yuan/ Person)

The big cities obviously have attracted *nongmingong* with higher incomes, which is the fundamental reason for the population expansion in big cities. The average monthly income of *nongmingong* working in the municipalities directly under the central government was RMB 2,561 Yuan in 2012, with an increase of RMB 259 Yuan compared with 2011; the average monthly income of them working in provincial capital cities was RMB 2,277 Yuan, with an increase of 236 compared with 2011; and the average monthly income of them working in the prefecture-level cities and county-level cities was RMB 2,240 Yuan and RMB 2,204 Yuan respectively, with an increase of RMB 229 Yuan and RMB 222 Yuan respectively.

Nongmingong from the central and western regions and working in the eastern region have a lower monthly income balance. The average monthly income balance of the migrant *nongmingong* was RMB 1,557 Yuan after deducting the living cost. But the *nongmingong* from the central and western regions and working in the eastern region had an average monthly income balance of RMB 1,518 Yuan and RMB 1,344 Yuan respectively, both being lower than the average income balance of the local *nongmingong* in the two regions. *nongmingong* from the central region and working in the central region and western region earned an extra RMB 64 Yuan and RMB 130 Yuan respectively compared with working in the eastern region. Those from the western region and working in the central and western regions earned an extra RMB 228 Yuan and RMB 90 Yuan compared with working in the eastern region. *nongmingong* from the central and western regions had the same income balance for the employment within and outside their provinces, while the income balance of the *nongmingong* from the eastern region and working in other provinces was RMB 2,118 Yuan, RMB 496 Yuan higher than working within their provinces. Comparatively speaking, *nongmingong* from the central and western regions and working in the eastern region suffered a higher living cost and lower income balance, which is why *nongmingong* tend to choose jobs near their hometowns when the job opportunities arise in the central and western regions and the major reason for the current change pattern of the *nongmingong* flows.

2.1.2.3 Accommodation of *Nongmingong*

The general accommodation conditions of the migrant *nongmingong* in big cities are poor, with only 0.6% migrant *nongmingong* purchasing property near the place of employment. Judging by the changes of the accommodation conditions of the migrant *nongmingong* in recent years, there is a trend that the ratio of shared tenancy rose, the ratio of sole tenancy dropped, and the ratio of property purchase at the place of employment dropped.

Most *nongmingong* live in the accommodation provided by the employer or the working units. For employed *nongmingong*, 32.3% of them live in the dormitories, 10.4% on the construction sites or makeshifts, 6.1% in the places of production or operation, 19.7% in shared tenancy, and 13.5% in sole tenancy. 13.8% of the migrant *nongmingong* working outside the towns returned to home every day for rest.

Table 2-7: Accommodation of Migrant *Nongmingong* (%)

	2008	2009	2010	2011	2012
Dorms of working places	35.1	33.9	33.8	32.4	32.3
Makeshifts on construction sites	10.0	10.3	10.7	10.2	10.4
Places of production and operation	6.8	7.6	7.5	5.9	6.1
Shared tenancy	16.7	17.5	18.0	19.3	19.7
Sole tenancy	18.8	17.1	16.0	14.3	13.5
Self-purchased property at the places of employment	0.9	0.8	0.9	0.7	0.6
Working outside the town and living at home	8.5	9.3	9.6	13.2	13.8
Others	3.2	3.5	3.5	4.0	3.6

Box 2-2: Housing for *Nongmingong* in Beijing

The types of *nongmingong* housing mainly include: rural bungalows and makeshifts in the suburban areas, the urban makeshifts, basements of tower buildings in new residential communities, and buildings of the old residential communities, etc. The accommodation of the self-employed *nongmingong* is mainly centered within the 1 kilometer radium and 5-kilometer radius from the places of employment. The major types of commute and transport are bus (42%), (electric) bicycles (21%), walking (17%) and private vehicles (11%). Their average one-way commute time is 27 minutes, far lower than the average level of Beijing urban residents (45 minutes).

Photo: Living Environment of *Nongmingong* at the Urban Fringes of Beijing (Photo by Chen Yulin)

Chen Yulin. Disturbance Effect of Space Urbanization on the Registration of *nongmingong* as Permanent Urban Residents-A Study on the Case of Demolition of Beijing N Covered Market. Not published.

The employers or working units of 40% migrant *nongmingong* provided no accommodation or tenancy subsidies. Judging by the accommodation share of employed migrant *nongmingong*, 49.5% of the *nongmingong* lived in the free accommodation provided by their employers or working units; 9.2% *nongmingong* were provided with no accommodation but tenancy subsidy from their employers or working units; and 41.3% *nongmingong* received no accommodation or tenancy subsidy.

2.1.3 Social Security and Permanent Urban Resident Registration of *Nongmingong*

2.1.3.1 Provision of Core Public Services

Nongmingong suffered low employment security and there doesn't seem to be much improvement. Only 43.9% of the employed migrant *nongmingong* signed labor contracts with their employers or working units and the percentage didn't witness much change or obvious improvement. There were still 0.5% of the employed migrant who had wages in arrears from their employers or working units in 2012.

They also had low social insurance levels. The percentage of employers or working units paying the premiums for pension insurance, work-related injury insurance, medical insurance, unemployment insurance and maternity insurance for the *nongmingong* was 14.3%, 24%, 16.9%, 8.4% and 6.1% respectively, which was 0.4, 0.4, 0.2, 0.4 and 0.5 percentage point increase respectively compared to 2011. Since 2008, there has been no obvious improvement in the work-related injury insurance which had a relatively high extent in the five insurances. There was still a disparity of the social insurance participation rate between the *nongmingong* working in the central and western regions and those in the eastern region.

In 2012, the increment of the various social insurance holding in the central region was higher than those in the eastern and western regions.

Table 2-8: Percentage of Migrant *nongmingong* Participating in Social Security Insurance (%)

	2008	2009	2010	2011	2012
Pension insurance	9.8	7.6	9.5	13.9	14.3
Work-related Injury insurance	24.1	21.8	24.1	23.6	24.0
Medical insurance	13.1	12.2	14.3	16.7	16.9
Unemployment insurance	3.7	3.9	4.9	8.0	8.4
Maternity insurance	2.0	2.4	2.9	5.6	6.1

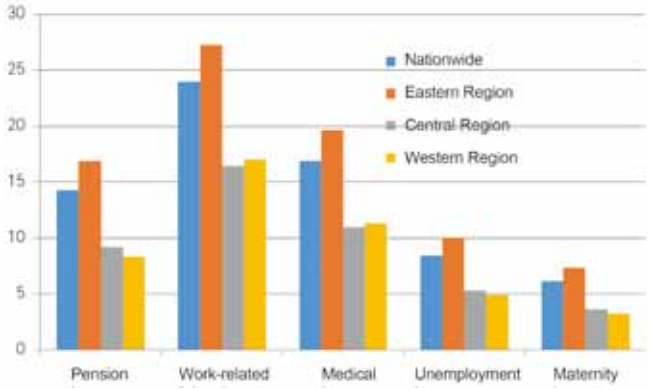


Figure 2-3: Percentage of *Nongmingong* Participating in Social Security Insurance in Different Regions in 2012

Box 2-3:

The quantity and percentage of reproductive-age women in the floating population have been increasing and the percentage of these women giving birth to babies outside their places of household registration is also increasing year by year. The number of migrant married reproductive-age women was about 63.07 million in 2012, accounting for nearly one fourth of the married reproductive-age women of China. The number of babies born out of floating population households in last year accounted for about one third of the newly-born babies during the same period in China. Nearly 70% pregnant of women choose to deliver their babies at their current residence. Migrant pregnant and lying-in women and children should be the focus of attention when it comes to prenatal and perinatal healthcare, child health management, immunization, etc. At the same time, there are prominent problems of prenuptial cohabitation, prenuptial pregnancy and reproductive health problems among the new-generation floating population.

2.1.3.2 Social Integration of *Nongmingong*

Among total *nongmingong* of China, illiterate ones account for 1.5%, those with primary school education account for 14.3%, those with junior middle school education 60.5%, those with senior middle school education 13.3%, and secondary specialized school and above education 10.4%. Compared with the national average level, *nongmingong* with junior middle school diplomas account for above 60% of all *nongmingong*, and the percentages of *nongmingong* with primary school education and illiterate ones witness a comparative drop.

Table 2-9: Comparison of Education Level of *Nongmingong* with the National Education Level

Region	Illiterate	Primary school	Junior middle school	Senior middle school and above
Population with education background	4.9	28.6	41.7	24.8
Nongmingong	1.5	14.3	60.5	23.7

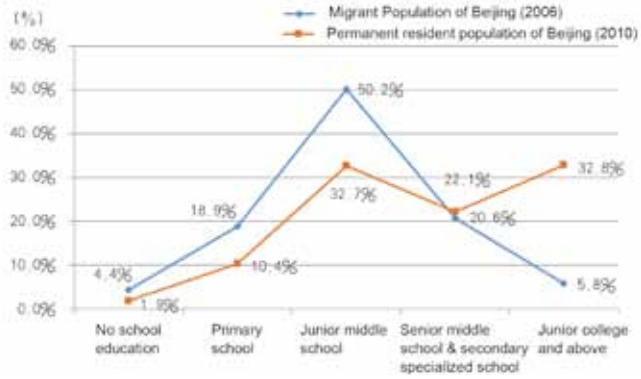


Figure 2-4: Comparison of Education Backgrounds between Floating Population and Permanent Resident Population above 6 Years Old in Beijing
(©/ Data of Population Census 2010 of Beijing; Data of Beijing's 1‰ Sampling Survey of Floating Population conducted by the Renmin University of China in 2006; Beijing Office of the Sixth Population Census. New Features of Cultural Improvements of Beijing Permanent Residents. May 30, 2011.)

Table 2-10: Composition of *Nongmingong's* Education Background in 2012 (%)

	Total *Nongmingong*	Local *Nongmingong*	Migrant *Nongmingong*	Young *Nongmingong* under 30 years old
Illiterate or semi-illiterate	1.5	2	1	0.3
Primary school	14.3	18.4	10.5	5.5
Junior middle school	60.5	58.9	62	57.8
Senior middle school	13.3	13.8	12.8	14.7
Secondary specialized technical school	4.7	3.3	5.9	9.1
Junior college and above	5.7	3.6	7.8	12.6

Yixian County Library of Liaoning Province gives *nongmingong* access to benefits of urban residents by offering Reading Room for *Nongmingong* (Photo by Li Tiecheng)

Table 2-11: Attendance of Training by *Nongmingong* of Different Age Groups in 2012 (%)

	Received farming technical training	Received non-farming occupational technical training	Received neither
16-20 years old	4	22.3	73.7
21-30 years old	6.2	31.6	62.2
31-40 years old	11	26.7	62.3
41-50 years old	14.9	23.1	62
Above 50 years old	14.5	16.9	68.6

Enshi Prefecture Labor and Employment Training Center of Hubei Province offers free training courses to *nongmingong* returning home (Photo by Yang Shunpi)

The majority of *nongmingong* who have received no technical training and small proportion of young *nongmingong* have received farming technical trainings. Among *nongmingong*, 10.7% have received farming technical training, and 25.6% have received non-farming occupational technical training, and 69.2% have received neither. The percentage of young *nongmingong* who have received non-farming occupational technical training is much higher than the percentage of *nongmingong* at older ages, and the percentage of older *nongmingong* who have received farming technical training is higher than the young *nongmingong* group. It shows that the lower the age group is, the lower the percentage of them who have received farming technical training.

2.1.3.3 Restrictions Faced in *Nongmingong's* Registration as Permanent Urban Residents

Considering its systematic and long-term nature, the registration of *nongmingong* as permanent urban residents is a massive project involving large population and high costs. Assuming the mission of registering the 200 million *nongmingong* as permanent urban residents is to be completed in the next 20 years, about 10 million *nongmingong* shall be turned into permanent urban residents each year. According to the relevant analysis of the Development Research Center of the State Council, the cost for each *nongmingong* to be registered as a permanent resident is estimated at about RMB 80,000 Yuan, which only includes following the six costs: the education cost for the children, medical security cost, pension insurance cost, other social security expenses of the civil affairs authority, social administration costs and social housing expenses. In the short term, the problem is providing such benefits of urban residents as identity, employment and public services, to *nongmingong* and in the even long time, there is the process for *nongmingong* to be integrated with the urban residents and urban cultural life. By now, according to the survey by the Institute of Labor Science, Ministry of Human Resources and Social Security, the top reason exerting its influences on the registration of *nongmingong* as permanent urban residents is "unable to purchase property", which account for 65.29% of the survey results. The second reason is "living cost in cities is too high" and the third and fourth reasons are "I want to be with family and take care of my parents" and "I have land and houses in the rural area" respectively. About 13.71% of *nongmingong* choose "we don't' belong here and we will go back sooner or later". 55.12% of *nongmingong* choose "having no house to live in" as the biggest difficulty in their work and life in the cities. At the same time, 59.93% of *nongmingong* are willing to purchase houses in the urban areas and the improvement of living conditions and child education are the two reasons they want to purchase property in the cities. 40.07% of them are not willing to purchase property in the cities mainly because the housing prices are too high, accounting for 73.45%. 26.29% of them choose so because "the job is not stable and it's not necessary to purchase houses", and 10.66% of them choose "the city has serious pollution problems"[1]. To sum up, the restrictive factors on *nongmingong's* registration as permanent urban residents include[2]:

Firstly, the cities are not capable of providing sufficient public services. After the reform and opening up to the outside world, the GDP-oriented targets of urban governments were far higher than such factors as social welfare or equality, and their investment on public goods tilted towards productive infrastructure that can improve the regional economic capabilities. Social functions such as the provision of core public services were reinforced just after the beginning of the new century. Considering that the resource allocation of such public services as social security, education, public health and housing security, were planned and provided based on the registered permanent urban residents,

1 Bai Tianliang. Too High Housing Prices Dampens *Nongmingong's* Wish to Settle Down in Cities. Renmin Ribao. April 2013.
2 Shen Bing. How to Promote the Urbanization of Migrant Workers in the 12th Five-Year Plan Period. China Economic Times. October 14, 2010.

it is materially difficult to extend the public services to the large scale rural population entering the cities when there are still "historical debts" in the resources allocation for the registered permanent population of the cities. This problem is even more remarkable in the emerging cities in the southeastern coastal region which receive an increasing inflow of *nongmingong*.

Secondly, the cities don't have enough will to provide public services. Currently, China is at a low level of integrated planning of core public services, and the local-based provision mode of core public services reinforces the regionalization and localization of public services provision to satisfy the need of citizens. The will of the municipal governments to provide such external public goods as education, employment support and public health, generally decreases based on the nature of affiliation, i.e. these services shall be provide first to *nongmingong* who come from the rural areas under the administration of the city, followed by the *nongmingong* of the same province and then the *nongmingong* from other provinces.

Thirdly, the inter-governmental cost-sharing mechanism for *nongmingong's* registration as permanent urban residents has not been established. The central government has attached great importance to the problem of *nongmingong*. But the current situation is that the cost sharing mechanism between the central government and local governments has not been formed and the majority of the responsibility for actual cost falls on the shoulder of the local governments (as for public services), the enterprises and the individuals (as for social security).

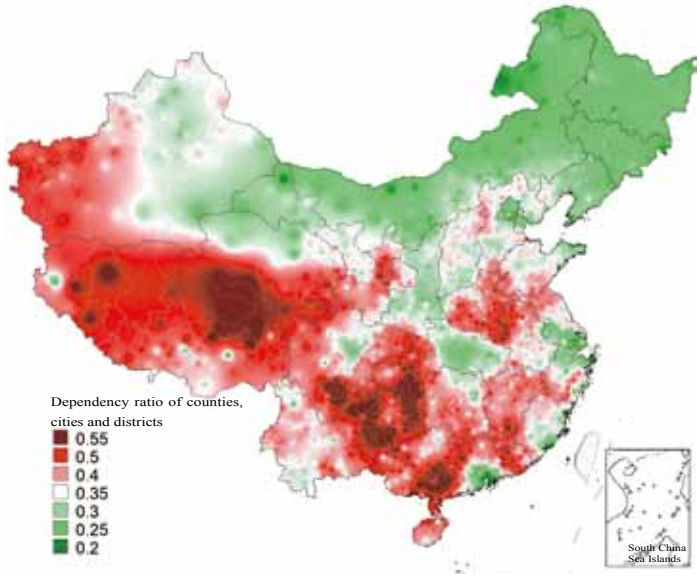
Fourthly, the support from the capitalization of land in the rural area to the registration of *nongmingong* as permanent urban residents shall be strengthened. Unlike the cases in such countries or regions as Japan where the farmers capitalize on their land and residential houses on their own or the government builds the economically affordable housing with the land increment benefits, thus basically solving the residence problem of the farmers entering the cities and turning the land increment benefits as a result of economic development into the important capitals of the farmers in their entry into the cities, China still has a long way to go to explore the possibility of capitalizing the rural land, especially to use the benefits from the capitalization for increasing the public service to *nongmingong*, and supporting the settlement of *nongmingong* in the cities, etc.

Textile workers of Jimo, Shandong Province manufacture garments for export (Photo by Liang Xiaopeng)

2.2 The Development of *Nongmingong* and Urban Prosperity

2.2.1 *Nongmingong's* Survival and Development Opportunities in Cities

Farmers' entering the cities to find job opportunities is an important way to transfer the surplus labor forces of the rural



Map 2-9: Proportion of Old-aged Population Above 65 and Children under 15 in Counties, Cities and District of China, 2010

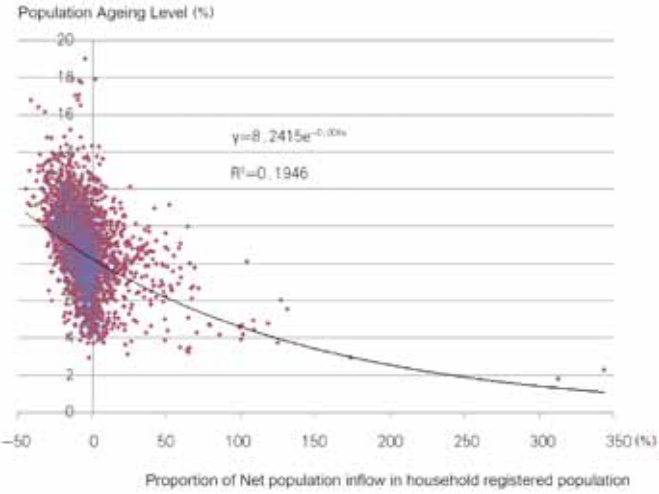


Figure 2-5: Relationship between Ageing Level and Net Population Outflow

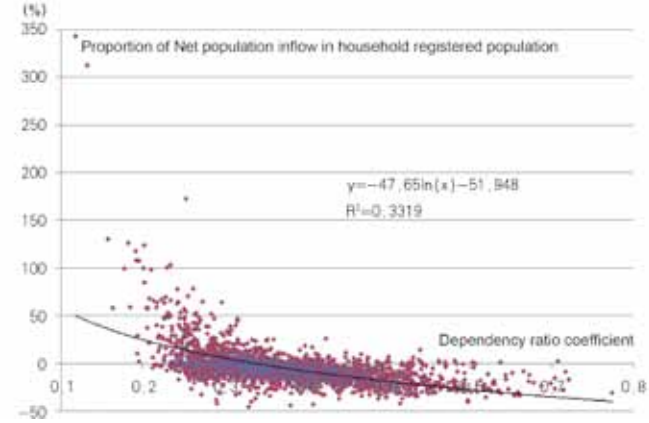


Figure 2-6: Relationship between Population Flow and Dependency Ratio

area and an inevitable process in China's promotion of urbanization. The total area of arable land of China is about 130 million hectares and the insufficient arable land has resulted in the increasing number of surplus labor forces in the rural area. As an answer to the new demand for labor forces as a result of the accelerated adjustment of agriculture and rural economic structure, industrialization and urbanization processes, and rapid expansion of the secondary and tertiary industries, large amount of rural labor forces have entered cities to find employment through various means. Therefore, *nongmingong* are the natural products of industrialization and urbanization and seeking their opportunities in cities that become their natural choice of development.

The cities provide the economic income but also various development opportunities for *nongmingong*. According to the survey of the Institute of Labour Science, Ministry of Human Resources and Social Security, among the reasons for *nongmingong* to settle down in the cities, the reason of "cities offer more opportunities and the income can be ensured" accounts for 55.70%, followed by such reasons as "children can enter urban schools for education", "learn technologies, see the world and have bright career futures", "enjoy the urban public services" and "convenient to see the doctors in the cities".

Farmers' entry into the cities for employment is an important way to transfer the surplus labor forces of the rural area and increase the farmers' income. The cash income of the farmers can directly support the local rural development and improve their living conditions. In 2003, the *nongmingong* in Beijing had an average monthly income of RMB875 Yuan, and the average annual income of 10500 Yuan, which was 4 times the net income per capita of Chinese farmers in that year. This has increased the income level of the farmers of the labor exporting places and played an active role in narrowing the urban-rural gaps and promoting the integration of urban and rural area.

2.2.2 *Nongmingong's* Contribution to Urban Prosperity

Nongmingong have made tremendous contributions to the urban prosperity. First of all, they have been providing the lost-cost labor forces. According to the data released by the National Bureau of Statistics and relevant research organizations, *nongmingong* have become an important force to support China's industrialization drive. Compared with the older generation of *nongmingong*, the new generation of *nongmingong* are no longer "farmers and workers" but purely workers in the secondary and tertiary industries, and mainly employed in the manufacturing sector. The transformation of China's industrial structure and the transition from "made in China" to "created in China" require a group of high quality labor force, and the transformation of the *nongmingong* to skilled workers with relatively stable employment and improving techniques and skills are playing a positive role in the transformation of China's industrial structure. Secondly, they have provided the necessary labor force to urban development by filling the workforce gaps of special industries that require high labor intensity and long working hours and that the local people have lost interests to work for.

2.3 Countermeasures for Registration of *Nongmingong* as Permanent Urban Residents: Prosperous City and Rich *Nongmingong*, a Win-win Choice

As an effort to promote the healthy development of China's urbanization, create the domestic demands for China's economic development and promote the prosperous city and rich and contented life of *nongmingong*, the solution of the problem of

Box 2-4 *Nongmingong* in Beijing

The *nongmingong* are unevenly distributed among various industries in Beijing. In 2004, about 84.4% of total *nongmingong* in Beijing were engaged in five industries such as construction, lodging and catering, wholesale and retail, manufacturing and residents' services and other social services, where 721,000 of them worked in construction, accounting for 25.2% of the total *nongmingong*; 483,000 in lodging and catering, accounting for 16.8% of the total; 449,000 in wholesale and retail, accounting for 15.7% of the total; 425,000 in the manufacturing sector, accounting for 14.8% of the total; and 342,000 in residents' services and other social services, accounting for 11.9% of the total.

In 2003, the workers engaged in the construction industry in Beijing realized the added-value of RMB 27.983 billion Yuan, with the added-value per capita of RMB 34,238 Yuan, and the added-value realized by *nongmingong* reached RMB 23.3 billion Yuan; the 1.378 million workers in the manufacturing sector realized the added-value of RMB 103.2 billion Yuan with the added value per capita of RMB 74,891 Yuan, and the added-value realized by the *nongmingong* reached RMB 30.18 billion Yuan; 861.3 thousand workers in the wholesale and retail realized the added-value of RMB 24.886 billion Yuan with the added-value per capita of RMB 28,893 Yuan and the *nongmingong* realized the added-value of RMB 12.31 billion Yuan. The added value of the above three industries realized by *nongmingong* reached RMB 65.79 billion Yuan, which equaled the combined added-value realized by the financial and insurance industries, government agencies, party agencies and social organizations and other industries.

In 2003, the number of *nongmingong* accounted for 83.6% of the construction workers who built the buildings and bridges. They also accounted for 49.5% (nearly 50%) of the workers in whole-sale and retail, and 29.3% of the workers in the manufacturing sector. Judging by the trends in recent years, *nongmingong's* entry into the labor market of Beijing has played an important role in accelerating the development of the secondary and tertiary industries and facilitating the living of the urban residents. By now, it's hard to disengage *nongmingong* from the daily life of Beijing's urban residents. In particular, when the *nongmingong* go back home for the new year celebrations and family reunion during the Spring Festival, the temporary vacancies of coal deliverers, milk deliverers, nannies and dustmen have brought much inconvenience to the daily life of Beijing residents.

The house renting by *nongmingong* in the urban and suburban areas have increased the income of some urban residents and local farmers. In 2003, the average monthly housing rent per *nongmingong* household was RMB 333 Yuan, which alone would bring the "other income" of RMB 4.62 billion Yuan to urban and suburban residents of Beijing in a single year.

(©/ Beijing Municipal Bureau of Statistics. *Nongmingong has become an Indispensable Force in Beijing's Economic Development*. 2005.)

Shabby dwellings for *nongmingong* in some coastal cities (Photo by Zhang Heping)

registering of *nongmingong* as permanent urban residents concerns not only the future of China's urbanization and modernization, but also the need to realized the equality and impartiality for the rural area, agriculture and farmers and maintain the social stability.

The central government has enhanced the attention to and input in the issue of *nongmingong's* registration as permanent urban residents. Relevant documents have pointed out on the subject of *nongmingong's* registration as permanent urban residents that: China would make great efforts to register the rural migrant population who have moved to work in the cities as permanent urban residents and register those who are capable of working and living in cities as permanent urban residents. The documents of the Central Urbanization Work Conference 2013 and the 2014 No.1 Document of the CPC Central Committee have attached unprecedented attention to the issue of *nongmingong's* registration as permanent urban residents. Following the gist of the documents, local governments also have deepened and reformed the development ideas on new path of urbanization and *nongmingong's* registration as permanent urban residents.

2.3.1 Innovation to the Urban-Rural Dual Structure

The top obstacle for *nongmingong's* registration as permanent residents is the urban-rural dual structure. The urban-rural dual structure of China, typified by household registration system and differentiated labor, employment, welfare and benefits security system for the urban and rural residents, has blocked the way of *nongmingong* who have left their hometown and farming life and moved into the cities to become true residents in cities. In recent years, despite some minor breakthroughs in the household registration system, the changes to the restrictions on household registration in large and medium-sized cities, especially Beijing, Shanghai and Guangzhou, are still limited, which means that when the farmers go into the cities to engage in a new career, they cannot change their identity as farmers, thus becoming the third group independent from the farmers and urban residents in the society and forming the new urban dual structure within the city, which includes the dual structure in terms of residential community, entitlement to public resources and public rights and employment. Therefore, the fundamental measure for terminating the term of *nongmingong* is to promote the transformation of dual economic structure to change to modern socio-economic structure and solving the barriers for *nongmingong's* urbanization from the institutional perspective. For migrant *nongmingong*, the long-term lack of interest safeguard mechanism through institutional participation means will result in the emergence of non-institutional participation (resistant participation, overactive participation or even violent participation) and threaten the stability and peace of the cities and the society.

Tanmen Town, Qionghai (Photo by Meng Zhongde)

Box 2-5: 26 *Nongmingong* Party Members Became Representatives of the CPC National Congress

The 17th CPC National Congress witnessed the presence of the representatives of the *nongmingong*, but the number was small and they could not be called a group. In 2008, three *nongmingong* representatives entered the arena of the CPPCC and entered the highest authority of the country. Since the reform and opening up to the outside world, *nongmingong* (migrant workers) have become an important part of the worker class and infused fresh blood to the workers' group. In 2012, 26 *nongmingong* party members became the representatives of the 18th CPC National Congress and for the first time appeared as a group on the national congress of the CPC. They accounted for 1.14% of all the representatives, but represented the expectations of 250 million *nongmingong* in China.

2.3.2 Market Mechanism and Countermeasures for Registration of *Nongmingong* as Permanent Urban Residents

Firstly, measures should be taken according to the local conditions and treat the *nongmingong* by different groups. The Work Report of the Government in 2011 explicitly proposed that "We will gradually make sure that rural migrant workers who have stable jobs and have lived in cities or towns for a number of years are registered as urban residents in line with local conditions and in a step-by-step manner." Due to the restriction of the special urban-rural dual economic structure and other factors, Chinese Nongminggong have failed to realize the complete change of career, region and identity from a farmer to an urban resident as in the western countries in the process of urbanization, but experienced the double journey as from farmer to *nongmingong* (migrant farmer workers) and from *nongmingong* to permanent urban residents. During this process, every farmer would rationally compare and weigh the benefits and costs of entering the cities as urban residents, which has resulted in various ways to register *nongmingong* as permanent urban residents[1].

Box 2-6: Article 30 of the 2014 No.1 Document of the CPC Central Committee

We should accelerate to promote the registration of the rural migrant population as permanent urban residents, proactively promote the reform of the household registration system, establish the unified rural and urban household registration (hukou) system, and register those who are capable of working and living in cities as permanent urban resident in an orderly manner. We should fully implement the residence permit system on migrant population, gradually promote the same core public services to the holders of the floating permits as the permanent residents of the place of residence, and protect the right of *nongmingong* to enjoy the same pay for the same work. We will encourage the local governments to make relevant policies starting from the actual situations and solve the household registration of the rural migrant population in the local towns or cities within their jurisdiction.

Box 2-7: Local Two Meetings Focused on New Path of Urbanization and *Nongmingong's* Registration as Permanent Urban Residents

By January 29, 2014, a total of 28 provinces have convened their local sessions of the People's Congress and the Chinese People's Political Consultative Conference and the new path of urbanization have become a heated topic of the local meetings. At least 26 reports already released by the governments of the provinces, autonomous regions and municipalities mentioned "promote new path of urbanization". The urbanization targets raised by the local governments included accelerating the reform to the household registration system, promoting the development of the city clusters, promoting the development of small and medium-sized cities… promoting the *nongmingong's* registration as permanent residents, strengthening the management of migrant population and using the residence permit to replace the temporary residence certificate. As a megalopolis with a permanent population of over 20 million, Beijing has declared in its government work report that, "The contradiction between the population, resources and environment are difficulties we cannot avoid in the current development. It concerns the vital interests of the public, the image of the capital city and the overall situation of development and must be seriously tackled and have both the symptoms and root causes addressed." In order to solve the problems of urban development and increase the level for sustainable development, Beijing Municipal Government has raised the measures of "strengthening the control on population scale" and the adoption of residence permit system. The work report of Shanghai Municipal Government pointed out that Shanghai would strengthen the demographic service management based on legal and stable employment and residence, strictly implement the residence permit system which is centered on the score system, and adopt such integrated measures as adjusting the industrial structure, improving the public policies and demolishing unauthorized buildings and cracking down on shared tenancies, to strictly control the population scale. As for Shaanxi Province in the western region, a province with a large rural population and high pressure in promoting urbanization, a highlight of the government's work report is to "lift the restrictions on household registration". The province vowed to realize the target of "registering 900,000 rural residents as permanent urban residents within the year", fully lift the restriction on household registration in the county seats and designated towns, and improve the provincially unified residence permit system.

1 Gu Shengzu. No.1 Document of the CPC Central Committee Identifies the Route for Urbanization of *Nongmingong*. http://www.people.com.cn. January 2014.

Secondly, ways should be explored to capitalize the rural land suitable to China's national situations and mutually promote the rural land capitalization and *nongmingong's* urbanization. Pilot projects should be implemented to use the capitalization gains to improve the public services level and support *nongmingong's* entering the cities for settlement through the capitalization of the rural land and houses or use of the land increment benefits by government to build economically affordable housing. On the basis of completing the registration and issuance of ownership certificates of the land use right to the rural residential land, local government are encouraged to continue to adopt such measure as assignment, contribution of capital in the form of land, contribution of capital, land in lieu of shares, mortgage and substitution, to explore the capitalization of rural residential land, share the experiences with other regions, and improve the financial capability of *nongmingong* when they move into the cities and settle down.

2.3.3 Institutional Arrangements for Registration of *Nongmingong* as Permanent Urban Residents

Firstly, the cost sharing mechanism for *nongmingong's* registration as permanent urban residents shall be established. Pilot projects of different types and at different levels will be conducted in different regions following the different sharing methods and mechanism between the central government, provincial governments, municipal governments and the individuals. The public services for *nongmingong* as permanent urban residents include not only such public goods as public healthcare and family planning, children's compulsory education and employment support, but also such services with quasi-public goods nature as social security and housing security. (1) The central government shall pay through the means of fiscal transfer the social security subsidies and fundamental education expenses for *nongmingong's* registration as permanent urban residents. (2) The local governments shall undertake the various urban infrastructure and administrative services, education and employment training, entrepreneurial support and supporting facilities for infrastructure of the public rent houses.(3) The enterprises shall assume part of the social responsibilities, which are mainly for such supportive input as pension, medical care and housing. (4) The individual and family of the *nongmingong*, as the direct beneficiary of the registration shall assume such fees as for employment training, social security insurance premium and housing.

Secondly, the long-term system of fiscal transfer payment by the central government will be established. The central government will increase its effort in fiscal transfer payment to solve the problems of public services for *nongmingong*, with the focus on enhancing subsidies to the labor force destinations for public healthcare and family planning, children's compulsory education, employment support and housing security. In recent years, the central government has been increasing the financial input to support the local governments to improve the welfare and benefits of Nongmingogng. In 2009, the central government assigned RMB 2 billion Yuan as the reward fund for the compulsory education of the migrant *nongmingong's* children, which was used specifically for the urban schools who received the children of *nongmingong* for compulsory education to supplement their administrative funds and improve the educational conditions. The provinces with the most inflows of migrant *nongmingong* in southeastern coastal region became the major recipients of the subsidies.

Thirdly, the institutional arrangement for equal access to public services shall be promoted. The Third Plenum of the 18th CPC National Congress pointed out that efforts should be made to make basic urban core public services available to all permanent residents in cities; a mechanism dovetailing fiscal transfer payment with the urbanized agricultural population; and core public services and public goods including labor remuneration, labor protection, children education, medical care services, and social security, etc., will be gradually made available to all permanent residents in cities instead of the population with urban household registration only. As for the housing of *nongmingong*, efforts will be made to gradually change the pattern where the social housing including the public rental house, low-rent housing and economically affordable housing, are not available to migrant *nongmingong*. As for compulsory education, the current pattern of public school accepting the children of *nongmingong* for education has been basically formed, and such problems as the regional imbalance, the children's preschool education and off-site college entrance examination should be solved. As for reproductive health care, family planning service and employment, support for the new generation of *nongmingong* shall be enhanced as many of their children will enter the compulsory education period and have a large demand for compulsory education.

Fourthly, the basic rights and interests system on promoting *nongmingong's* employment and labor shall be established. There are still a large number of *nongmingong* who have not signed labor contracts, and the generally poor working conditions and obviously low wage salary level of *nongmingong* have jeopardized their labor rights and interests, and suppressed their will to become permanent urban resident. Household registration system reform is a complicated issue. Surveys have shown that over 70% of the *nongmingong* are not willing to abandon their rural household registration, because the current rural household registration has an increasingly higher gold content which includes the residential land, contracted land and various subsidies, and the reform of the land system will bring its value even higher. Therefore, the principle of voluntary participation shall be maintained in the reform of the household registration system.

Taijiquan practitioners practice Taijiquan on the roof of Office Building of Beichuang Education Bureau, Sichuan Province
(Photo by Wang Weiqiang)

Chapter 3 Urban Core Public Services in China

Core public services refer to public services designed to ensure the basic needs of all citizens for survival and development, which is dominated and provided by the government based on certain social consensus, adapted to the economic and social development level and stage. It is the citizen's right to enjoy core public services and it is the responsibility of the government to provide them.

Scope of core public services generally include public services ensuring basic human needs, such as education, employment, social security, health care, housing security, culture and sports, etc., and broadly include public services closely associated with living environment of human beings, such as transportation, communications, utilities and environmental protection, as well as the public services ensuring the security needs, such as public safety, consumer safety and national defense.

Equalization of core public services means that all citizens can get fair and equal access to core public services. The principle is an equal opportunity, rather than a simple averaging or non-differentiation.

To ensure that all people enjoy their rights to education, employment, medical care, old-age care, and housing, in the ***12th Five-Year Plan for the National System of Basic Public Services***, the scope of core public services system was defined to include public education, employment services, social security, basic social services, health care, family planning, housing, public culture and other areas of basic public services.

For a long time, the problem of insufficient supply of public services and uneven development is prominent in China and the establishment and improvement of core public service system still faces many difficulties and challenges. The quantity and quality of core public services cannot meet the growing demands of the people; core public services for rural, poor areas and vulnerable groups have not been adequately ensured; institutional mechanism needs to be further improved, and the following problems are prominent: inconsistent system design between urban and rural regions, management fragmentation, irrational allocation of resources, less type of service providers and simple method of service providing, mismatched financial resources and powers of grassroots governments, and the absence of supervision and accountability mechanism.

The 12th Five-Year plan period is a critical period to accelerate the construction of the core public service system. From the demand perspective, industrialization, informatization, urbanization, marketization and internationalization will experience in-depth development, the income of urban and rural residents continues to improve, accelerating the transformation and upgrading of the consumption structure and the demand for public services increases strongly. From the supply perspective, the economy maintains steady and rapid development, increas-

Old people attend physical exercise at Qingxihe Fitness Square, Chizhou, Anhui Province (Photo by Cheng Zhao)

ing financial revenue, and further enhancing the financial security capacity for basic public services. From the institutional environment perspective, the establishment of mechanism and system favorable to scientific development are accelerated, reforms on education, public health and culture are carried forward and the institutional conditions for building a core public system are improved. Governments at all levels should firmly seize this rare historical opportunity and work hard to enhance the level of equalization to provide basic public services to satisfy the demand of people of various groups for a better life.

Table 3-1: National Standard of basic social services in the 12th Five-Year plan period

Service	Target	Standard	Expenditure Obligation	Coverage Rate
Social Assistance				
Minimum living security System	Urban and rural residents whose family income per capita is lower than local minimum living standard	Security standards shall be in accordance with the basic livelihood of local residents to meet the necessary food, clothing, water, electricity and other needs; annual growth shall be determined by the goals regulated by the outline of the national 12th Five-Year Plan	Undertaken by local fiscal budget with reasonable subsidy from central fiscal budget for poor areas	100%
Natural Disaster Relief	People whose life is in difficulty because of natural disasters	Providing preliminary relief to ensure basic living within 12 hours after the disaster	Shared between central fiscal budget and local fiscal budget	100%
Medical Aid	Groups with special difficulties such as families enjoying minimum living security and Five-Guarantee support in rural areas, low-income patients with serious illness, people with severe disabilities, the elderly with low income	Medicaid baseline pay shall be gradually reduced or cancelled; the proportion of subsidy for self-paid cost of hospitalization within the policy scope shall be no less than 50%	Undertaken by local fiscal budget with reasonable subsidy from central fiscal budget for poor areas	100%
Living assistance for vagrants and beggars	Homeless vagrants and beggars in cities	Free access to basic food, temporary shelter, acute illness treatment, service for returning to hometowns and resettlement	Undertaken by governments above county level	100% with standard relief agencies set up in cities
Rescue and protection of vagrant minors	Vagrant minors	Free to enjoy life care, education and vocational training, medical treatment, behavioral treatment, psychological counseling, rights protection, and service for returning to hometowns and resettlement	Undertaken by governments above county level	100% with standard relief agencies set up in cities
Social Welfare				
Orphans Raising	Minors who lost their parents, and minors whose parents cannot be found	Minimum raising standard shall be no less than the average living standard of the local area and shall be reasonably determined, and institutional care standards shall be higher than home raising standards	Undertaken by local fiscal budget with subsidy from central fiscal budget according to some standards	100% with 200,000 new beds for orphans
Five-Guarantee support for rural area	The old villagers, the disabled villagers and the children under the age of 16 who have no ability to work, no income, and no legal supporter or guardian, or the legal supporter and guardian have no capacity to assume their obligations	Not less than the average standard of living of local villagers and adjusted according to improvement of the average standard of living of local villagers, as determined by the local government	Undertaken by local fiscal budget with reasonable subsidy from central fiscal budget for poor areas	100% with collective supporting capacity of over 50%
Funeral subsidy	Families where cremation ashes are not preserved and low-income families of the deceased	Those who do not keep the ashes shall enjoy free service such as scattering of cremated ashes; providing subsidy on transportation, cremation and burial of the remains of the deceased to low-income families if possible	Undertaken by local fiscal budget	Increasing the cremation rate to 50%

Service	Target	Standard	Expenditure Obligation	Coverage Rate
Basic Aged Care Service				
Basic aged care service subsidy	65 years old or above urban and rural residents from poor families who lost the ability to take care of themselves	Subsidy shall be determined according the physical condition and family income of the aged	Undertaken by local fiscal budget	Over 50%
Special Care and Placement				
Preferential Treatment and Care	Persons enjoying preferential treatment and care from the state	No less than the local average living standard	Undertaken by central fiscal budget and local fiscal budget according to grading	100%
Centralized support to key targets of special care	Special care for those who are old and lonely and cannot take care of themselves	No less than the local average living standard	Shared between central fiscal budget and local fiscal budget	100%
Placement of veterans	Veterans	Those who are self-employed shall enjoy preferential policies after receiving the bonus; others shall enjoy work arrangement, retirement and support services	Shared between central fiscal budget and local fiscal budget	100%

3.1 Basic Public Education

Objectives of the country to establish basic public education system: to ensure that all school-age children and teenagers enjoy equal rights to education and to improve the basic cultural quality of the citizen. Focus: consolidating and improving the nine-year compulsory education, making senior middle school education and one-year pre-school education universal, improving financial support policies for students from poor families, establishing a sound system of basic public education services.

3.1.1 Preschool Education

By the end of 2012, China had 181,300 kindergartens in total, an increase of 14,500 over the previous year, 36,857,600 children in kindergarten (including the attached classes), an increase of 2,613,200 over the previous year, and 1,677,500 kindergarten teachers, an increase of 181,500 over the previous year. Pre-school education gross enrollment rate reached 64.5%, an increase of 2.2 percentage points over the previous year.

3.1.2 Compulsory Education

Compulsory education is the cornerstone of national prosperity and social progress. It is also an important way to improve the quality of the citizen and promote the comprehensive development of the people. Millions of families are looking for a better life through education. After the implementation of the newly revised *Compulsory Education Law* in 2006, the State Council and local governments at all levels gave high priority to compulsory education in the process of improving people's livelihood

Box 3-1

The government plans to provide the following basic public education services during the 12th Five-Year plan period:

◆ Providing free 9-year compulsory education for school-age children and teenagers, providing free accommodation for boarders from the rural area during the compulsory education period and providing subsidy for boarders from poor families

◆ Carrying out the Nutrition State Improvement Program for compulsory education students from poor and rural areas

◆ Providing free secondary vocational education for rural students, students from poor urban families and specialized in agriculture-related majors

◆ Providing financial support for students from poor families to receive general middle school education

◆ Provide financial support for children from poor families, orphans and disabled children to receive pre-school education

A worker hands out school lunch for students at Gangwei Village Primary School Canteen, Dapo Town, Liuzhou, Guangxi (Photo by Tan Kaixing)

Changqing Kindergarten of Haidian District, Beijing holds a Parent-Child Sports Meeting (Photo by Li Lin)

and enhancing social development, and introduced a series of supporting policies and regulations, to establish a management system *led by State Council, planned and implemented by provincial governments and managed by county governments*. The compulsory education was fully covered by the public financial security, investment was effectively increased and compulsory education has made significant achievements. All provinces (autonomous regions and municipalities) passed the evaluation of the state on universal nine -year compulsory education in 2011, with population coverage of 100%. Free compulsory education from primary school to junior middle school in urban and rural areas became universal. In 2012, nine-year compulsory education stability rate reached 91.8%. Overall, the provisions of the *Compulsory Education Law* have been well implemented, creating a new stage of development, from *receiving education to receiving good education and from ensuring all school-age children receive compulsory education to improving the quality of education*.

As of the end of 2012, there were 282,000 schools providing compulsory education. The enrollment in compulsory education totaled 32,854,300 and students in school totaled 144,589,600. Nine-year compulsory education penetration rate reached 91.8%. Full-time teachers totaled 9,089,800.

Primary School: There were 228,600 primary schools nationwide, with 17,146,600 students enrolled, 96,959,000 students on campus and 16,415,600 students being graduated. Net primary school enrollment rate of school-age children reached 99.85%. Primary school full-time teachers totaled 5,585,500, with the student-teacher ratio of 17.36:1.

Junior Middle School: There were 53,200 junior middle schools nationwide, with 15,707,700 students enrolled, 47,630,600 students studying on campus and 16,607,800 graduates. Gross junior middle school enrollment rate reached 102.1% and junior middle school graduates progression rate reached 88.4%. Junior middle school full-time teachers totaled 3,504,400, with the student-teacher ratio of 13.59:1.

Children living in the city with their parents who are migrant *Nongmingong* and the rural left-behind children

Among students in school in the compulsory education period, 13,938,700 were children living in the city with their parents who are migrant *nongmingong*, among which 10,355,400 are in primary schools and 3,583,300 are in junior middle schools.

Among students in school in the compulsory education period, 22,710,700 were rural left-behind children, among which 15,178,800 are in primary schools and 7,531,900 are in junior middle schools.

While development has been made in recent years in compulsory education, there are still some difficulties and problems:

1.Funds security for compulsory education needs to be improved

The gap of state funding for the country to realize standardiza-

National flag-raising ceremony is being held at Louwo Primary School, Shagou Town, Shandong Province
(Photo by Hong Xiaodong)

tion of compulsory schools is large, including cash of financing for land, buildings, equipments as well as teachers, management and teaching facilities. Due to the large-scale and weak foundation of primary and middle schools, and the fact that some of the old buildings which do not meet the current standards are still being used, it is a heavy task to ensure school safety. Some of the boarding schools lack in dormitories and their canteens, toilets, drinking water and other facilities are not up to standards. The phenomenon of a number of students sleeping on one wide bed and two students sharing one bed exist in 13% of the 12533 boarding schools audited by the National Audit Office in 2012 in 1185 counties of 27 provinces.

2.Compulsory education levels of urban and rural areas, different regions, different schools and different groups remain uneven

Generally there is a strong contrast on balanced education between the expectations of the masses and the reality. From the perspective of urban and rural areas, rural education is still weak. There is a considerable gap between funding per student of urban and rural areas. In 2011, the average expenditure in public finance budget for one student in general primary school of the rural area was RMB 700 Yuan less than that of the urban (including county seat) area; the expenditure in public finance budget for one student in general junior middle school of the rural area was RMB 900 Yuan less than that of the urban (including county seat) area. From the perspective of different regions, education development in the central and western regions is lagging behind. Economic development gap brings about education investment gap. In 2011, among all the provinces, the maximum average expenditure in public finance budget for one student in general primary and junior middle school was 9 times of the minimum expenditure. From the perspective of different schools, there is a large difference between schools of different levels. Key schools which have been socially accepted have brand effects accumulated for a long time. The gap between different schools on school conditions, teaching staff, education quality, and management level is significant. In some large and medium-sized cities, the enrollment is not standardized and there are school choosing issues, resulting in the vicious circle of imbalance - school choosing - more serious imbalance - stronger will for school choosing, which caused strong resentment among the masses. From the perspective of different groups, the education level of special groups is not high enough. Compulsory education for children living with their parents who are migrant workers has not yet fully integrated into the financial security and education development plan in the places where they live. There are still many difficulties for these children to get equal access to compulsory education. There are still many problems for rural left-behind children in the safety, education and emotional aspects due to the fact that they live far away from their parents and the lack of affection and family education. Special education is still a weak part of the education system. Compulsory education enrollment rate of children with disabilities is lower than that of normal children and the dropout rate is higher than normal children.

3.Implementation of quality education face many challenges

Although government at different levels has taken various measures to promote the implementation of quality education, the phenomena of valuing knowledge rather than the ability, valuing intellectual education rather than physical education, valuing class time rather than extracurricular *time* still exist in many schools, as a result of the pressure of college entrance examination and uneven allocation of educational resources. Due to the shortage of space and equipment as well as lack of teachers, some schools fail to offer enough courses; students are overburdened, lacking in rest and exercise time; endurance, strength, speed and other physical indicators of adolescents continue to decline, and the rate of poor vision stays high. If these problems are not effectively addressed, they will seriously affect the healthy growth of young people, and even affect the future of the country and the nation.

3.1.3 Special Education

Development of special education is an important content in promoting educational equity and realizing education modernization. It is an important measure to adhere to the people-oriented concept and promote the humanitarian spirit. It is also an important task to secure and improve people's livelihood, building a socialist harmonious society.

By the end of 2012, there were 1,853 special education schools, in which full-time teachers totaled 43,700. All around the country, 65,700 disabled students were enrolled in special education and 378,800 were in school already, among which, 40,900 were visually disabled students, 101,100 were aurally disabled students, 186,700 were intellectually disabled students and 50,100 were students with other disabilities. Disabled students enrolled by ordinary primary schools, ordinary junior middle schools and special education classes attached to ordinary schools amounted to 35,000 and disabled students already in school amounted to 199,800, respectively accounting for 53.30% of total number of students enrolled in special education and 52.74% of total number of students already in school. Special education graduates amounted to 48,600.

The Special Education Enhancement Program (2014-2016) was formulated by the state in 2014, with the general goal of providing appropriate education for every disabled child. A special education system was initially established with rational layout, interlinked studying periods, combination of general education and vocational education as well as combination of medical treatment and education. According to the program, by 2016, compulsory education for disabled children shall become universal and compulsory education enrollment rate of children with visual, aural and intellectual disabilities shall reach 90%, and educational opportunities for children with other disabilities shall increase significantly.

3.1.4 Senior Middle School Education

By the end of 2012, China had 26,868 schools providing senior middle school education (including general senior middle school, adult senior middle school and secondary vocational school), with 15,987,400 students enrolled, 45,952,800 students on campus and gross enrollment rate of 85.0%.

There were 13,509 senior middle schools, with 8,446,100 students enrolled, 24,671,700 students on campus and 7,915,000 students being graduated. General senior middle school full-time teachers totaled 1,595,000, with the student-teacher ratio of 15.47:1.

There were 696 adult senior middle schools, with 144,200 students on campus and 116,300 students being graduated. Adult senior middle school faculty totaled 7,300, with 5,800 full-time teachers.

China had 12,663 schools providing secondary vocational education (including general secondary specialized school, vocational senior middle school, technical school and adult secondary specialized school), with 7,541,300 students enrolled, accounting for 47.17% of total numbers of students enrolled in senior middle school education, with 21,136,900 students already in school of secondary vocational education, accounting for 46.00% of total numbers of students already in senior middle school education. Graduates of secondary vocational education amounted to 6,748,900. Secondary vocational education school faculty totaled 1,189,400, with 881,000 full-time teachers and student-teacher ratio of 24.19:1.

3.1.5 Adult Training and literacy education

By 2012, there were 3,948,400 person times receiving various kinds of higher education without degrees, among which 7,785,300 person times completed the course in the same year; there were 49,698,100 person times receiving various kinds of secondary education without degrees, among which 55370400 person times completed the course in the same year.

China had 123,800 vocational and technical training institutions, with faculty of 506,600 persons and 282,200 full-time teachers.

Students of Kashgar No.26 Middle School in Xinjiang attends class in the Language Lab (Photo by Adiljan)

Shansuo Primary School, a school with only 1 teacher and 8 students, in the mountainous area of Rong'an County, Guangxi (Photo by Tan Kaixing)

585,700 people got rid of illiteracy and other 689,000 were attending classes to get rid of illiteracy. There were 38,300 teachers engaged in wiping out illiteracy among which 17,800 were full-time teachers.

3.1.6 Community-run schools

By the end of 2012, China had 139,900 community-run schools (education organizations) of various levels and various kinds with 14,540,300 students enrolled and 39,110,200 students in school. Among them 124,600 were community-run kindergartens with 18,527,400 children, 5,213 community-run general primary schools with 5,978,500 students, 4333 community-run general junior middle schools with 4,514,100 students, 2,371 community-run general senior middle schools with 2,349,600 students, 2,469 community-run secondary vocational schools with 2,408,800 students. Besides, there were 20,155 other kinds of community-run training organizations providing training courses for 8,606,400 person-times.

Table 3-2: National Standard of basic public education in the 12th Five-Year plan period

Services	Target	Standard	Expenditure Obligation	Coverage Rate
Nine-year Compulsory Education				
Free Compulsory Education	School-age children and teenagers	Free tuition, miscellaneous items, and rural boarders lodging, free textbooks to rural students; annual public funds for each student of rural schools: no less than RMB 500 Yuan for student of ordinary primary schools, and no less than RMB 700 Yuan for student of ordinary junior middle schools	Shared between central fiscal budget and local fiscal budget in proportion	100% nine-year compulsory education stability rate: 93%
Subsidy to Boarders	Boarders from poor families in rural area	Annual subsidy for each student, of primary schools: RMB 1000 Yuan; of junior middle schools: RMB 1250 Yuan	Undertaken by local governments with appropriate subsidy from central government	100%
Nutrition State Improvement Program for compulsory education students from rural area	compulsory education students from poor and rural area	Besides the subsidy for boarders, each student from areas with special difficulties can get nutritious meal subsidy of RMB 3 Yuan every day (200 days of school time every year)	Undertaken by local governments with appropriate subsidy from central government target (undertaken fully by central government for pilot zones of the state)	100%
Senior middle school education				
Free secondary vocational education	rural students, students from poor urban families and agriculture-related majors	Free tuition	Shared between central fiscal budget and local fiscal budget in proportion	100% gross enrollment rate for senior middle school education reaches 87%
National Grants for secondary vocational education	Full-time students from rural area and poor urban families	No less than RMB 1500 Yuan for each student every year, for two years	Shared between central fiscal budget and local fiscal budget in proportion	100%
National Grants for general senior middle schools	Students from poor families	Determined by the local government, within the scope of RMB 1000-3000 Yuan, RMB 1500 Yuan on average for each student every year	Shared between central fiscal budget and local fiscal budget in proportion	100%
Pre-school education				
Financial support to pre-school education	children from poor families, orphans and disabled children	Support method and standard shall be determined by the local government	Undertaken by local governments with appropriate subsidy from central government	100% gross enrollment rate one year before entry into the kindergartens reaches 85%

3.2 Basic medical and health care

Health is an inevitable demand in promoting the comprehensive development of human beings. It is the common pursuit of human society to improve people's health and achieve the goal of accessing to medical services at needs. Medical and health care, which influences hundreds of millions of people's health, is a major livelihood issue of a country.

The Chinese government attaches great importance to the protection and promotion of people's health. According to the Constitution, the state should provide medical and healthcare services and develop modern medicine and traditional medicine to protect people's health. Through unremitting efforts, a nationwide basic medical and health service system covering urban and rural areas has formed, the disease prevention and control capability has continuously enhanced, the population covered by health insurance has gradually expanded, the level of health technology has risen, and the health of residents has significantly improved. The state has established and continuously improved the basic health care system to provide safe, effective, convenient and affordable basic health services for the urban and rural residents. According to objective and requirement of universal access to basic health services, the public health service system, urban and rural health care system, drug supply and security sys-

Box 3-2:

The government plans to provide the following basic medical and health care services during the 12th Five-Year plan period:

◆ Providing basic public health services including free health records, health education, immunization, communicable disease prevention and control, child health care, maternal health care, the aged health care, management of chronic diseases such as hypertension, management of severe mental disease and health supervision to urban and rural residents;

◆ Implementing national immunization program and other major public health programs such as prevention and treatment of AIDS, tuberculosis, schistosomiasis and other major infectious diseases, hospitalization and maternity subsidy for rural women, cervical cancer and breast cancer screening for women;

◆ Implementing the national essential drug system, with all basic essential drugs included in the reimbursement list, and drugs sold with no price difference;

◆ Providing security for drug safety to ensure the quality and safety of medicines.

Rural medical practitioner in China (Photo by Liang Hongyuan)

Box 3-3:

To ensure the effective supply of food, improve the nutritious status of the citizens, promote scientific diet, prevent and control nutritional disorders, and provide a better life for the peoples the State Council issued the Outline for the Development of Food and Nutrition in China (2014-2020) on January 28, 2014.

Development Objectives by 2020:

China's grain production shall be stable at 550 million tons or more, and production of oil, meat, eggs, milk, fishery product and other products shall increase at a stable growth rate.

The national annual consumption of grain per capita shall be 135 kg, edible vegetable oil 12 kg, bean products 13kg, meat 29 kg, eggs 16kg, dairy products 36 kg, aquatic products 18kg, vegetables 140 kg and fruits 60kg.

National daily intake of energy per capita shall be 2200-2300 kcal, among which proportion of energy from cereals shall not be lower than 50% and proportion of energy from fat shall not be higher than 30%; daily intake of protein per capita shall be 78 grams, among which proportion of high-quality protein shall be higher than 45%; micronutrient intakes of vitamins and minerals shall meet the basic health needs of the residents.

The retarded rate of children under 5 years old shall be controlled below 7%; the anemia rate shall be controlled below 10%, where the anemia rate of pregnant women shall be controlled below 17%, the anemia rate of the aged shall be controlled below 15%, and the anemia rate of children under 5 years old shall be controlled below 12%; Growth rate of overweight, obesity and dyslipidemia shall be decreased significantly.

Students eat hot boiled eggs and drink milk in Sanlie Town Central School, Neijiang City, Sichuan Province
(Photo by Li Jianming)

tem have been established and improved to improve the fairness, availability and quality of basic health services.

3.2.1 Health Status

By 2012, China had 950,297 medical and health institutions in total, including 23,130 hospitals, 912,620 grassroots medical and health institutions and 12,083 specific public health institutions.

There were 5,725,000 hospital beds in total in the medical and health institutions, including 4,161,000 in hospitals (accounting for 72.7%) and 1,324,000 in grassroots medical and health institutions (accounting for 23.1%). The number of hospital beds for every one thousand people rose from 3.84 in 2011 to 4.24 in 2012.

Medical and health personnel of the country totaled 9,119,000, with an increase of 5.8% over the previous year, including 6,679,000 medical and health technical personnel, 1,094,000 country doctors and nurses, 319,000 other kinds of technical personnel, 373,000 management personnel and 654,000 ground skilled staff members. Among the medical and health technical personnel, there were 2,616,000 practicing physicians (assistants) and 2,497,000 registered nurses.

The number of visits to the medical and health institutions in China was 6.89 billion person-times in total, with an increase of 9.9% over the previous year. In 2012 every resident went to medical and health institutions for treatment of 5.1 times on average. It was estimated that total expenditures on health should reach RMB 2891.44 billion Yuan, with expenditure per capita of RMB 2135.8 Yuan.

There were 33,562 community health service centers (stations), including 8,182 community health service centers with 347,000 staff members, and 25,380 community health service stations with 107,000 staff members. The number of staff members working in community service centers (stations) increased by 4.9% or 21000 persons over the previous year. It is much more convenient for the residents to go to hospitals, which means the hospital is more accessible. The proportion of residents living within 15-minute distance from medical institutions rose from 80.7% in 2003 to 83.3% in 2011, among which the proportion for rural area reached 80.8%.

The number of visits to community health service centers in China was 0.45 billion person-times in total, with 2,665,000 persons hospitalized. Annual treatment amount of each center on average was 55,000 person times, with an annual hospitalization amount of 326 persons. The number of visits and inpatient of each physician was 14.8 person-times and hospitalization of 0.7 day. Community health service stations in China treated 0.14 billion person-times in total, and the annual number of visits and inpatient of each station on average was 5,516 person times. The daily number of visits and inpatient of each physician was 14.0 person-times.

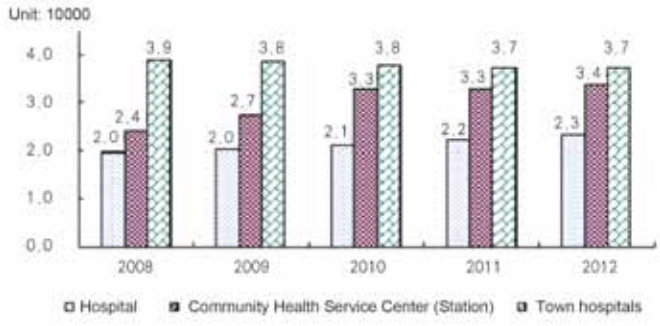


Figure 3-1: Number of medical and health institutions

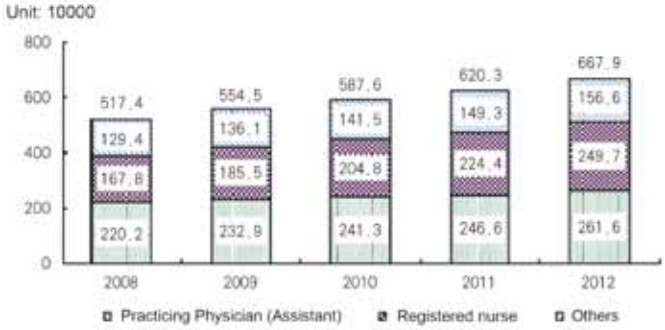


Figure 3-3: Number of Medical and health technical personnel

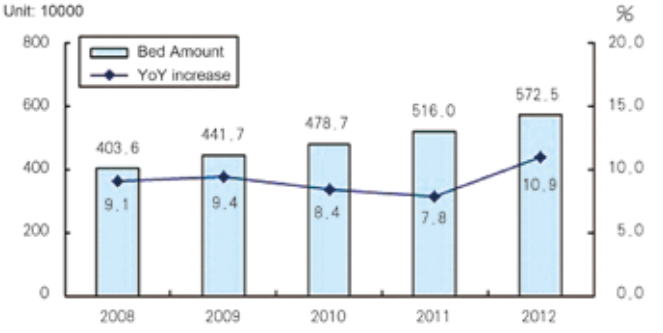


Figure 3-2: Number of beds and their increase in medical and health institutions

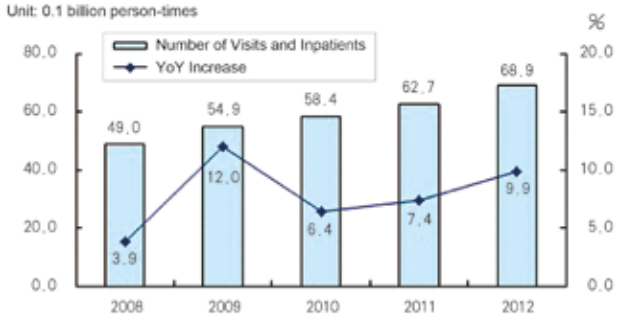


Figure 3-4: Number of Outpatients and their increase in medical and health institutions

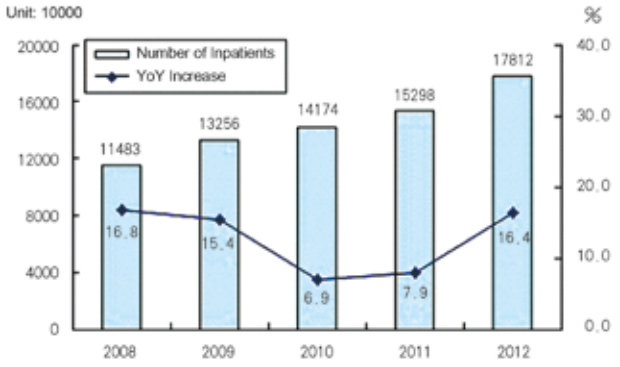


Figure 3-5: Number of Inpatients and their increase in Medical and Health Institutions

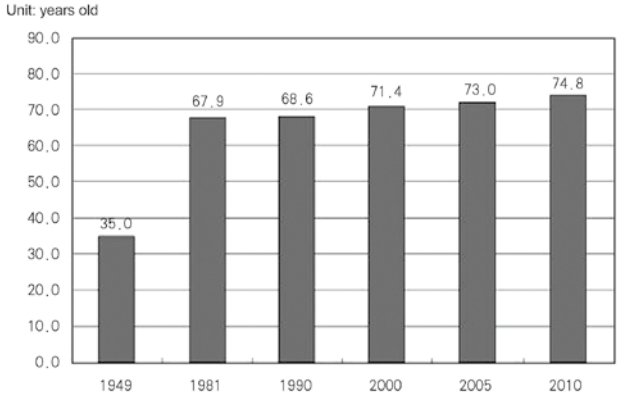


Figure 3-6: China's average life expectancy

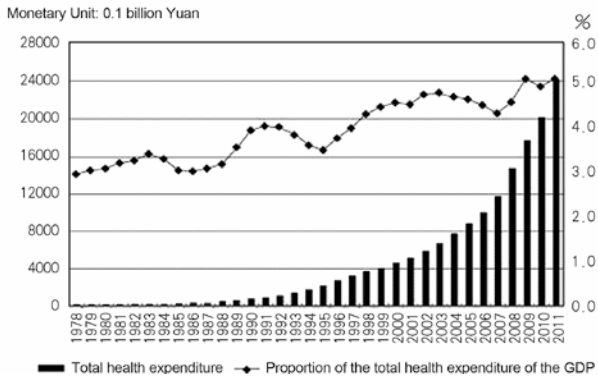


Figure 3-7: China's total health expenditure and its proportion in the GDP

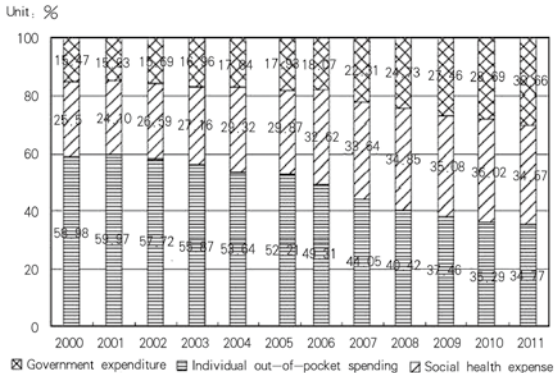


Figure 3-8: China's health financing structure

It was estimated that total national health expenditure in 2012 reached RMB 2891.44 billion Yuan, with the per capita health expenditure of RMB 2135.8 Yuan. In terms of the comparable price, annual increasing rate of total national health expenditures from 1978-2011 was 11.32%. Individual out-of-pocket spending on healthcare dropped from 57.7% in 2002 to 34.8% in 2011. Risk protection level and re-distributional effect of health financing system were improved. National health expenditure in 2011 was composed by expenditures for urban area (76.3%) and expenditures for rural area (23.7%). Health expenditure per capita was RMB 1,807.0 Yuan, with RMB 2,697.5 Yuan per capita for urban area and RMB 879.4 Yuan per capita for rural area. Total health expenditure accounted for 5.15% of the GDP.

In 2012, there were 3,217,000 cases of incidence of Category A and B infectious diseases as reported by statutory reports, 16,721 persons reported dead. Incidence rate of infectious diseases was reported as 2387.6 per million persons, with the death rate of 12.4 per million persons.

The health level of Chinese residents has been at the forefront of developing countries. In 2010 the average life expectancy was 74.83 years old, with the male at 72.38 and the female at 77.37 years old.

3.2.2 Women and Children Health Protection

China has 0.86 billion women and children, accounting for 2/3 of the total population. Gender equality is a basic national policy of China and the Chinese government has always attached great importance to the survival and health of women and children, improved maternal and children health law and policy, signed a number of international conventions to protect women and children, improved maternal and children health service system, implemented maternal and children public health services projects, focused on improving the fairness and accessibility of maternal and children health services and effectively protected the health and rights of women and children.

Since the 1990s, the Chinese government has formulated and implemented *Outline for the Development of Women (1995-2000), Outline for the Development of Women (2001-2010), Outline for the Development of Women (2011-2020) and Outline of the Program for Chinese Children's Development in the 1990s, Outline for the Development of Children (2001-2010) and Outline for the Development of Children (2011-2020)*. The health of women and children are included in the national economic and social development planning as one of the development fields with priority.

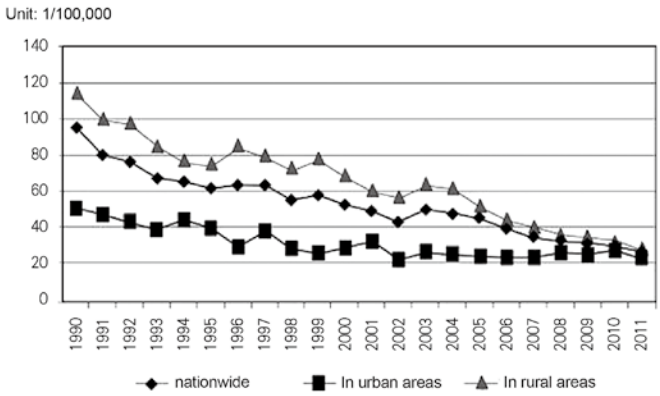


Figure 3-9: China's maternal mortality rate

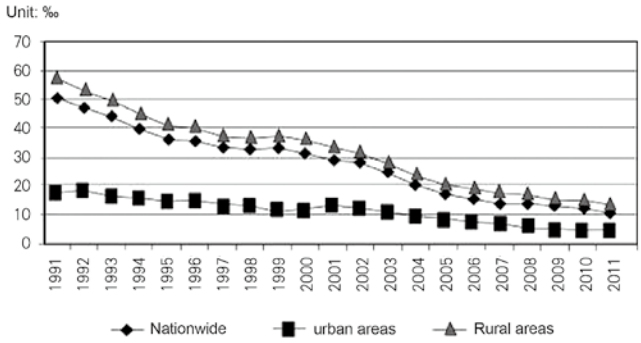


Figure 3-10: China's infant mortality rate

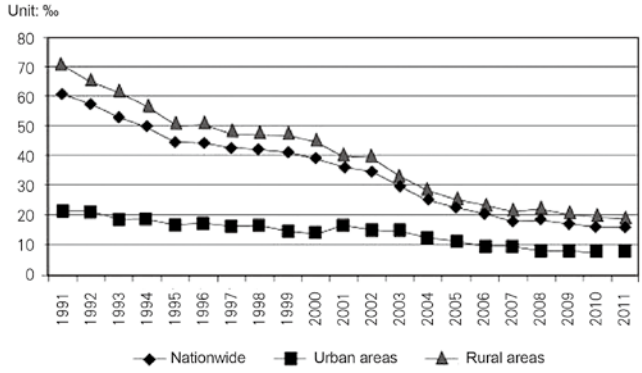


Figure 3-11: China's mortality rate of children under five

Kindergarten children and parents plays child-parent games
(Photo by Zhang Guorong)

China's maternal and children health system, with maternal and children health care professional organizations as the core, urban and rural primary health care institutions as the bases, large and medium-sized comprehensive medical institutions and related research and teaching institutions as technical support, provides a full range of health care services for women and children. Maternal and children health annual report system and the world's largest network of maternal and children health monitoring are established to conduct birth defects monitoring, maternal mortality monitoring, monitoring of death in children under five years of age, critical pregnant women monitoring and children nutrition and health monitoring. Maternal and children health information provides scientific basis for the governments at all levels to make health policies, and maternal and children health policies in particular.

In 2012, the maternal antenatal check rate was 95.0%, the postpartum visit rate was 92.6%, delivering rate in hospital was 99.2% (99.7% in city, 98.8% in county), and over-age and critical pregnant women management rate reached 99.6%. In 2012, the national maternal mortality rate was 245 per million persons, declining by 74.1% and 55.2% respectively compared with that of 1990 and 2000. Examination and treatment of gynecological diseases, adolescent health care and premenopausal and old women care were conducted to provide the women with full life-cycle services.

Infants and preschool children health care is promoted. Health care management for children under 7 years old and system management for children under 3 years old were conducted. Infant mortality rate and mortality rate of children under 5 years old continued to decline, with infant mortality rate of 29.2 ‰ in 2002 to10.3 ‰ in 2012 and the mortality rate of children under five years old of 34.9 ‰ in 2002 to 13.2 ‰ in 2012

China has carried out a series of works including control of birth defects to improve the quality of birth population by neonatal screening, early comprehensive development of children of 0-3 years old, rehabilitation of developmental deviation children, high-risk infants early intervention, early intervention on food allergies, intervention on sleep problems, early intervention on damages of environmental pollution to the health of children and adolescent health care.

3.2.3 Reform of the Medical and Health Care System

In March 2009, the *Opinions of the CPC Central Committee and the State Council on Deepening the Reform of the Medical and Health Care System* was released to start a new round of medical reform. The basic idea of the reform is to provide basic health care as a universal public goods to people all around the country, making sure that everybody get access to basic health services and that every resident, regardless of the geography,

ethnicity, age, gender, occupation, income level, are equitable to get access to basic health services through the system. The basic principles of the reform are *ensuring the basic services, enhancing the grass-roots levels, and building a mechanism*.

Through hard work, China's new round of medical reform has made great progress.

1. The basic medical insurance system has covered both urban and rural residents

As of 2011, the number of people covered by basic medical insurance for urban employees, basic medical insurance for urban residents, and the new rural cooperative medical insurance exceeded 1.3 billion, with a coverage increase from 87% in 2008 to over 95% in 2011. China built up the world's biggest basic medical insurance net. It is now much more convenient for the residents to settle the medical account after the implementation of real-time settlement for reimbursement of medical costs. Urban and rural medical assistance system has been established and improved to cover urban and rural low income families and rural Five-Guarantee support families, and gradually to cover the groups with special difficulties such as low-income patients with serious illness, persons with severe disabilities, and the aged from low-income families. In 2011, China's urban and rural medical assistance system provided service for 80.9 million person-times.

2. The essential drug system is established

A system of selection, production, supply and use of essential drugs and medical insurance and reimbursement has been initially formed. In 2011, the essential drug system achieved full coverage of the grassroots with all government-run grassroots health care institutions storing and using essential drugs. Drugs were sold in price without any difference and the mechanism of *subsidizing medical services with profits from drug sales* was cancelled. Clinical use guidelines and formularies for national essential drugs were formulated to regulate grassroots medication behavior and promote the rational use of drugs. All the essential drugs are included in the basic medical insurance drug reimbursement catalog.

3. Urban and rural grassroots medical and health care service system is further improved

From 2009-2011, the central finance invested RMB 47.15 billion Yuan to support the construction and development of grassroots medical and health care institutions. A variety of actions were taken to strengthen the quality of medical and heath care professionals, formulate preferential policies and train and introduce medical and health care professions for rural area and communities. A general practitioner system was established to standardize the training of general practitioners and arrange staff members of grassroots medical and health care institutions to participate in the general practitioner training. Grassroots medical care service model was changed, to provide mobile medical services in township hospitals, promote community general practitioner team system and contracted family doctors system, to integrate treatment with prevention ensure the basic needs of residents for medical treatment, and have most of the common diseases and frequently re-occurring disease addressed at the grassroots institutions.

4. Equalization level of basic public health services has improved significantly

The state provides all residents with basic public health service packs, including 41 kinds of services of 10 categories such as health records, health education, immunization, health management for children of 0-6 years old, maternal health management, elderly health management, health management for hypertension and type II diabetes patients, management of patients with severe mental disorders, reporting and handling of infectious diseases and public health emergencies, health monitoring and co-management. In 2011, the overall vaccination rate of national immunization programs reached above 90%, and the national hospital delivery rate reached 98.7%. In 2009 the *Program of Providing Treatment for Millions of Cataract Patients from Poor Families* was launched and as of 2011, the government had provided grants to more than 1.09 million cataract patients from poor families to receive surgeries.

Senior citizens of Lican Village, Gaoxin Street, Zouping County, Shandong Province, collect basic pension (Photo by Dong Naide)

5. Reform of public hospitals advances orderly.

Since 2010, Chain has implemented public hospital reform in 17 state-designated pilot cities and 37 province-level pilot areas, and has made great progress in improving the service system, creating new institutional mechanisms, strengthening internal management and accelerating the formation of diversified medical pattern. Service capacity of regional medical centers in clinical key specialties as well as county hospitals has been upgraded and the cooperation mechanism between public hospitals and grassroots medical care institutions are being formed.

Promotion of diversified medical patterns has been accelerated, encouraging social investment in profit and non-profit medical institutions. Measures which brought convenience to the people have been universally adopted such as medical appointment, scheduled treatment and qualified nursing.

The new round of medical reform has brought great benefits to Chinese urban and rural residents. Fairness level of basic public health services have increased significantly. Health development gap between urban and rural areas has been gradually narrowed. Situation of rural and remote areas where medical facilities are outdated and service capacity is weak has been improved significantly. Problems intensely complained by the public such as *difficult to see a doctor* and *expensive to get treated* have been alleviated. The phenomenon of becoming poor due to illness has gradually reduced.

Students from Mingde Primary School, Taicang, Jiangsu Province visiting the aged people in Liuhezhen Resthome
(©/ www.news.mdxx.com)

3.3 Aged Care Service

China has entered the stage of rapid increase of aging population. In 2013, the population of people aged 60 years old and above was 202.43 million, accounting for 14.9% of the total population of China. It is predicted that the population of people aged 60 years old and above in China shall reach 255 million by 2020, exceed 300 million by 2025, exceed 400 million by 2033 and reach 483 million by 2050.

At present, China has built an Aged Caring System which is home-based and supported by community and institutions. The elderly consumer market is being built and the development of aged service has made remarkable achievements.

3.3.1 Development of Aged Services

By the end of 2012, China had 2,583 aged service organizations in total, and 22,000 legal aid centers, 78,000 justice and rights organization, 50,000 schools with 6,253,000, and 346,000 various recreation centers for the aged.

There were 44,304 aged care institutions with a total of 4,165,000 beds, up 12.8% from previous year, and averaging 21.5 beds per 1000 senior citizens. Among them were 198,000 beds for community night care and daily care services. The year-end number of senior citizen taken care of by these institutions was 2,936,000. Eighteen provinces launched old-age allowance policies targeting at the low-income elders aged 80 or above, benefiting more than 1.6 million elders. Twenty-two provinces rolled out aged care service subsidy policies for the elders in financial difficulty, in favor of over 1.7 million senior citizens. In addition to general aged care service subsidies, Tianjin, Heilongjiang and Shanghai established a system to subsidize disabled care services.

The number of citizens registered for basic urban pension insurances was 304.17 million, with an increase of 20.36 million than last year. There were 229.81 million insured employees and 74.46 million insured retired personnel, up 14.16 million and 6.19 million from the end of the previous year respectively. The year-end number of *nongmingong* with access to basic pension insurances was 45.43 million, up 4.03 million from previous year, while 282.72 million employees were insured by basic company pension insurances by the end of the year, up 19.88 million from the end of the previous year.

The urban basic pension insurance funds revenue registered at RMB 2.0001 trillion Yuan in 2012, including a collected income of RMB 1.6467 trillion Yuan. Subsidies by governments at all levels reached RMB 264.8 billion Yuan. The total expenditure registered at RMB 1.5562 trillion Yuan, and the year-end cumulative balance of the basic pension insurance funds was RMB 2.3941 trillion Yuan.

However, the aged care service industry in China is just at initial stage, facing challenges to adapt to new circumstances and demands. There's no overall planning for the industry development. The community aged care service facilities and beds in aged care institutions are in great shortage. Simple facilities and functions made it difficult to provide multiple services in aged care, rehabilitation and spiritual solace. Moreover, the industry has to address such problems as unreasonable industrial distribution, unbalanced regional development, low qualified professionals, and poor regulations and market supervisions.

3.3.2 Revised Aged Care Law Goes into Effect

The Law of the People's Republic of China on Protection of the Rights and Interests of the Aged revised and adopted by the National People's Congress Standing Committee of the People's Republic of China on December 28th, 2012 entered into force as of July 1st, 2013.

3.3.3 Aged Care Service Industry Development Plan

In accordance with the *Opinions on Accelerating the Development of the Aged Care Service Industry* released by the State Council in September 2013, a comprehensive properly-scaled aged care service system shall be established by 2020 to cover both urban and rural areas, and integrate home care, community care with institutional care. The aged care products and services shall be greatly enriched, and the market mechanism improved. The aged care service industry shall develop in a sustainable and healthy way, with the following goals:

1. A more comprehensive service system

All the old persons staying at home shall have access to various services including daily care, medical nursing, spiritual solace, and emergency aids. All urban communities shall boast qualified daily care centers and senior activity centers. Over 90% of towns and 60% of rural communities should build aged care service facilities and stations. There will be 35 to 40 beds per 1000 senior citizens across the whole country, with the serving capabilities improved by a large margin.

Group photo of volunteers and the aged people, Qingdao Tianhaiyiyuan Aged Care Center, Dec. 30, 2013 (Photo by Li Ziheng)

2. Significant expansion of industry scale

The aged care service industry that provides daily care, health services, gym, entertainment, financial services, and travelling shall develop in an all-round way. The proportion of the aged care service industry to the service industry shall increase significantly. More than 10 million job opportunities in regards to nursing and home-based care services shall be provided. A large batch of leading companies and innovative small and medium-sized enterprises will emerge to form an aged care service industrial cluster and cultivate a number of famous brands.

3. Optimized environment for development

The laws and regulations on the aged care service industry shall be more comprehensive and industrial standards more scientific. The supervision mechanism shall be perfect and the service quality shall improve greatly. The awareness to address an aging society shall be obviously enhanced. People are more supportive to the aged care services. Volunteering activities to take care of the elder shall be widely organized. The tradition to respect, provide for and help the aged shall be further promoted.

The state's main tasks to develop aged care service industry include:

1. Make overall plans for aged care service facilities in urban areas

While making overall, detailed regulatory plans, the aged care service facilities must be included in the plan for every district at every level in line with the standard of no less than 0.1 m2

Box 3-4: Requirements of *Law on Protection of the Rights and Interests of the Aged:*

The people's governments at various levels and relevant departments shall take measures to develop community aged care services in urban and rural areas, encourage and help professional service institutes, organizations and individuals to provide such aged care services like daily care, emergency aid, medical care, spiritual consolation, and psychological counseling. For the old persons in financial difficulty, the people's governments at various levels shall provide aged care service allowances. (Article 37)

The people's governments at various levels, relevant departments and self-governing mass organization at grass roots shall include aged care services into the plan for supporting facilities in urban and rural communities. The facilities and stations to meet aged care needs for daily life, cultural activities, exercises, daily care, nursing and rehabilitation shall be established. People are encouraged to help and take care of the neighbors and help the old persons in trouble. Charity organizations and volunteers are encouraged to help the old persons, while the old persons are encouraged to help each other. (Article 38)

The people's governments at various levels and relevant department shall, based on the proportion and distribution of the old persons, make an overall arrangement of land and materials dedicated to the aged care service facilities in the urban and rural construction plan. The state-owned lands or lands collectively owned by peasants could be used for non-profit aged care service facilities in accordance with the law. The land for aged care service facilities shall not change the purpose of use without following legal procedures. (Article 40)

The state shall take measures to develop the aged-oriented industry and list it into the catalogue of industries supported by the state. Enterprises shall be supported and guided to develop, produce and sell aged care products and services. (Article 51)

Children of Heqin Kindergarten, Yaohai District, Hefei, present Chongyang Festival Tea to senior citizens as a festival bless (Photo by Xie Chen)

Home-based aged service activity Dish of Our Family held by Tongjiang Street, Chong'an District, Wuxi
(wx.wenming.cn/, 2012-09-17)

land area per capita. All newly established urban extensions and residential communities shall be equipped with aged care service facilities as requested, which shall be planned, established, examined, and put into service simultaneously with the residence. In the old urban areas and existent residential communities without such facilities or with facilities that fail to meet the requirements, the aged care service facilities shall be established through purchasing, replacing or renting within time limit, and these facilities cannot be used for other purposes.

The public service facilities in the communities shall also be used for aged care services. The aged care service facilities in the communities shall be combined with community service center (service stations) and community facilities for health, culture and sports to improve the efficiency of comprehensive utilization. Various social groups shall be supported and guided to participate in the establishment, operation and management of comprehensive service facilities in the communities to provide aged care services. All facilities boasting aged care services must be open to the elderly.

In accordance with the standards and regulations on barrier-free facilities and projects, the state shall promote and help with the transformation of barrier-free facilities in the elderly's homes, accelerate the renovation of ramps, elevators and other public facilities closely related with the daily life of the elderly.

2. Develop home-based aged care service network

The local governments shall support to build a home-based aged care service network with enterprises and institutes as the main body and bonded by communities to meet various needs of the elderly. Relevant supportive policies shall be formulated to actively cultivate home-based aged care service companies and agencies to provide customized home services including assistance with dinner, bathing, cleaning, emergency response and nursing. Housekeeping services shall be developed to provide normative and personalized services for home-based old persons.

The local governments shall support communities to establish a comprehensive home-based aged care service network, attract social organizations, housekeeping and property companies, to establish or provide a multiple array of aged care services including meals, daily care, and activity center for the elderly.

3. Establish more aged care institutions

Different types of aged care institutions shall be establish in line with the urban and rural planning layout to further lower the thresholds for social groups to establish aged care institutions in regards to capital, location and personnel by simplifying procedures, standardizing procedures and disclosing information. The agencies for administrative approval and registry shall check and ratify their business scope and provide convenient services for social groups to establish aged care institutions.

China shall bring into full play the fundamental role of the public aged care institutions to provide free or low-charge assistance and care services to old persons who are not able to work, have no source of living and have no one to support them, with low-income, and incapable or half-capable old persons in financial difficulty. The government-funded aged care institutions shall be practical and avoid extravagance or luxury.

4. Make the aged care service consumption market flourish

China will actively develop aged care service industry, guide aged care service companies and agencies to make the elderly' basic needs a priority, encourage and lead the relevant industries to expand services for the elderly, like entertainment, sports, gym, travelling, health service, spiritual solace, and legal services, and enhance professional services for the disabled old persons.

Given the elderly' needs in clothing, food, shelter, means of travelling, and entertainment, the government shall support companies develop safe and effective rehabilitation tools, food, medicine, clothing and relevant services for the elderly, guide

Senior citizens in Dongwei Village Senior Apartments, Changshan Town, Zouping County, Shandong Province, chat together
(Photo by Dong Naide)

the markets, supermarkets, and wholesale markets to set up special areas and counters for the aged care products, and develop elder living facilities like residence and apartments so as to improve the elderly' life quality.

5. Promote the combination of medical health with elderly care services

China will promote the access of medical health resources into the aged care institutes, communities and homes. The health authorities shall support the qualified aged care institutes to set up medical institutions that will actively support and develop aged care services. The qualified secondary general hospitals shall set up geriatrics, increase beds for the elderly, and provide disease prevention and rehabilitation care for the elderly. New cooperative models should be explored between medical institutions and aged care institutes. The medical institutes and community health service agencies shall make health record for the elderly, establish medical service agreement between community hospitals with the elderly' families, develop services like door-to-door examination, physical examination, and health care counseling, and accelerate the development of long-distance medical care trial units among the aged care institutes. The medical institutions shall provide priority and preferential services to the elderly.

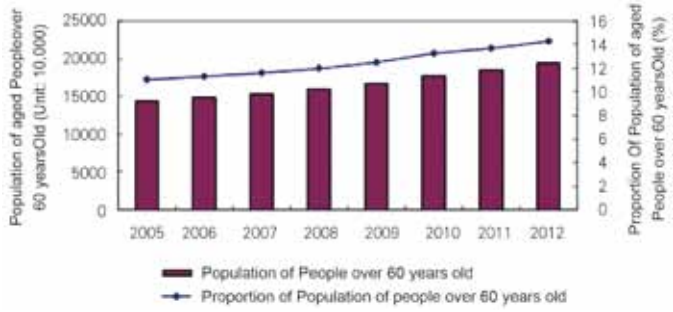


Figure 3-12: Proportion of Population of Aged People over 60 years old

Senior citizens at Suzhou Silver Home Senior Apartments rehearse for the Chongyang Festival (Photo by Wang Jianzhong)

3.4 Service for the Disabled

According to the Sixth National Population Census of China and the Second China National Sampling Survey of Disability, it is estimated that total number of the disabled persons of China was about 85.02 million by the end of 2010, including 12.63 million people with visual disability, 20.54 million people with hearing disability, 1.3 million people with speech disability, 24.72 million people with physical disability, 5.68 million people with intellectual disability, 6.29 million people with mental disability and 13.86 million people multiple disabilities. The number of peple at each level of disability is as follows: 25.18 million people with severe disabilities and 59.84 people with moderate and mild disabilities.

According to *Constitution of the People's Republic of China and Law of the People's Republic of China on the Protection of Disabled Persons*, the State shall protect the legitimate rights and interests of persons with disabilities, provide service programs for the disabled, ensure persons with disabilities to participate fully in social life on an equal footing and share the social and cultural achievements.

Box 3-5:

The government plans to provide the following basic public services for the disabled persons during the 12th Five-Year plan period

◆ Providing subsidy for disabled persons in poverty to cover their social insurance;

◆ Providing rescue rehabilitation service for disabled children under 6 years old;

◆ Providing free compulsory education to school aged disabled children and adolescents, and providing more subsidy according to the special need of the disabled students;

◆ Providing free employment service and assistance for the disable persons;

◆ Providing blind reading, sign language and movie subtitles, special art, fitness and other public cultural and sports services for the disabled persons;

◆ Providing barrier-free environment for the disabled persons.

Children of Jinwen Language Rehabilitation Center, Hefei, Anhui Province, engage in hearing practice (Photo by Han Suyuan)

The state provides basic public services for people with disabilities to meet their specific needs, create a social environment of their equal participation and provide a stable institutional guarantee for the life and development of persons with disabilities. According to the principle of equality, participation and sharing, the state puts emphasis on serving the people with severe disabilities, rural people with disabilities and children with disabilities, developing basic public service in urgent need and with wide and good benefits firstly for people with disabilities, enhancing supply capacity, and improving the social insurance and service systems for the disabled.

3.4.1 Rehabilitation

In 2012, total 7,602,000 people with disabilities recovered at varying degrees through the implementation of a number of key rehabilitation projects. Nationwide community-based rehabilitation demonstration districts (counties) for persons with disabilities were established to promote community-based rehabilitation of persons with disabilities; construction of service institutions for the disabled persons was enhanced; *System Rehabilitation Personnel Training Plan* of China Disabled Persons' Federation (CDPF) was implemented to strengthen the development of qualified personnel; Releasing and implementation of policies to insure the medical and rehabilitation service for the disabled were promoted; and rehabilitation knowledge was vigorously publicized and popularized.

Community-based rehabilitation work has been launched in 889 urban districts and 1,905 counties and cities. The number of communities which have built community-based rehabilitation stations totaled 205,000, with 353,000 community rehabilitation coordinators. 30 provincial-level rehabilitation institutions for children with autism have been established and 11,000 children with autism have received rehabilitation training in agencies at various levels. The number of institutions providing rehabilitation services for people with physical disability was 1592, of which 31 were rehabilitation institutions at provincial level and 1561 were rehabilitation institutions at municipal and county level; training for physical disability rehabilitation personnel at various levels was provided for 39,000 person times; rehabilitation service was provided for 357,000 people with physical disabilities; a project was implemented to provide financial support for 30,000 children with cerebral palsy to get institutional rehabilitation training, and for 6,221 children with physical disabilities from poor families to get corrective surgery.

3.4.2 Education

In 2012, the education right of persons with disabilities was better protected, improving the quality of persons with disabilities and their ability to get involved in society. The special lottery project for students of disabilities provided financial support of 10,000 person times for disabled children from poor families to enjoy inclusive preschool education. Governments of various levels also actively sought financial support through multiple channels for 4429 disabled children to get preschool education. 186 General senior middle school classes (departments) for special education were opened with 7043 students, among which there were 121 deaf senior middle schools with 5555 students, and 22 blind senior middle schools with 1488 students. There were 152 secondary vocational schools (classes) for the disabled, with 10442 students studying in school and 7354 graduates. 5816 disabled persons obtained their professional qualification certificates. There were 7,229 people with disabilities admitted by regular higher learning institutions and 1,134 people with disabilities admitted to special education academies.

3.4.3 Employment

In 2012, the employment of persons with disabilities made some new progress on the basis of maintaining stable situation. Another 329,000 people with disabilities were employed in urban areas, including 102,000 employed collectively, 80,000 placed by the state, 18,000 employed by welfare enterprises, 123, 000 self-employed or employed flexibly, and 7,000 employed in simple and supportive posts. The actual number of disabled persons employed in urban area was 4,448 million; 17.703 million rural people with disabilities got stable jobs, including 13.899 million people engaged in agricultural production.

The number of national vocational training bases for people with disabilities reached 5271, including 1927 set up by CDPF and 3344 set up by social institutions. Vocational training was provided to urban people with disabilities of 299,000 person times. Blind massage industry maintained stable development, with the number of health care massage institutions reaching 12,887, and the number of medical massage institutions reaching 848; in the accreditation of professional and technical positions, there were 551 persons and 1655 persons passing the intermediate and junior accreditation for medical massage technicians.

3.4.4 Culture and Sports

In 2012, cultural life of disabled persons became more active and richer. The disabled persons got public concern and participate fully in the social life. The *Opinions on Strengthening the Cultural Development of the Disabled Persons* was formulated and released by Central Publicity Department and other 10 ministries and departments; National culture and sports development demonstration city (area) for the disabled persons were launched; cultural week for the disabled people was further promoted with millions of disabled persons participating in it; the project of Culture of Disabled Persons in Community

was further promoted and the number of demonstration communities supported by CDPF reached 1500; cultural activities loved by the disabled such as *National Art Competition for the Disabled, Lanting Cup National Calligraphy Competition for the Disabled and V Song Competition were* held; and *Moral Power*, a collection of essays from the disabled people, were published to effectively promote the prosperity and development of cultural activities for persons with disabilities.

The year 2012 was a landmark year for sports development of the disabled people. China sent a delegation of 417 people participating in the 14th Paralympic Games in London from August 29, 2012 September 9, 2012, and won 95 gold medals, 71 silver medals and 65 bronze medals with 231medals in total, achieving three-peat of gold medals count and medal count in Paralympic games and creating a new glory.

Sports activities for the disabled were carried out all around China. 218 times of sports and fitness activities at provincial level for the disabled were organized, with more than 49,000 person times participation; 351 demonstration stations for sports activities at provincial level for the disabled were established, 2836 sports and fitness instructors at provincial level for the disabled were trained and 80 sports events for the disabled were held with athletes participation of 13000 person times; and the number of sports training bases at provincial level for the disabled reached 200. Sports and fitness activities at municipal level for the disabled were organized with more than 525000 person times participation; 1040 demonstration stations for sports activities at municipal level for the disabled were established, 6616 sports and fitness instructors at municipal level for the disabled were trained.

3.4.5 Social Security

Social security for the disabled in 2012 maintained a stable condition. The disabled were fully covered by new urban residents social pension insurance, and 325000 urban disabled person had participated in the new urban residents social pension insurance, with the insurance rate of 58.4%. Among the insured disabled persons under 60 years old, 628000 were people with severe disabilities, and 592,000 of them got the insurance subsidy from the government. 477,000 disabled persons without severe disabilities enjoyed full or partial deals as well. The number of pensioners reached 1,337,000.

Xiamen International Wheelchair Half Marathon 2104 (Photo by Wang Dongming)

The number of urban workers with disabilities participating in social insurance reached 2,809,000, the number urban residents with disabilities participating in the basic medical insurance reached 498.6 million, and 10.705 million persons with disabilities in urban and rural areas were covered by the range of minimum living security. The numbers of people with disabilities supported collectively in the urban area and Five-Guarantee support people with disabilities in the rural area reached 122,000 and 685,000 respectively. 2,613,000 urban and rural people with disabilities obtained other kinds of relief and support. 2,391,000 urban and 363,000 rural people with disabilities enjoyed a stable living allowance and nursing allowance.

Disabled care support services developed steadily, with 3,903 boarding organizations engaged in disabled care support services, including 1,107 institutions, 1,366 private-run non-enterprise organizations, 1,430 other kinds of organizations, providing care support service for 113,000 people with disabilities. The number of disabled day care institutions reached 3372, providing care support services for 74,000 people with disabilities. The number of people with disabilities receiving home care support services reached 560,000.

In 2012, remarkable achievements were made on poverty alleviation for people with disabilities. Production and living conditions of poor people with disabilities were further improved. 2.299 million disabled people in poverty got support, where 1.373 million people got rid of poverty through poverty alleviation and 861,000 person times with disabilities received practical technical trainings.

3.4.6 Barrier-free Environment Construction

Disabled facilities construction has been fully developed. As of the end of 2012, China had completed and put 1971 service facilities into use for persons with disabilities at all levels, with a total covering area of 4.44 million square meters, the total construction area of 3.558 million square meters and the total investment of RMB 9.62 billion Yuan. 231 rehabilitation facilities for the disabled at all levels were completed and put into use, with the total covering area of 0.824 million square meters, the total construction area of 0.670 million square meters and the total investment of RMB 1.92 billion Yuan. 155 care support facilities for the disabled at all levels were completed and put into use, with the total covering area of 0.716 million square meters, the total construction area of 0.431 million

square meters and the total investment of RMB 1.26 billion Yuan.

In 2012, CDPF website enhanced the promotion on various policies and local activities on people with disabilities. The annual page views reached 34.5 million times, with 15,000 pieces of information updates completed. Websites of 33 provincial federations, 272 municipal federations and 1235 county federations for disabled people were launched to provide information service for people with disabilities and the general public, of which accessible website construction was launched on the websites by 7 provincial federations and 2 municipal federations.

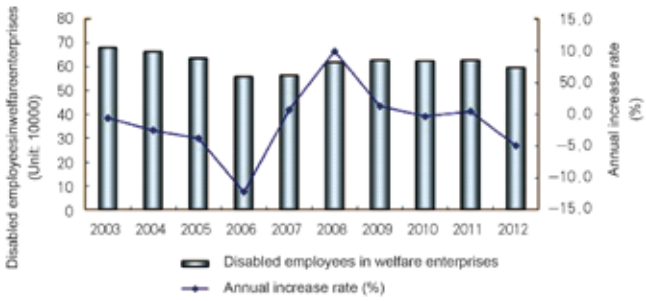


Figure 3-13: Disabled Employees in the Social Welfare Enterprises

Table 3-3: National Standard of basic public services for the disabled persons in the 12th Five-Year plan period

Service	Target	Standard	Expenditure Obligation	Coverage Rate
Social Security for the Disabled				
Subsidy for social insurance	People with severe disabilities and disabled persons in poverty	Covered by the basic medical insurance for urban residents, the new rural cooperative medical system, the new rural social pension insurance and social pension insurance for urban residents, and enjoy government subsidies for social insurance as required	Shared between central fiscal budget and local fiscal budget	100%
Basic medical insurance and medical rehabilitation project	Disabled persons covered by the insurance	Medical rehabilitation items covered by the basic medical insurance such as exercise therapy, comprehensive physical training for Hemiplegia, comprehensive physical training for cerebral palsy, comprehensive physical training for paraplegia, occupational therapy, cognitive perceptual function rehabilitation training, speech training, swallowing dysfunction training, daily living skills assessment	Basic medical insurance fund expenditure	100%
Basic Service for the Disabled				
Special education for the compulsory education period	School aged children and adolescents with disabilities	Providing more subsidy according to the special need of the disabled students besides the exemption of tuitions and miscellaneous costs and the basic subsidy; children and adolescents at large and medium- sized cities who cannot go to school will be educated at home	Shared between central fiscal budget and local fiscal budget	Rate of school aged children and adolescents with disabilities receiving compulsory education: 90%
Financial support to education of the disabled	Disabled children and adolescents from poor families	Compulsory education, pre-school education and senior middle school education boarders enjoy grants on living expenses, special school supplies, education and training; free tuition, miscellaneous costs, and textbooks for senior middle school education period	Shared between central fiscal budget and local fiscal budget	Coverage rate for targets of compulsory education and senior middle school education: 100%; providing pre-school training fee and living subsidy for disabled children from poor families: 51400 person times
Rescue rehabilitation for disabled children	disabled children under 6 years old	Financial support for operation, assistive devices and rehabilitation and trainings	Shared between central fiscal budget and local fiscal budget	Covering targets of about 930,000 persons (times)

Service	Target	Standard	Expenditure Obligation	Coverage Rate
Employment of the disabled	Urban and rural disabled persons who are willing to get a job	Free access to services such as job introduction and career guidance at the public employment service agencies and grassroots public service platforms for employment and social security employment; employment assistance to people with disabilities with employment difficulties; and services such as employment information releasing and vocational training for free at employment service agencies for people with disabilities	Undertaken by local fiscal budget with reasonable subsidy from central fiscal budget	1 million new jobs for disabled people of urban and rural area; providing practical and technical training for 1 million disabled people in poverty from rural areas
Cultural service for the disabled	The disabled	The disabled can get access to TV Programs with subtitles and sign language, and get access to Braille and audio books in public libraries	Shared between central fiscal budget and local fiscal budget	Setting up blind reading rooms, configured with Braille books and related reading equipment, in public libraries of various levels; offering sign language programs at provinces and municipal television stations; adding subtitles to television series and television programs
Sports and fitness service for the disabled	The disabled	Enjoy sports and fitness guidance service for free	Shared between central fiscal budget and local fiscal budget	Establishing 1200 Sports and Fitness demonstration centers for the disabled; ratio of disabled persons doing sports regularly: above 15%

3.5 Development of Social Organizations of Basic Public Services

As of the end of 2012, there were 499,000 social organizations, attracting 6.133 million social workers of various kinds, with the fixed assets of RMB 142.54 billion Yuan; added value of social organizations were RMB 52.56 billion Yuan, accounting for 0.23% of added value of the tertiary industry; and social donations totaled RMB 47.08 billion Yuan.

China had 3029 foundations in total, with an increase of 415 (15.9%) over the previous year, including 1,316 public foundations, 1686 private foundations, 8 foreign-related foundations and 19 representative offices of overseas foundations. 199 foundations were registered at Ministry of Civil Affairs. Public foundations and private foundations received total social donations worth RMB 30.57 billion Yuan.

China had 225,000 private non-enterprise organizations in total, with an increase of 10.1% over the previous year, including 11,126 on technology services, 1,065 on ecological environment, 117,015 of education, 20,979 on health service, 35,956 on social service, 10,590 on culture, 8,490 on sports, 8,717 on business service, 132 on religion, 49 international and other foreign-related organizations, and 10,989 organizations on other fields.

China had 200,000 various kinds of community service organizations in total, with community service organizations coverage rate of 29.5%, including 809 community service guidance centers, 15,497 community service centers, 87931 community service stations, and 96000 other kinds of facilities for community special services . Coverage rate of urban community service centers (stations) reached 72.5%. The number of convenient and beneficial service sites in urban areas reached 397,000. The number of community volunteering service organizations reached 93,000.

China had set up 31,000 social donation workstations and charity supermarkets (number of charity supermarket: 9053). The value of social donations directly received all year around totaled RMB 57.88 billion Yuan, including donation of RMB 10.17 billion Yuan received by civil affairs departments, in-kind donation of RMB 630 million Yuan, and donation of RMB 47.08 billion Yuan received by various social organizations. Donation of 125,382,000 pieces of clothing and quilts was received by various social organizations, of which cotton clothing and quilts were 15.708 million pieces. Social donations received and transferred from other sectors contained RMB 500 million Yuan and clothing and quilts of 4.856 million pieces, including cotton clothing and quilts of 490,000 pieces and donated materials with the worth of RMB 548.36 million Yuan. Throughout the year, financially challenged people of 13.250 million person (times) benefited from the donations. 12,933,000 person times provided 36,396,000 hours of volunteer service in the field of social services.

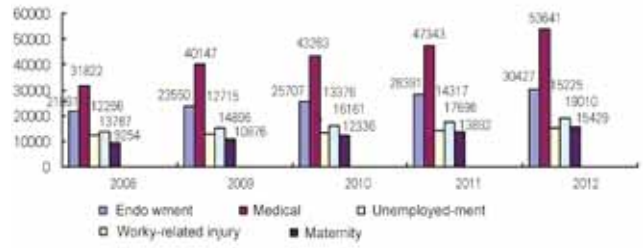


Figure 3-14: The number of people insured by social insurances, 2008-2012 (10,000 People)

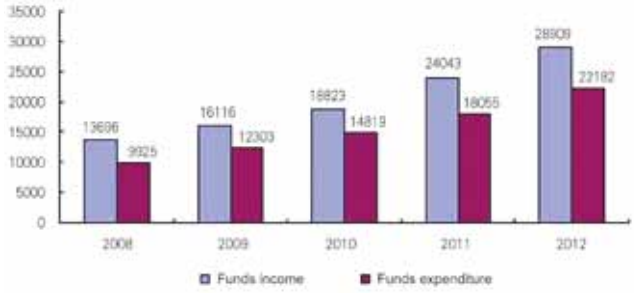


Figure 3-15: Social insurance funds income and expenditure, 2008-2012 (RMB 0.1 billion Yuan)

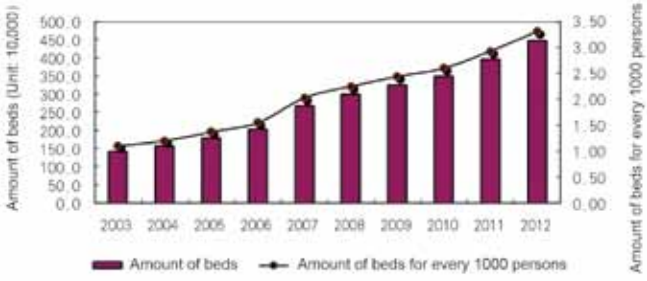


Figure 3-16: Number of beds in social service organizations

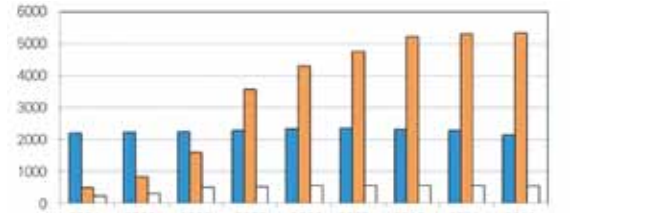


Figure 3-17: Social Assistance (10,000 People)

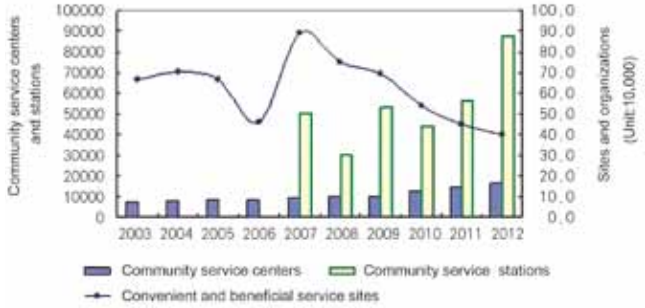


Figure 3-18: Community Service Organizations

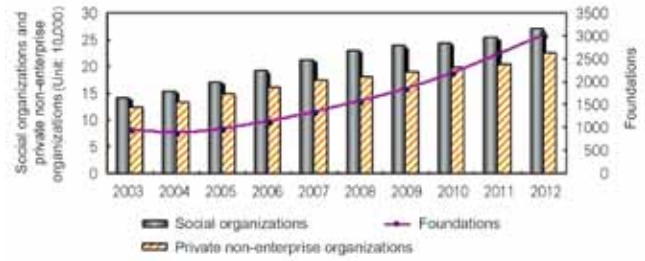


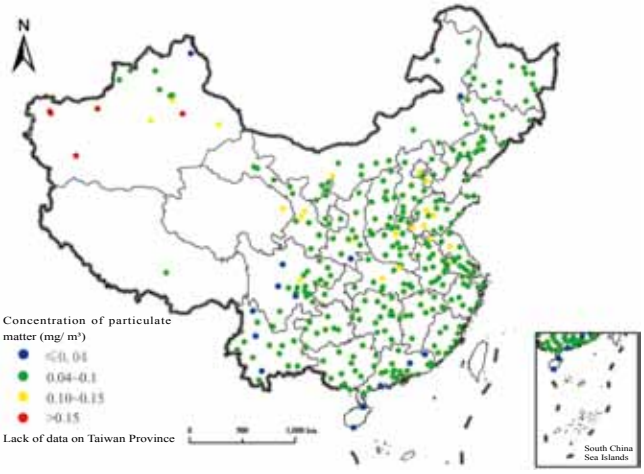
Figure 3-19: Social Organizations

Mudanyuan Community Elderly Chorus, Beijing (Photo by Zhang Zhiguo)

Dali, Yunnan Province (Photo by Zhang Zhiguo)

Chapter 4 Urban Environment and Infrastructure in China

In recent years, Chinese cities are still faced with big environmental pressures and an increasing demand for infrastructure. In some cities, air pollution, water pollution, waterlogging, and underground pipeline explosions and other accidents have become an important factor affecting the quality of the living environment, threatening public safety and restricting the sustainable development of the cities. To this end, the central government and local cities respond to strengthen urban infrastructure construction and management through economic, legal, administrative and other technical means to improve the quality of urban environment, and have achieved remarkable results.



Map 4-1: Annual Average Concentration of Particulate Matter (PM_{10}) in Cities at prefecture or above level in 2012
(©/ *2012 Report on the State of the Environment of China*)

4.1 Atmospheric Environment

4.1.1 Overall Situation

The assessment results of air condition vary widely according to the old air quality standard and the newly revised one. In 2012, according to the old *Ambient Air Quality Standard (GB 3095-1996)*, the air quality of 325 cities at prefecture or above level and 113 key environmental protection cities was assessed on three kinds of pollutants including sulfur dioxide, nitrogen dioxide and PM_{10}. The proportion of cities at prefecture or above level which meet the *Ambient Air Quality Standards* (at or better than the secondary standard) was 91.4%, and the proportion of key environmental protection cities which meet the *Ambient Air Quality Standards* (at or better than the secondary standard) was 88.5%, an increase of 2.4 percentage points and 4.4 percentage points respectively compared with 2011, indicating that the air quality was gradually improving. However, if assessed according to the revised *Ambient Air Quality Standard (GB3095-2012)*, the proportion of qualification cities would be much lower, indicating that the air quality situation was still grim.

Smog shrouds Beijing on January 23, 2014 (Photo by Yu Long)

As of the end of 2012, air quality monitoring net works in conformity with the revised standard has been established and began to work in 74 cities in key areas of China such as Beijing-Tianjin-Hebei Area, the Yangtze River Delta and the Pearl River Delta as well as municipalities, provincial capitals and cities with specifically designated in the state plan. Under the new standards, the contents of sulfur dioxide, nitrogen dioxide and PM_{10} were assessed in these 74 cities. The qualification rate of cities at prefecture or above level was 40.9%, 50.5 percentage points lower than the assessment results under the old standard, and the qualification rate of key environmental protection cities was only 23.9%, 64.6 percentage points lower than the assessment results under the old standard.

The number of cities where air quality is monitored under the revised standard has significant increase. By 2013, besides the 74 cities of the first stage, another 87 cities have completed the construction of air quality monitoring sites in conformity with the revised standard. The number of cities at prefecture or above level which releases monitoring results according to the revised air quality standard reached 161 and the number of monitoring sites reached 884. According to *Notice on the Implementation of the Ambient Air Quality Standard (GB3095-2012)* (H.F. [2012] No. 11), all cities at prefecture or above level in China shall implement the new standards by 2015, and the whole country shall implement the new standard by January 1, 2016.

In the first half year of 2013, the contents of sulfur dioxide, nitrogen dioxide and PM_{10} were assessed according to *Ambient Air Quality Standard (GB 3095-1996)* in 256 cities[1] at prefecture or above level which conduct air quality monitoring, and the qualification rate was 64.1%. In the first half year of 2013, air quality of the 74 cities in key areas of China such as Beijing-Tianjin-Hebei Area, the Yangtze River Delta and the Pearl River Delta as well as municipalities, provincial capitals and cities with specifically designated in the state plan were assessed according to *Ambient Air Quality Standard (GB3095-2012)*. The proportion of qualification days on average was 54.8% and the proportion of days of substandard air quality was 45.2%, including 25.4% with slight pollution, 9.5% with medium pollution, 7.5% with heavy pollution and .8% with severe pollution. If assessed according to Secondary Standard of $PM_{2.5}$ Annual Averages, only four cities of the 74 cities, i.e. Zhoushan, Huizhou, Haikou and Lhasa, reach the standard, accounting for only 5.4%. $PM_{2.5}$ has become the primary air pollutants in urban environment.

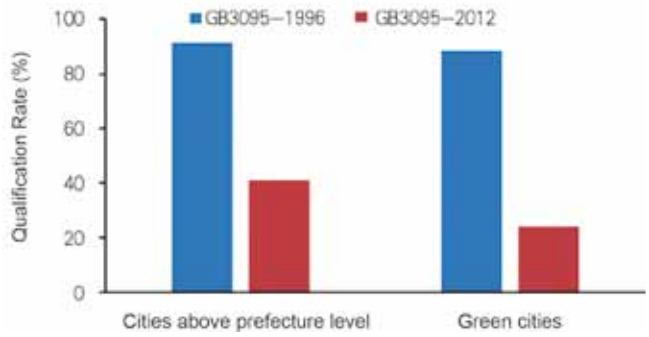
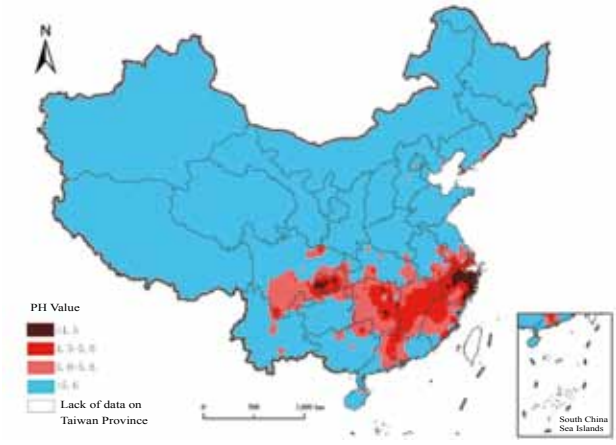


Figure 4-1: Comparative assessment results of air quality of 74 cities according to old and newly revised standards, 2012



Map 4-2: The annual PH Average of Precipitation in China, 2012 (©/ *2012 Report on the State of the Environment of China*)

Acid rain pollution level is still high in China. In 2012, among the 466 cites (counties) monitored by Ministry of Environmental Protection, 215 cities (counties) experienced acid rain, accounting for 46.1%; there were 133 cities (counties) with acid rain frequency of more than 25%, accounting for 28.5%; and there were 56 cities (counties) with acid rain frequency of more than 75%, accounting for 12.0%. Acid rain areas were mainly located along and south of the Yangtze River and east of the Tibetan Plateau, including most parts of Zhejiang, Jiangxi, Fujian, Hunan, Chongqing, and the Yangtze River Delta, Pearl River Delta, southeastern Sichuan, and northern region of Guangxi. Acid rain area accounted for 12.2% of the land area of China. In the first half year of 2013, 175 cities out of 456 cities experiences acid rain. Among them, precipitation pH of 135 cities were below 5.6, which meant that they were acid rain cities, accounting for 29.6% of the total number of cities.

1 Excluding the 74 cities in key areas of China such as Beijing-Tianjin-Hebei Area, the Yangtze River Delta and the Pearl River Delta as well as municipalities, provincial capitals and cities with specifically designated in the state plan which are assessed according to Ambient Air Quality Standard (GB 3095-2012)

4.1.2 Analysis of Distribution and Causes of Smog

Smog causes widespread concerns. In 2013, smog weather in China had the characteristics of long duration, wide range and great strength. In January 2013, China suffered from four times of large scope of smog, involving 30 provinces (autonomous regions and municipalities). Survey data of Ministry of Environmental Protection in January 2013 showed that average monthly smog days of Jiangsu, Beijing, Zhejiang, Anhui, Shandong were 23.9 days, 14.5 days, 13.8 days, 10.4 days, and 7.8 days, all being the highest since 1961 at same period. After the winter began, caused by burning coal for heating and other factors, severe smog appeared in Changchun, Shenyang, Harbin and some other cities, with local visibility of less than 10 meters. Traffic and transportation of the three provinces of northeast China were severely affected, with traffic of some cities disrupted, highways closed, patients with respiratory diseases increased by more than 20%, and thousands of schools closed. After December 2013, smog became more serious. Data from China Meteorological Administration showed that the smog in early December spread to 25 provinces and 100 large and medium cities. Smog days of 13 regions including Anhui, Hunan, Hubei, Zhejiang and Jiangsu set up a record. According to *Green Book of Climate Change: Annual Report on Actions to Address Climate Change (2013)* released by Chinese Academy of Social Sciences on November 4, 2013 in Beijing, the national average smog days in 2013 was 29.9, 10.3 days more than normal years and the highest since 1961.

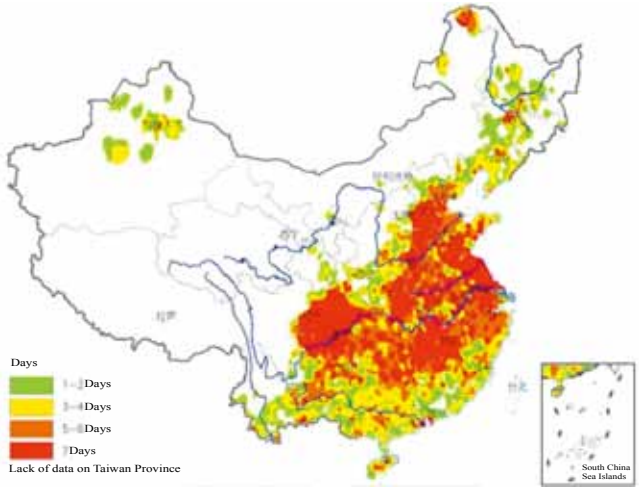
There are different opinions on smog causes. For smog causes, there is no consistent understanding, and the conclusions given by different cities, organizations and academics are quite different. Fossil fuels, motor vehicles, and abnormal atmospheric circulation are three representative explanations.

(1) Fossil fuels. Since haze is formed by a large number of particles floating in the air including $PM_{2.5}$, finding the source of $PM_{2.5}$ shall help find the cause of haze. Experts from Chinese Academy of Sciences did some research on chemical composition of $PM_{2.5}$ and seasonal changes of the sources in Beijing. Research shows that $PM_{2.5}$ in Beijing has six important sources, namely, soil dust, coal burning, biomass burning, vehicle exhaust and waste incineration, industrial pollution and secondary inorganic aerosols, with the contributions of 15%, 18%, 12%, 4%, 25% and 26% respectively. If the three sources of coal burning, industrial pollution and secondary inorganic aerosols are combined, emission from fossil fuel combustion becomes the main source of Beijing $PM_{2.5}$ pollution. It is also pointed out in *Green Book of Climate Change: Annual Report on Actions to Address Climate Change (2013)* released by Chinese Academy of Social Sciences on November 4, 2013 in Beijing that increased consumption of fossil fuels caused the increase of emissions of air pollutants year by year, and became the main reason for smog weather increase in China.

(2) Motor vehicles. Beijing Municipal Environmental Protection Bureau held a news conference on January 2, 2014, on which officers from Beijing Municipal Environmental Protection Bureau gave their opinions on the causes of smog. According to the findings of Beijing Municipal Environmental Monitoring Center, air pollution sources in Beijing mainly fall under two categories, one of which is local emission accounting for 75.5% of air pollution sources, and the other is external sources accounting for 24.5%. Out of these local sources, the largest proportion of 22.2% was from motor vehicles, followed by 16.7% from coal burning, 16.3% from industrial pollution, 15.8% from dust pollution, and4.5% from other pollutions. In addition, coal consumption in Beijing is reducing while vehicle amount is rising year by year. Therefore, air pollution in Beijing would gradually transfer from *caused mainly by coal burning to caused mainly by motor vehicles.* Motor vehicle pollution is still a major source of pollution in Beijing.

(3) Abnormal atmospheric circulation. Some academics believe that the emergence of smog is closely related to abnormal atmospheric circulation. Abnormal atmospheric circulation, especially stability of atmospheric conditions, often results in difficult diffusion of pollutants in the air and sustained accumulation of small particles floating in the air, causing smog.

In fact, the emergence and development of smog is caused by multi-factors including meteorological elements, fossil fuel



Map 4-3: Smog days of China from, 7 to13 January, 2013 (©/ www.nmc.gov.cn)

Box 4-1: Definition and Identification of Haze

Defined by meteorology, fog is the product of condensation, consisting mainly of water steam, while haze is formed by a large number of particles floating in the air including $PM_{2.5}$. Typically, low visibility weather with relative humidity higher than 90% is called fog; it is called haze when the relative humidity is lower than 80%, and when the relative humidity is between 80%~90%, it is the mixture of haze and fog and is called smog. Smog, which the public concern about currently, is primarily formed by small soot, dust and sulfates, nitrates, ammonium salts, organic particles and water droplets in the air with the diameter less than 2.5 micrometers. Formation of smog requires certain weather conditions, such as relatively higher humidity, static and steady atmosphere, and sudden drop of temperature, etc.

Observation and forecasting levels of haze (QXT113—2010) released in 2010 gives haze and its identification condition a more precise definition. Haze is defined as: widespread air turbidity phenomenon where a large number of very fine dry dust particles float in the air evenly and the horizontal visibility is less than 10.0km. The haze makes distant things with slight yellow and red colors and makes dark objects with slight blue color; definition of $PM_{2.5}$: atmospheric aerosol mass concentration with aerodynamic equivalent diameter ⩽ 2.5μm, expressed in micrograms per cubic meter (μg/ m^3).

According to *Observation and forecasting levels of haze (QXT113—2010)*, identification conditions of haze are: (1) if the visibility is less than 10km, excluding the obstruction to vision caused by precipitation, storms, blowing sand, dust and other weather phenomena. The weather can be identified as haze when the relative humidity is less than 80%; when the relative humidity is between 80%~95%, the description regulated by meteorological observation specification or composition index of the atmosphere shall be used for further identification. (2) When index from the atmospheric composition monitoring station shows $PM_{2.5}$> 75μg/m^3, PM_1> 65μg/ m^3 or aerosol scattering coefficient + aerosol absorption coefficient > 480, it can be used as identification basis of haze.

Contrast of smog and good air quality in Beijing (Photos taken at 13:30 of Feb. 19, 2014 and 13:30 of Feb. 21, 2014, by Zhang Zhiguo)

combustion, motor vehicle emissions and etc. But the influence of the factors differs in different regions or at different times in the same region. Since China's research on smog is still in its primary stage, there is not clear answer on the causes of smog and the diffusion mechanism yet. Relevant governments, organizations and academics can only draw limited conclusions based on limited data. The current conclusions are not absolute and can not be used as the main basis for the development of long-term air pollution control strategies.

4.1.3 Air Pollution Prevention and Control – State Action Plan

Prevention and control measures are cleared in *Air Pollution Prevention and Control Action Plan*. Premier Li Keqiang presided over a State Council executive meeting on June 14th, 2013 to make arrangements for curbing air pollution. *Air Pollution Prevention and Control Action Plan* was released in September 2013 by the State Council which proposed the following 10 measures to prevent and control air pollution: (1) increase the effort of comprehensive control and reduce the emission of multi-pollutants, (2) optimize the industrial structure, promote industrial restructuring, (3) accelerate the technology transformation, improve the innovation capability, (4) adjust the energy structure and increase the clean energy supply, (5) restrict environmental thresholds for investment projects and optimize industrial layout, (6) bring into full play the role of market mechanism and improve environmental economic policies, (7) improve legal systems and carry on supervision and management based on law, (8) establish the regional coordination mechanism and the integrated regional environmental management, (9) establish monitoring and warning systems to cope with heavy pollution weather, and (10) clarify the responsibilities of the government, enterprise and society, and mobilize the public participation in environmental protection

The following goals were also proposed in the *Air Pollution Prevention and Control Action Plan:* after five years' efforts, the overall national air quality shall be improved and heavily polluted days shall be reduced dramatically; and regional air quality in Beijing-Tianjin-Hebei, Yangtze River Delta and Pearl River Delta will be turned better. Through another five years' or even longer efforts, heavily polluted days shall gradually be eliminated and the national air quality shall be improved significantly. Specific indicators: By 2017, the urban concentration of Particulate Matters (PM_{10}) shall decrease by 10% compared with 2012; annual number of days with fairly good air quality will gradually increase; concentration of fine particulate matter ($PM_{2.5}$) in Beijing-Tianjin-Hebei, Yangtze River Delta and Pearl River Delta regions shall respectively fall by around 25%, 20% and 15%; and fine particulate matter an-

nual concentration in Beijing shall be controlled below 60 micrograms per cubic meter. To implement the *Air Pollution Prevention and Control Action Plan*, the Chinese government is formulating specific and detailed policy measures, including 6 energy structural adjustment policies such as replacing coal with gas and expanding the use of clean coal, 10 environmental economic policies such as for pricing, taxation, and investment and 6 management policies such as for assessment methods and environmental protection standards.

Actions on prevention and control of air pollution are taken all around the country. When the state released these relevant policies and action plans, various measures are also actively adopted to combat air pollution all around the country. During the period from July to December 2013, Shandong, Hebei, Beijing, Gansu, Shanxi, Shanghai, Anhui and some other provinces also issued air pollution prevention and control plans or action plans, in addition to a number of provinces whose air pollution prevention action plan is in the process of preparation. Further to the national and provincial action plans, cities are also developing their air pollution prevention and control programs, working hard to achieve the goal that in three to five years the city's ambient air quality shall be improved. As of February 2014, 25 provinces (autonomous regions and municipalities) of China have formulated local programs for the implementation of *Air Pollution Prevention and Control Action Plan.*

Box 4-2: Shijiazhuang cuts cement overcapacity to control air pollution

On February 17, 2014, 18 sets of cement grinding system and 377 silos of 17 companies in Pingshan and Luquan of Shijiazhuang City, Hebei province were demolished. This is the second large-scaled and centralized demolition action, two months later after the first cement plants demolition action in 2013. This action will reduce cement production capacity of 9.1 million tons, reducing emission of dust of 3,073 tons and vacating land of 858 acres. Through these two demolition actions, Shijiazhuang removed 35 cement companies in total, reducing cement production capacity of 18.5 million tons, and completed the objective and task for *cutting cement overcapacity of 15 million tons* three years ahead of schedule.

A cement plant in Shijiazhuang is blasted and demolished (Photo by Zhao Wei)

Air pollution control measures should vary in different regions. While actions are taken throughout the country to prevent and control air pollution, it should also be noted that the degree of air pollution and the causes in different regions are very different. If control measures are not specific enough, the control efforts shall be dispersed and satisfactory results shall be not obtained. Taking motor vehicle restriction rules for example: if motor vehicle is not the major source of air pollution, actions to restrict the use of motor vehicles would not help reduce air pollution, but affect the government's credibility since the public is widely involved. Therefore, in the process of preventing and controlling atmospheric pollution, the cities should firstly find out the pollution sources through scientific analysis and then formulate specific control measures. For better effect, the related information should be disclosed to urban residents to get their understanding and supports. They should not just copy the control methods of other cities.

4.2 Water Environment

4.2.1 Overall situation

Water pollution situation. In 2012, the state-controlled sections of surface water of China were in mild pollution generally. Among the state-controlled sections of the top 10 river basins including Yangtze River, Yellow River, Pearl River, Songhua River, Huaihe River, Haihe River, Liaohe River, the rivers in Zhejiang and Fujian Provinces, the rivers in the Northwest area and the rivers in the Southwest area, proportions of sections of water quality of Class I- III, Class IV-V and Class V- were 68.9%, 20.9% and 10.2% respectively. The main pollution indicators were COD, BOD and permanganate index. Among the 62 key state-controlled lakes (reservoirs), the proportions of lakes (reservoirs) of water quality of Class I- III, Class IV-V and Class V- were 61.3%, 27.4% and 11.3% respectively. The main pollution indicators were TP, COD and permanganate index. Among the 60 lakes (reservoirs) (excluding Miyun Reservoir and Pangong Tso), 4 were in moderate eutrophication status, accounting for 6.7% ; 11 were in mild eutrophication status, accounting for 18.3% ; 37 were in moderate nutrient status, accounting for 61.7%; and 8 were in poor nutrient status, accounting for 13.3%. In the first half year of 2013, the surface water of the country was in light pollution generally. Among the 962 state-controlled sections monitored, proportion of sections of water quality of Class I- III was 63.7% and proportion of sections of water quality of Class V- was 11.5%.

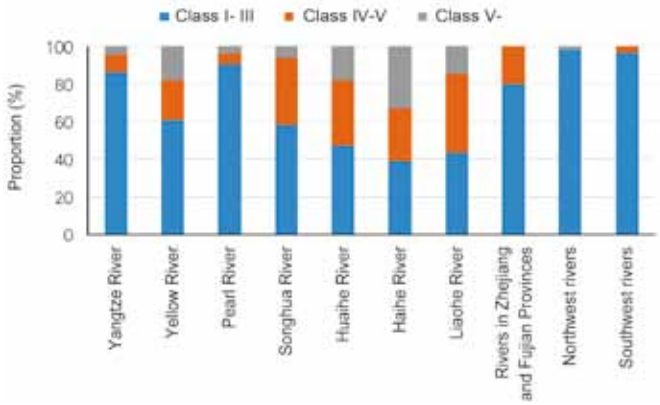


Figure 4-2: Water quality proportions in top 10 river basins in 2012

Plants being removed at the intake spot of the source of drinking water in Chaohu, Anhui Province, July 21, 2013
(Photo by Xu Zhenhua)

Water-purifying substances being transported to eliminate cadmium in Longjiang River, Liuzhou, Guangxi Province, February 1, 2012
(Photo by Deng Keyi)

4.2.2 Serious Water Pollution Accidents

Serious water pollution incidents occur frequently. In recent years, China's serious water pollution incidents showed a gradually increasing trend with increasing degree of harm. Incidents occurred in 2012 and 2013 such as Guangxi Longjiang cadmium pollution incident, Zhenjiang water pollution incident, Shanxi Changzhi aniline leak incident, Guangxi Hejiang water pollution incident, and incident of lingering stench in tap water of Hangzhou, causing broad impact. According to the statistics from Ministry of Environmental Protection, in 2012, 542 sudden environmental incidents occurred in China, including 5 major, 5 larger, and 532 general ones.

Water pollution incidents affect the safety of drinking water. With the expansion of urban areas and human activities, the protection and buffer range of urban water sources are further compressed and the polluted upstream rivers tend to affect the safety of drinking water of downstream cities. In 2012, Ministry of Environmental Protection directly handled 33 sudden environmental incidents, 30 of which were water pollution incidents. Apart from 4 cases of marine pollution, all the 26 cases affected the drinking water sources to some degrees.

Cumulative risk is increasing. In July 2013, there was a major water pollution incident in Hejiang River, Guangxi Province. The concentration of cadmium and thallium and other indicators exceeded standards and posed a serious threat to water sources of downstream cities. During the investigation, related authorities found that there were 100 mining enterprises

engaged in illegal mining along the upstream Mawei River. Although individual responsible enterprise were finally locked found to be responsible, the root cause of frequent pollution accidents was attributed to the long-term lack of effective control on potential pollution sources along the river. Since for a long time the industrial layout of China, especially the layout of chemical and petrochemical companies, has been around the rivers and lakes. This cumulative risk which is gradually increasing with time passing needs attention of high priority.

Increase of difficulties to trace pollution sources. In May 2013, there was some odor like plastics or paint in the tap water of Hangzhou. In December 2013, the odor in the tap water of Hangzhou appeared again, lasted for a long time with a large range of impact, and caused strong public reaction, great concern of the central government and quick respond of local governments. In mid-January 2014, Zhejiang Provincial Environmental Protection Department announced that: it was basically confirmed the main substance causing the odor is o-t-butyl phenol, and control measures such as stopping the production and emission from 10 involved enterprises along the Qiantang River were carried out. In the course of tracing this pollution, the Department dispatched 10,560 person times to check 7,885 company times, which not only spent a lot of manpower and resources, but also delayed the process to deal with the accident, and missed the best time for treatment and settlement.

Pollution incidents always occur suddenly. Water pollution incidents always occur suddenly with strong impact and heavy losses and it is difficult to eliminate their consequences in a short term. In the coming period, China has to face sudden water pollution incidents caused not only by accidents (turning-over of cars and ships, etc.), but also caused by cumulative risks from risk sources. Pollution sources will be more diverse, ways of pollution will be more complex, and consequences will be more uncertain, especially the high-density urban areas along the middle and lower Yangtze River, Yellow River, Pearl River and other major rivers, where there are a lot of oil, chemical and other industrial facilities along the rivers with safety risks. They have greater risks of sudden water pollution accidents.

Water being delivered by Fire Department for residents of Handan, a downstream city whose water supply was cut off because of aniline leak age in Changzhi, January 2013
(©/ http://119.hebnews.cn/Photo by Zhai Yujia)

4.2.3 Water Pollution Control – State Action Plan

Water Pollution Prevention and Control Action Plan is forthcoming. In response to the severe water environment situation, the Chinese government is preparing *Water Pollution Prevention and Control Action Plan,* another national action plan after *Air Pollution Prevention and Control Action Plan.* Officers from relevant authorities said: the core of the plan is to improve the quality of water environment, and focus on controlling areas with heavy pollution and protecting rivers and lakes with better water quality from being polluted. In terms of specific measures, the first is to slash industrial pollution emissions, the second is to manage the emissions of domestic pollution and the third is to control rural river gullies and river branches. A breakthrough is expected in the action plan on the responsibilities, tasks, measures and institutional mechanisms to promote the improvement of quality of the water environment.

Regulation on Urban Drainage and Sewage Treatment has been released and implemented. *Regulation on Urban Drainage and Sewage Treatment* (herein after referred to as the Regulation), released according to Order of the State Council (No. 641), came into force on January 1, 2014. The Regulation, with 7 chapters and 59 articles, standardizes the planning, construction, maintenance and protection of urban drainage and sewage treatment facilities, and defines the legal responsibility of the relevant action entities. The Regulation proposes that urban drainage and wastewater treatment should follow the principles of respecting the nature, overall planning, construction of supporting facilities, safety, and comprehensive utilization, to embody the concept of ecological civilization and sustainable development. In order to solve the funding gap, it is especially stipulated in the Regulation that the state encourages franchising and government procurement of services and some other forms to attract social capital to participate in the investment, construction and operation of urban drainage and sewage treatment facilities.

Wulongtan Park, Jinan (Photo by Zhang Zhiguo)

4.3 Environmental Sanitation

4.3.1 Overall situation

By the end of 2012, there were 701 waste sanitary disposal factories (sites), a capacity of 446,268 tons/ day, disposed 144.9 million tons of waste. The waste disposal moves towards modernization, centralization and large-scale. Waste collection and transportation method was improved from the previous open collection and transportation method to the closed collection and transportation method. In 2012 waste collection and transportation amount reached 170.81 million tons, of which 153.876 million tons were collected and transported in closed method, accounting for 90.0%. Due to the lack of awareness, funds, mechanisms, most Chinese cities haven't implemented waste sorting. Nevertheless, cities like Beijing, Guangzhou, and Hangzhou have introduced waste sorting and have achieved positive results through formulating development plans, releasing related laws and regulations, providing financial support and enhancing public promotion. It is believed that this will play a very good guiding role for the waste sorting system in other Chinese cities.

4.3.2 Waste Disposal

Sanitary landfill is still the main way to dispose of the wastes. As of the end of 2012, 540 out of the 701 waste sanitary disposal factories (sites) used the method of sanitary landfill to dispose waste, accounting for 77.0%; out of the waste disposal capability of 446,000 tons/ day, the capability of sanitary landfill was 310,900 tons/ day, accounting for 69.7%.

The proportion of waste incineration is gradually increased. The proportion of waste incineration in terms of waste disposal capability rose from 12.9% in 2005 to 27.5% in 2012, reaching 122,649 tons/ day. However, there has always been controversy in China on waste incineration. Supporters argue that waste incineration help save land and recover energy, while opponents argue that the harmful substances produced by waste incineration, especially dioxins, will have a serious impact on the health of surrounding residents.

Food waste treatment will be more standardized. Volume of food waste generated in China gradually rises each year to 50 - 60 million tons, accounting for more than 30% of municipal solid waste. Environmental safety and food safety risk caused by the improper handling of food waste has become a major problem for food waste treatment. On May 1, 2013, *Technical Code on Food Waste Treatment* (CJJ184-2012) was formally implemented. The implementation of the code will help improve technical levels of China's food waste treatment, regulate food waste processing, and promote resource conservation and environmental protection.

The contradiction between waste and urban environment and land needs to be resolved. With the rapid progress of China's urbanization, the contradiction between municipal solid waste and urban environment and urban land is increasingly intensified. How to choose a safe, efficient, land-saving, energy-efficient approach is a question that governments and community of Chinese cities must face. In recent years, some cities are exploring practical and proper disposal methods. The Ministry of Housing and Urban-Rural Development will hold a national conference on waste treatment in 2014, which is believed to provide a clear direction for the strategy and method of waste treatment in China in future.

4.3.3 Typical Cases

Case 1: Nanhai Model of Solid Waste Management established in Nanhai District, Foshan City

Nanhai Environmental Protection Industry Park for Solid Waste Management covers an area of 350 mu, with a total investment of 2.7 billion Yuan. Through unified planning and construction, waste, sewage sludge, food waste and other wastes of the city are properly processed in the Park, and are then reused. This Park, with the waste incineration power plant as its core, has the processing capabilities such as compression and transportation of integrated urban and rural solid waste, waste incineration and power generation, sludge treatment, and food waste treatment, to form a whole chain processing mode from the source to the terminal. Recently, the Park planned to build a food waste processing center, in which the food waste would be transferred to bio-diesel. The waste incineration process in the Park was covered by the digital platform of city management of Nanhai, to accept the full supervision of the residents. Meanwhile, the Park has established an interactive and open

(1) Centralized control room for the transfer stations

Waste sorting card for students

(2) Inside transfer station

Integrated urban and rural solid waste transportation and transfer in Nanhai District
(©/ Http:// www.nhgre.com)

Intelligent waste recycling platform
Waste sorting in Hangzhou
(©/ Hangzhou Environmental Sanitation Science Research Institute)

environmental education center to promote environmental philosophy to the public.

Case 2: Hangzhou devotes to build the cleanest city of China

Hangzhou begun to explore waste sorting in 1986, but had not made much progress. In March 2010, waste sorting pilots were established at 37 residential communities. After three years' efforts, waste sorting was full implemented in governmental institutions, 1,381 residential communities, with participation of 760,000 families. On November 19, 2012 , Hangzhou Government issued *Implementation Opinions on Further Strengthening Municipal Solid Waste Treatment* and proposed that by 2015, solid waste sorting shall be completely implemented in the city area and zero growth of solid waste per capita shall be realized; Hangzhou shall become the first model city for waste sorting in Zhejiang Province and one of the first batch in China; a collection and transportation system with clean and direct transportation as the main part shall be set up; solid waste disposal capacity shall exceed 10,000 tons/ day, with incineration disposal capacity of more than 8500 tons/ day ; solid waste landfill amount shall be reduced, sanitary disposal rate shall reach 100% and resource utilization rate shall exceed 50%. By 2020, a long-term supervision and management system shall be established in the city area for solid waste source reduction, littering sorting, collection sorting, transportation sorting and treatment sorting, with a waste disposal pattern of incineration as the main method, biological treatment as the supplement method and landfill as the guarantee method. The treatment level of Hangzhou shall be in the first rank of the nation.

4.4 Urban Water Supply

4.4.1 Overall Situation

By the end of 2012, China's urban water supply capacity reached 272 million cubic meters/ day, of which the groundwa-

ter supply capacity was 63.292 million cubic meters/ day. From 2007, the total urban water supply showed a slow growth trend, with an average annual growth of 0.83%. The total water supply in 2012 amounted to 52.303 billion cubic meters. Meanwhile, the service scope of the public water supply was expanded, and the public water penetration was increasing, reaching 84.1% in 2012.

4.4.2 Planning and Construction

The water supply planning for the Twelfth Five-year plan period is being carried out in a steady way. In November 2012, in order to implement the *National Plan for Urban Water Supply Facilities Renovation and Construction during the Twelfth Five-year Plan period and 2020 Vision*, and make urban water supply reach *Drinking Water Health Standard* (GB5749-2006), based on major science and technology achievements of "Water Pollution Control and Governance", the Ministry of Housing and Urban-Rural Development organized the compilation of *Technical Guide on Urban Water Supply Facilities Construction and Renovation*, which covers major parts of "from water source to faucet" and "from design to operation and management" of the urban water supply system. In June 2013, Chinese Urban Water Supply Association compiled the *Technical Guidelines on Urban Water Supply Facilities Construction and Renovation* (for Trial Implementation) to supplement the Guide, put forward more specific countermeasures and technical measures, and improved the effectiveness of the *Guide*. In addition, the mid-term assessment of the *National Plan for Urban Water Supply Facilities Renovation and Construction during the Twelfth Five-year Plan period and 2020 Vision is in* the process of preparation.

Successive completion of Phase I of South-to-North Water Diversion Project. In December 2013, Phase I of East Route of South-to-North Water Diversion Project officially began to supply water. Phase I of Middle Route is also expected to be finished in 2014. The water is mainly supplied for urban and industrial consumption in cities of north China, such as Beijing, Tianjin and Shijiazhuang. For a long time, these cities are facing the grim situation of over exploitation of surface water, over exploitation of groundwater, water supply source pollution and water environment deterioration. The completion of Phase I of South-to-North Water Diversion Project will help alleviate the situation. However, this project faces a series of new challenges, including water quality protection of water source areas, water conveyance safety of the main channel, impact on the existing water supply system of the above cities after replacement of water sources. Necessary measures need to be taken in the early period of water supply to prevent the inadaptability of the pipelines after the replacement to ensure the safety of city residents' drinking water.

4.4.3 Water Quality Regulation

Continuous improvement of water quality regulation system. In 1999, the urban water supply quality management system and mechanism, with "enterprise self inspection, industry monitoring, government supervision" led by the urban water supply industry administrative authorities, were basically formed, and the water quality supervision system based on water quality monitoring network was also basically formed. As of the first half of 2013, the national urban water supply quality monitoring network has 1 national water quality monitoring center, 43 national stations, nearly 200 local stations, covering 30 provinces, autonomous regions and municipalities directly under the central government throughout the country. The majority of the national stations have the ability to fully analyze and detect the 106 indicators in the standard. However, the local stations are in the shade, only about 20%

Water Pipeline Renovation in Langfang City (Photo by Li Zonglai)

Water Quality Monitoring Vehicle
(©/ Urban Water Quality Center, Ministry of Construction)

Urban Water Quality Regulation On-site Detection
(©/ Jinan Water and Waste Water Monitoring Center)

of them have the ability to detect the 42 basic items in the standard.

Gradual expansion of the scope of water quality regulation. Since 2004, the scope of water supply quality supervision of cities in China has been gradually expanded from 36 major cities to all cities and countries. In May 2013, the Ministry of Housing and Urban-Rural Development issued a notice, requiring all counties to complete the water quality regulation before the end of 2015. According to the work plan, 2013 water supply quality regulation covered public water supply and pipelines for a total of 623 counties of 23 provinces, autonomous regions, municipalities directly under the central government in 2013, including Beijing, Tianjin and Hebei. Among them, all counties in 11 provincial-level administrative regions were all covered, while some counties in 12 provincial-level administrative regions were covered.

Box 4-3: Beijing, Tianjin and Hebei Province "721" Rainstorm

On July 21, 2012, Beijing, Tianjin and Hebei Province had a rainstorm. The maximum rainfall was 541 mm in Fangshan District, Beijing. The rainfall in Wang'an Town, Laiyuan County, Hebei Province was 349 mm. 62 counties (cities, districts) of Beijing City, Tianjin City and Hebei Province suffered the devastating floods, with an affected population of 5.40 million, the death toll of 115 persons, 16 persons missing (of which 79 persons died in Beijing, 36 persons died and 16 persons missing in Hebei Province), affected crop area of 530 thousand hectares, 30,000 houses collapsed, and 50 reservoirs, 3427 spots of the embankment totaling 1032 km, 2565 spots of the revetment and 1053 spots of the sluices damaged. There were 426 flooded spots in Beijing urban area, 10 in Tianjin central urban area, and low-lying areas of 9 cities in Hebei Province, causing 33.1 billion Yuan direct economic losses.

On July 21, 2012, Beijing had a sudden rainstorm , causing paralysis of a number of traffic arteries
(Photo by Zhang Ke)

4.5 Urban Drainage

4.5.1 Overall Situation

By the end of 2012, China cities' sewage treatment capacity reached 117 million cubic meters/ day, and the sewage treatment rate reached 87.3%, 5% higher than in 2010. Nevertheless, there were still a lot of problems in some cities. For example, sewage supporting pipelines construction was lagging behind, facilities construction was unbalanced, some treatment facilities could not fully meet the new requirements for environmental protection, most sludge was not disposed harmlessly, and sewage recycling degree was low. The efficiency and effectiveness of facilities were to be improved.

According to statistics, 639 cities in China had flood control works, of which the cities with the flood control standard less than that of 10 years frequency accounted for 15.6%, and of which 403 cities did not meet the flood control standards stipulated by the state. The drainage facilities were not complete, and rainstorm waterlogging was an increasing prominent problem. In 2012, 184 cities in China were water flooded or waterlogged, and the mega cities, such as Beijing, Chongqing and Tianjin, suffered the most.

4.5.2 Planning and Construction

Drainage and flood control deployed by the State Council. On March 25, 2013, the General Office of the State Council issued the *Notice of on Doing a Good Job in City Drainage and Flood Control Facilities Construction* (Guo Ban Fa [2013] No. 23). the *Notice* suggests that by the end of 2014, based on investigation of the current situation, plans for City Drainage and Flood Control Facilities Construction shall be drafted, renova-

tion of the drainage network for the rain and sewage diversion be completed in 5 years, relatively complete city drainage and flood control engineering systems be built in about 10 years.

All-round promotion of drafting Drainage and Flood Control Plans. In response to the deployment of the State Council and relevant ministries and commissions, all local governments made their efforts to draft the Drainage and Flood Control Plans throughout the country. June 2013, the Ministry of Housing and Urban-Rural Development issued *Technical Guidance on Data Collection and Management for General Survey of City Drainage and Flood Control Facilities,* which played an instructive role in standardization of related general survey data for drainage and flood control facilities. In June 2013, the Ministry of Housing and Urban-Rural Development issued the guideline for preparation of *City Drainage (Rainwater) and Flood Control Plans*, which improved the construction standard of the drainage and flood control facilities, required the introduction of numerical simulation technology in the drafting process, and enhanced the scientific nature of the plans.

City drainage and sewage treatment brought into the legal system. On January 1, 2014, *City Drainage and Sewage Treatment Ordinance*, published by the State Council, officially came into effect. The *Ordinance* is conducive to strengthening the management of city drainage and wastewater treatment, protecting the safe operation of city drainage and wastewater treatment facilities, preventing and controlling water pollution and urban waterlogging disasters, and safeguarding the life of citizens, property and public safety.

On October 7, 2013, by the impact of typhoon "Fitow", waterlogging occurred in some places of Wenling, Zhejiang Province. Several children were swimming in water in Hengfeng Town, Wenling
(Photo by Chen Xu)

Before

After

Obvious Improvement of the Water Environment of Qinghe River after Construction of Qinghe Sewage Treatment Plant in Beijing
(©/ http://www.bdc.cn)

Box 4-4: Urban and Rural Sewage Integrated Treatment in Changshu

Changshu launched City Sewage Treatment Three Year Plan in 2009 to carry on urban and rural sewage integrated treatment. Currently Changshu's sewage integrated treatment system initially takes shape, with characteristics of urban and rural integrated treatment, breaking the boundaries of the administrative regions, combination of centralized treatment and decentralized treatment, and full coverage of the city. The experience of sewage integrated treatment of Changshu can be summed up as "unified management, unified planning, unified construction, and unified operation".

Unified management: rural sewage treatment was brought to the sector management scope of Changshu Urban and Rural Housing Construction Authorities, with legal supervision of the City Environmental Protection Authorities, and coordination and cooperation of other departments and towns.

Unified planning: the special plan on sewage treatment within the city was drafted with characteristics of integrated treatment and coordination by Urban and Rural Housing Construction Bureau, breaking the boundaries of the administrative regions, giving priority to centralized sewage treatment system, decentralized sewage treatment facilities as a supplement, and reasonable layout of city sewage treatment system.

Unified construction: Changshu Jiangnan Water Co., Ltd., a state-owned company, was established, responsible for the construction of the core pipelines of all sewage treatment facilities, improvement of the construction of pumping stations and water collection pipelines in towns. The construction of decentralized sewage treatment facilities was carried out mainly by the township governments, with "substituting subsidies with rewards" by the municipal government for 80% of their investment.

Unified operation: the centralized treatment facilities were under unified management of Changshu Jiangnan Water Co., Ltd., and the urban sewage collection system (including pipelines and pumping stations) was entrusted to the municipal maintenance office for unified maintenance and management. Research Center for Eco-Environmental Sciences of the Chinese Academy of Sciences and a local company with experience of centralized sewage treatment were combined to work for unified operation and maintenance of decentralized sewage treatment facilities in the city. The Research Center was primarily responsible for technical guidance and drafting operational plans, while the local company was responsible for routine operations.

4.5.3 Typical Case: Zhejiang Province

Zhejiang province was taken Five Water Works of "ensuring drainage, treating sewage, guaranteeing water supply, preventing flood and paying attention to water saving" as the guiding idea, made overall planning and arrangement for water infrastructure construction, including water supply, drainage, flood control and waterlogging drainage, and improved the efficiency and overall benefit of infrastructure construction.

Dredging vessels are working on Yiwujiang River, Zhejiang Province on February 7, 2014 (Photo by Zhang Yunfei)

Defining water control targets. In accordance with the idea and strategy of "Five Water Works, focusing on waterlogging and sewage treatment", the main problems to be solved by 2017 have been defined, including basically eliminating easily flooded and waterlogged areas, and alleviating serious disaster phenomenon that affect the normal work and life order in the city. The newly built area shall not be waterlogged; the sewage treatment rate shall reach 95% in cities with administrative districts, 90% in counties, and reach 60% in towns. The sewage treatment plant shall execute level A standard, sludge harmless disposal rate 95%. The full coverage of township sewage treatment facilities shall be achieved. For cities whose resources of drinking water supply could not meet standards, the full coverage of water plants advanced deep treatment technologies shall be achieved to solve the quality problem caused by water source pollution and backward water supply facilities.

Improving water planning. The planning for urban flood control, sewage treatment, water supply and water saving has been improved with focus on improving the city drainage (rain) waterlogging control. By the end of 2013, the drafting of flood control and drainage plans in 11 cities (with administrative districts) and several key cities was launched. The examination of the plans shall be completed in March 2014, and their the approval filing shall be finished by the end of June 2014.

Promoting the legalization process. *Opinions on Implementation and Strengthening of Urban Waterlogging Prevention in Zhejiang Province* has been issued. *Zhejiang Province Water Supply Regulations* has been formulated, to deal with urban waterlogging prevention, secondary water supply management, and improve the interaction between water price and electricity price, and determine the standard and method for reasonable collection of sewage treatment charging fees.

Establishing the collaborative work mechanism. The project responsibility and timing node requirements, have been set to improve the working mechanism of division of labor and cooperation between construction, planning, hydropower, land and civil affairs departments. Easy access passage of examination and approval procedures for water projects has been built to improve the efficiency of project approval and construction management.

Raising water control fund from multi channels. A multi-channel fund-raising mechanism has been established with main resources from local governments and supplement from the provincial government, and use 3%-5% of the land transfer income every year for waterlogging control. Apart from some hydropower construction fund, Zhejiang provincial government was established a special fund to encourage local governments to increase water control efforts with the manner of "substituting subsidies with rewards".

Strengthening supervision and public participation. Water control projects, as the people's livelihood projects, have been brought to the annual target assessment of local governments by the provincial government. The waterlogging prevention and sewage treatment have become a decisive vote in evaluating governments performance. The inspection and supervision of the operation and management of city flood control, sewage treatment and water supply facilities have been strengthened. Full Play has been given to the supervisory role of the people's congresses at various levels, the CPPCC and the media. The knowledge on waterlogging prevention, sewage treatment and water saving has been disseminated through a variety of ways to enhance the sense of public participation.

4.6 Underground Pipeline

4.6.1 Overall Situation

Urban underground pipeline is an important part of city infrastructure. From the nationwide prospective, there are over 30 kinds of underground pipelines, including those for municipal

Box 4-5: Extraordinarily Serious Accident of "11 • 22" Oil Pipeline Leak Age and Explosion in Qingdao, Shandong Province

At 10:25 on November 22, 2013, Donghuang Oil Pipeline of Pipeline Storage and Transportation Company, China Petroleum & Chemical Corporation, located in Qingdao Economic and Technological Development Zone, Shandong Province, leaked crude oil into the municipal closed drainage ditch, and the gas accumulated and exploded with sparks in the confined space of the ditch. The explosion brought to the death toll to 62, and left 136 people injured, and caused direct economic loss of RMB 751.72 million Yuan.

After investigation, the direct cause of the accident is: the pipeline between the oil pipeline and drainage closed ditch was corroded and became thinner, the pipeline burst, the crude oil leaked, and flew into the ditch and on the road. After the leak age, the onsite workers punched the board of the ditch with a hydraulic breaker, and the sparks incurred by the punching caused the gas explosion in the ditch.

"11 • 22" Pipeline Leakage and Explosion Site, Qingdao
(Photo by Yu Fangping)

Analysis: due to the soil salinization and high concentration of groundwater chloride of the area, where the oil pipelines crossed with drainage closed ditch was located, and backward flow of the sea water to the closed ditch with the tidal variation, the pipelines were in an alternating wet and dry environment with sea water and salt spray corrosion. Compounded by the road load and vibration, the pipeline corrosion, thinning and rupture were accelerated, which resulted in the leakage of crude oil. The leaking point was located in 15 centimeters from the east wall of the bridge and culvert of Qinhuangdao, right under the pipeline. Upon calculation and confirmation, about 2000 tons oil leaked. Part of crude oil flew on the road, most directly flew into the drainage ditch. The oil gas evaporated from the crude oil and the air in the ditch formed combustible and explosive gas, and accumulated in the relatively confined drainage ditch. It lasted for more than 8 hours from the oil leakage to the explosion. Affected by the seawater encroachment, the crude oil and the mixed gas spread, diffused and accumulated, which finally resulted in the large range and continuous explosion.

In January 2014, according to the Approval on the Investigation and Punishment Report on the Extraordinarily Serious Accident of "11 • 22" Donghuang Oil Pipeline Leak Explosion of China Petroleum & Chemical Corporation, Qingdao, Shandong Province made by the State Council, 48 people were given disciplinary punishment, and 15 people suspected of committing crimes were transferred to judicial organs for legal responsibility.

utilities, electricity, communication, fire protection and industries. According to the *China Urban Construction Statistical Yearbook*, by the end of 2012, the length of municipal underground pipelines of water supply, drainage, gas and heating exceeded 1.48 million kilometers. Due to the characteristics of variety, invisibility and complex ownership of underground pipelines, many cities had the problems concerning unclear status, lack of management and etc. Underground pipeline leak, rupture, tube explosion, explosion and other accidents occurred from time to time. According to reports, during the period from 2008 to 2010, the average number of accidents of the underground pipeline only reported by the media was 5.6 per day through out the country. The direct economic loss every year due to underground pipeline accidents across the nation amounted to billions of RMB.

4.6.2 Planning and Construction

Overall Survey of Underground Pipelines and Development of Informatization Technologies. With the rapid development of the cities in China, the types of the city underground pipelines are increasing, the scale is expanding, and the functions are more and more complex. The incompleteness, inaccuracy and inconformity of the data of the underground pipelines, as an increasingly critical problem, seriously restricts the development of cities. From 1994 to 1997, the Ministry of Construction organized the first overall survey of national urban municipal utilities. Thereafter, the Ministry of Construction issued a number of documents to guide the overall survey, management and protection of the underground pipelines. By the end of 2011, the Ministry of Housing and Urban-Rural Development urged all local governments to carry out the overall survey of city underground pipelines, and actively explore and innovate management methods of city underground pipelines. The overall survey of national underground pipelines presented three new features: first, the wide usage of new detection technologies, second, the combination of the overall survey and the construction of pipeline information management system, and third, the establishment of the dynamic mechanism for updating pipeline information.

Recent determination of the task for underground pipeline construction and renovation. On September 6, 2013, *Opinions of Strengthening City Infrastructure Construction of the State Council*, proposed the construction principle of "underground first, on-the-ground second", asked for strengthening the construction, renovation and inspection of the city water supply, sewage, rain-water, gas, heating, communication and other kinds of underground pipelines, prioritizing the renovation of old pipelines with old materials, serious leakage and damage and low safety coefficient, in order to ensure that the pipeline leakage and damage rate is controlled within the national standard. By 2015, 80,000 kilometers of old urban gas pipelines and 92,800 kilometers of old urban central heating pipelines in the north heating area shall be renovated. The urban underground comprehensive utility tunnel pilot shall be launched, and the comprehensive utility tunnel pilot projects in 36 large and medium-sized cities shall be launched in 3 years; small and medium-sized cities shall carry out a number of comprehensive utility tunnel projects according to local conditions. The underground pipeline network of new roads, new cities and industrial parks shall be developed and constructed in accordance with the comprehensive utility tunnel mode.

4.6.3 Typical case: Kunming

A comprehensive survey of current underground pipelines. In order to get a clear picture of the underground pipeline resources within 250 square kilometers of Kunming urban area, Kunming municipal government has carried out underground

Comprehensive Utility Tunnel and Monitoring Center of Guangfu Road, Kunming
(©/ Http://www.ynjst.gov.cn)

pipelines survey from December 2007, which was organized and implemented by Kunming City Underground Pipeline Detection Office. The spatial location, specification, materials, appendages, building structure and other attribute data of underground pipelines within 330 square kilometers (including three Peninsulas in Dianchi) were collected with ground penetrating radar, pipe locator, other detection equipment and global positioning system, and geographic information system. The information about the nature, planar position and depth of the 7,700 kilometers of municipal pipelines under the urban traffic roads was collected and analyzed. A comprehensive database of underground pipelines was established, objectively reflecting the distribution situation of water supply, drainage, gas, electricity, traffic signal, communication, radio and television, thermal, industrial and other underground pipelines in Kunming city.

Legalization of underground pipeline management. On February 1, 2009, *Kunming Urban Pipelines Management Measures* came into effect. The *Measures* determined the functions of relevant departments in the urban underground pipeline management, required that the principle of unified planning, unified construction, unified management, the underground first and the on-the-ground second, supporting facilities construction should be followed, and the design and construction of various pipelines should be carried out together with road construction, land development and other related projects at the same time and under the unified management of urban planning and information. Urban and rural planning administrative departments were required to establish a pipelines information platform. Pipelines ownership authorities were required to establish a professional pipeline information system. A data interface shall be set up to update, store, monitor and share pipeline information resources. On November 29, 2012, Yunnan Province approved *Kunming Urban Underground Pipelines Management Regulations*, which greatly improved the efficiency of legal management of urban underground pipelines.

Exploration of comprehensive utility tunnel construction mode. Kunming began to construct large-scale comprehensive utility tunnel at Guangfu Road and Caiyun Road in 2003. The length of Caiyun Road comprehensive utility tunnel is 22.44 kilometers with 427 million Yuan investment; the length of Guangfu Road comprehensive utility tunnel is 15.96 kilometers with a total investment of 478 million Yuan. In 2006, the two comprehensive utility tunnels were completed. Currently the pipelines in the tunnels include: water supply pipeline of 1 meter in diameter; HV and EHV cables of 10,000 volts, 110,000 volts and 220,000 volts; communication cables of China Telecom, photoelectricity, China Mobile, China Unicom and the power company. The construction of the comprehensive utility tunnel avoids the repeated road excavation due to pipeline burying or repairing, while extends the service life of the pipelines.

4.7 Prospects of Urban Infrastructure Construction

4.7.1 Comprehensive development of urban infrastructure

Urban construction and management experience shows that, the construction of comprehensive infrastructure system will help solve the problems of lack of coordination and mismatching in the process of single-mode urban infrastructure construction. In 2010, the Ministry of Housing and Urban-Rural Development issued Drafting Methods for Planning Urban Comprehensive Transport Systems, which promoted the drafting of Plans for urban comprehensive transport systems. In 2013, the Ministry of Housing and Urban-Rural Development carried out "Modern Urban Infrastructure Construction Planning" pilot in Xigang District, Qinhuangdao, which strongly promoted the comprehensive planning, construction and management of urban underground pipelines. In terms of water system planning, after years of theoretical exploration, methods research and pilot practice, the research and drafting of Technical Specification for Urban Water System Comprehensive Planning was launched in 2014.

4.7.2 Balanced development of capacity and management in urban infrastructure construction

For a long time, due to a large capacity gap of urban infrastructure in China, and insufficient supply of infrastructure, the infrastructure construction mainly focused on backbone lines and hub nodes of large space and layout, with the primary task of building the main skeleton of the infrastructure system. In recent years, with the acceleration of building main skeleton of infrastructure system, the improvement of hierarchical structure and branch node of infrastructure construction is paid more attention. A number of new technologies and new concepts, such as low-impact development, green infrastructure, source separation, waste classification, have been more widely applied in urban infrastructure construction. The main function of the urban infrastructure is changed from mainly supporting economic development to fully supporting economic and social development and creating a good living environment. With the improvement of urban infrastructure capacity, the management of urban infrastructure is increasingly refined, the information management, early warning and emergency response capacity are enhanced significantly, and the idea and mechanism of infrastructure management service are continuously innovated.

4.7.3 People-livelihood, safety and green concepts in urban infrastructure construction

On September 6, 2013, the State Council issued Opinions on Strengthening the Urban Infrastructure Construction of the State Council (hereinafter referred to as the Opinions), which was the first document guiding the urban infrastructure construction issued by the State Council since China's reform and opening. The Opinions persisted in the priorities on planning, livelihood first, safety, mechanism innovation, green and high quality, and focuses on the key areas of improving people's livelihood, guaranteeing the safety of cities, and mobilizing investment initiatives, speeding up the infrastructure construction and transformation and upgrading of urban road transport, pipeline network, sewage and garbage disposal, and ecological landscape. The opinions emphasized that the overall planning of the city should be drafted scientifically, specific planning of the urban infrastructure construction should be improved and implemented, and the overall planning of public service supporting facilities should be strengthened. The Opinions also made stipulations on project construction, investment, administration and etc. The Opinions requested the promotion of the mechanism for infrastructure investment, financing system and operation, and establishment of urban infrastructure investment and financing system with reasonable division of labor between the government and market. The implementation of the Opinions will promote the development of urban infrastructure focusing on people's livelihood, safety and green technologies, and increase the infrastructure capacity to support the economic development, social harmony and friendly environment in cities.

Original Jiaxing Shijiuyang Water Sources Location

Completed Zhejiang Jiaxing Shijiuyang Ecological Water Sources Wetlands

Zhejiang Jiaxing Shijiuyang Waterworks Water Sources Bio-Ecological Restored Wetlands Demonstration Project Based on the Research Results of the National Sciences and Technology Major Project on "Water Pollution Control and Treatment"

Within and Without the Sloping Roof in Shanghai (Photo by Xi Wenlei)

Chapter 5 Quality of Life in Urban and Rural Residents in China

The report of the 18th CPC National Congress raised the brand new concept of "beautiful China" for the first time: work hard to build a beautiful country, and achieve lasting and sustainable development of the Chinese nation. In 2012, the per capita disposable income of urban households in China reached RMB 24,565 Yuan and the rural per capita net income reached RMB 7,917 Yuan. Some areas in China have already completed the mission of building the moderately prosperous society in all aspects, and the eastern region has raised the plan of Sunan Modernization Demonstration Zone. The urban and rural residents have turned to focus on the improvement of living quality, and the urban and rural spaces as a whole are becoming more beautiful, livable and fairer.

5.1 Residential Space

The improvement of residential environment is becoming an important yardstick against which the improvement of people's living quality can be measured. With the social and economic development, remarkable improvements have been made on residents' residential conditions: in 2012, the floor space of newly-built residential buildings in urban areas of China was 1 billion square meters, and the floor space of newly-built residential buildings in rural areas reached 951 million square meters, with the per capita housing area for urban residents and the per capita housing area for rural residents reaching 32.9 square meters and 37.1 square meters respectively. After the release of the national strategy of people-focused new path of urbanization, the housing supply has put emphasis on fairness and diversity: the construction scale of social housing has hit a record high, the transformation of the shantytowns has been further promoted and green buildings have become a new highlight of social housing. On the other hand, the rapid approaching aging society, the development of the civic society and science and technological progresses have resulted in residents' diversified needs for living spaces. The exploration into the development of elderly-friendly communities and smart communities and community renewal which focuses on residents' consensus and public participation have become the new priorities to improve the standard of living quality.

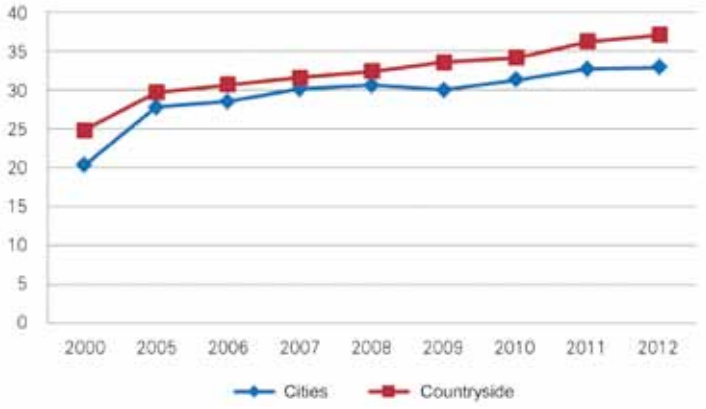


Figure 5-1: The Per-capita Housing of Urban and Rural Areas in China (m^2) (©/ China Statistical Yearbook 2013)

5.1.1 Impartial and Diversified Housing Supply

5.1.1.1. Focus on both Quantity and Quality in Supply of Social Housing

The housing construction under the Social Housing Project has been increasing rapidly. Since the No.131 Document titled *Several Opinions of the General Office of the State Council on Promoting the Healthy Development of the Real Estate Market* was implemented in 2008, the construction of 36 million units of urban social housing was launched and 26 million units of shantytown renovation housing were basically completed at the end of 2013.

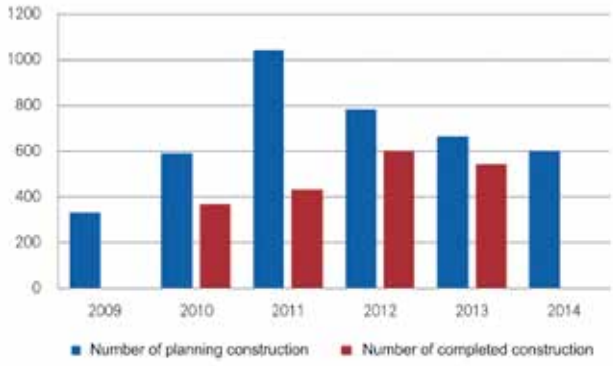


Figure 5-2: The Construction of National Social Housing (10,000 units)
Note: The number of 2014 is planned statistics.
(©/ Statistical Communiqué of the People's Republic of China on National Economic and Social Development)

Map 5-1: The Relation between Sites Selected for Social Housing and Rail Transit Routes and Stations (2010)
(©/ *Site-selection Plan for the Second Batch of Large-scale Residential Community of Shanghai*, Shanghai Urban Planning and Design Research Institute)

China has attached great importance to the improvement on the quality of the social housing. On one hand, China has enhanced the space selection of the social housing and improvement of the supporting facilities. For example, Shanghai Municipality proposed the site selection idea of "space adaptation" in the new round of site selection for social housing plan: the sites for the social housing shall be located mainly in new towns, near industrial parks, accessible to stations of rail transit system to ensure the adaption of the social housing with the provision of job opportunities, employment accessibility, and supporting service facilities. The site selection of Chongqing's public rental housing is integrated in the centralized construction plan of each district as a quantitative index, and the public rental housing communities are arranged in the construction of the 21 large-scale residential communities in an effort to ensure mixed living, support by the public transportation system, urban job-housing balance, complete supportive facilities and livable environment.

On the other hand, China has implemented the green building initiative in the construction of social security buildings. The Ministry of Housing and Urban-Rural Development (MOHURD) has issued the *Technical Guidelines for Green Security Housing* in an effort to promote the construction of eligible social housing as green buildings, and effectively improve the safety, heath and comfort of these housing. By now, such cities as Shenzhen, Nanjing, Hangzhou, Taiyuan and Kunshan have started relevant explorations.

5.1.1.2. Accelerated Transformation of Shantytowns

Transformation of shantytowns is a popularity winning project of the Chinese government to transform the dilapidated old houses in the urban areas, improve the housing conditions of financially challenged families, and prevent the appearance of slums in China. From 2004 when Liaoning took the lead to initiate and explore the large-scale shantytown transformation to the end of 2012, the transformation of 12.60 million housing units in various shantytowns started, and 7.50 million units of them covering 31 province, regions and cities were basically completed. However, according to the assembled data from different cities, over 14.00 million housing units need to be transformed nationwide. Therefore, *the Opinions of the Station Council on Accelerating the Transformation of Shantytowns* proposed to complete the transformation of 10 million housing units from 2013 to 2017, which included 8 million urban shantytown units, 0.90 million units in the state-owned industrial and mining (including coal mining) shantytowns, 0.3 million shantytown houses in the state-owned forest zones (farms) and 0.8 million shantytown houses in the state-owned reclamation areas.

5.1.1.3 Pilot Projects of Public Rental Housing Development on Collectively-owned Rural Development Land

Currently, the total area of the limited property rights housing[1] constructed without following the approved purposes of rural collectively-owned development land has exceeded 6.6 billion square meters and involves over 80 million dwellers. Despite its large quantities and extensive coverage, it is not allowed by the governmental policies. On the contrary, some cities have started the pilot project of building social housing on the rural collective development land in recent two years. For example, in 2012, the MOHURD approved Beijing and Shanghai to become the first pilot cities to use rural collective development land to build public rental housing.

5.1.2 Community Renewal and Public Participation

5.1.2.1 Integration of Community Renewal and Community Development

According to the statistics of the National Population Census 2010, there are now 12% urban households residing in the housing constructed before 1980. Though the old housing was excluded in the relocation or renovation programs due to their remaining value in use, the government has developed a mode of community renewal which combined the physical and environmental improvements of the community with its future development based on the demands of the residents to improve their residential conditions. Unlike the traditional "demolition and reconstruction", this mode improves the physical environment of the community under the precondition of maintaining the original spatial texture and neighborhood relationship according to the expectations of the residents. This is an organic and progressive renewal instead of rigid substitution. For example, such cities as Shenzhen and Guangzhou have effectively introduced the ideas and mechanism of community planning in their urban redevelopment, established villagers-dominated transformation focusing on the object of village-based economic organizations and effectively promoted the expansion of new spaces for urban development. Shanghai has developed the "three balances and three improvements" mode for on-site renovation of scattered old and dilapidated residential buildings: onsite balances of the residents, housing and funds and improvements of the environment, facilities and equipment and public services facilities.

5.1.2.2. Emphasis on Residents' Consensus and Public Participation

In recent two years, with the democratic practices of community autonomy, the communities are becoming the organizational bases for public participation and the

Box 5-1:
Deningge Paradigm for Post-earthquake Reconstruction in Yushu - Public Space from Public Sharing

The post-earthquake reconstruction in Yushu adopted the reconstruction on the original sites, which includes four housing reconstruction modes to satisfy the residents' needs: unified reconstruction, unified reconstruction of multiple households, individual reconstruction of multiple households and individual reconstruction. The areas choosing the latter two are called self-constructed areas. Here the complicated issues concerning the property right and interests arose.

In the self-constructed areas, with previous developments on "private land", people living in the densely arranged houses suffered from narrow roads, lack of access to water and electricity supply, piles of wastes not taken good care of and stinky waste water. While the residents wanted to change the residential environment after the reconstruction, and leave the space for disaster relief, pipelines and roads, how to leave out the space for the public works remained a question before the local government and the planners. Relocation of some residents was not an option.

After the heated discussion among the residents, the final solution was to give out some parts of the household's residential land for public use, which was called public sharing. The idea of public sharing was not accepted in the beginning by residents who were accustomed to the ideas of "my residential land". After rounds of negotiations and coordination, the residents left out some space of their individual residential land as the public space needed for public works. This was a good demonstration for the following reconstruction and a major achievement in the reconstruction of Deningge area.

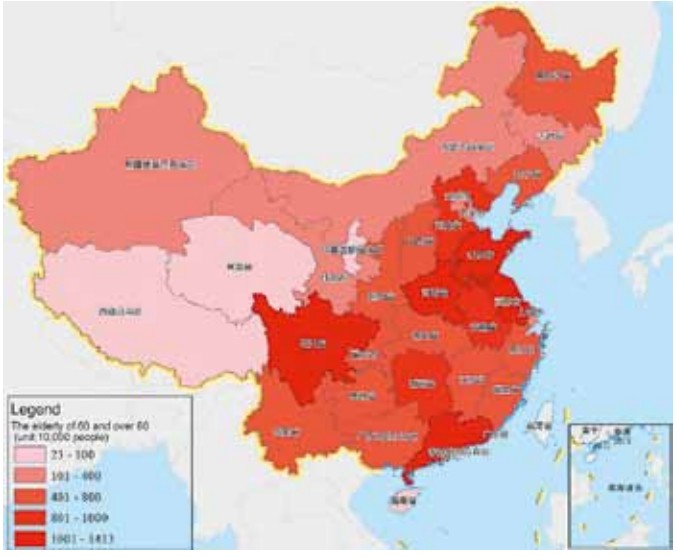
Map 5-2: Comparison of the Boundary of Personal Property Before and After the Re-design of Courtyard
(mapping by Xu Mingming)

1 China adopts the urban-rural dual land ownership system with the land falling under two categories: state-owned land and collectively-owned land. According to the *Land Administration Law of the People's Republic of China*, the housing constructed the rural collectively-owned land for construction use can only be transferred or replaced between the members of the collective and shall not be transferred or sold to persons other than the members of the collective. Therefore, the sale of the rural housing to urban citizens is not recognized or protected by the law, i.e. the legal formalities including the certificate for land-use right, certificate of housing ownership and deed tax certificate, etc. cannot be transacted, for which the housing is called limited property rights housing.

community planning and renewal focuses more on the consensus of residents. For example, Yushu has formed the courtyard mode of Dengningge self-constructed areas based on the residents' consensus on public sharing in the post-disaster redevelopment. In addition, some areas have explored the institutional formulation on enhancing the residents' consensus and autonomy. For example, Beijing Municipal Commission of Urban Planning has built the "public participation platform for community planning" based on the grassroots street offices; Shenzhen and Chengdu have established the system of community planners and Shanghai has trial tested the regional planner system, etc.

5.1.3 Development of Elderly-friendly Community

The rapid ageing of the population in China has turned China into the country with the largest number of aged people in the world. China Report on the Development of Aging Cause 2013 issued by the office of China National Working Commission on Aging noted that by the end of 2012, there were 194 million old-aged people at and above 60 years old in China, accounting for 14.3% of the total population, and "getting aged before getting rich" has become an indisputable fact for China. As a response to the ageing, China revised the *Law of the People's Republic of China on Protection of the Rights and Interests of the Elderly* by the end of 2012, implemented the 12th Five-Year Plan of Ageing Undertaking Development and the *Plan for the Development of Social Senior Service System (2011-2015)*, and proposed a mode of elderly care based on houses, relying on communities and supported by social institutions.



Map 5-3: Provincial Distribution of Older People over 60 in the Mainland China, 2010
(©/ *Studies on Urban-Rural Planning in the Trend of Population Ageing*, Jiangsu Institute of Urban Planning and Design)

The Day Care Center in the Chaoyang Community, Kunshan (Photo by Gu Jie)

5.1.3.1 Improvement of Community-based Elderly Service Facilities

Elderly day care centers have become the main carrier of the elderly care services in communities. The centers refer to the day care centers that provide such day care services including dining service, personal care, healthcare and rehabilitation, entertainment and transport, etc. for the elderly people under day care who are partially-dependent semi-disabled elderly people whose daily life needs certain care services. Such cities as Beijing, Shanghai, Changzhou and Kunshan have taken the lead to explore the planning of elderly service facilities and identified the elderly day care centers as the main carrier of elderly care services in communities. The MOHURD has also issued the Standard on the Construction of Elderly Day Care Centers in Communities to guide and regulate the construction of relevant facilities.

The community-based elderly service teams have been enhanced. Such cities as Shanghai and Suzhou have established the qualification system for special nurses and home-based elderly home workers to ensure the quality of services and gradually realize the professionalization and professionalism of workers in the elderly services. Guangdong has established the labor service bank system, and Liaoning, Guizhou and other provinces have set up the volunteers bank system, continuously improving the volunteer service and compensation mechanism to regularize, institutionalize and standardize the volunteer services.

5.1.3.2 Elderly-friendly Renovation of Residential Buildings

Various places have initiated the elderly-friendly renovation of old communities. Beijing and Nanjing have promulgated the *Implementation Opinions on Integrated Renovation of Old Communities in Beijing* and the *Provisional Methods for Installing Elevators in Existential Residential Buildings*

in Nanjing, and required the addition of elevators to the old communities. Elderly-friendly renovation of residential buildings, a cooperative program of Shanghai Municipal Civil Affairs Bureau, Shanghai Senior Citizens Foundation and Habitat for Humanity China, and the international charity organization, has conducted elderly-friendly renovation for 1000 low-income elderly families in 2012.

Attention has been attached to the requirements in the construction of elderly-friendly residential buildings. The MOHRD released the national standard, the *Code of Architectural Design for Elderly Facilities* [GB50867-2013], and raised the elder-friendly requirements on the relevant buildings including the community-based elderly services facilities. Beijing promulgated the *Key Technical Points in Planning and Design of Elderly Services Facilities in Beijing*, and raised for the first time the requirements for the elderly-friendly designs in newly-built residential buildings. For example, at least one elevator shall be installed in the residential buildings above three storeys.

5.1.3.3 Exploration into Diversified Elderly-friendly Communities

The recent years have witnessed the rapid rising of elderly-friendly real estate industry, which has developed very fast with the release of the *Implementation Opinions of the Ministry of Civil Affairs on Encouraging and Guiding Private Capital's Entry into Elderly Service Sector* and the *Opinions of the State Council on Accelerating the Development of Elderly Services Industry*. There are now three types of investors in the elderly-friendly real estate sector: real estate companies, insurance companies and state-owned enterprise. According to partial statistics, the total investment of these three types of enterprises in elderly-friendly real estate sector has exceeded RMB 100 billion Yuan. While by the mode of development, there are elderly centered communities and mixed communities, the former being represented by Beijing Suncity Community and the latter by Xiaoxianfang, Greenland 21 City in Kunshan, which advocates the distance short enough to deliver a bowl of hot soup between the elderly and the young people. By the mode of operations, there are for-sale and for-rent (membership) properties, with the former being common and dominant in the elderly-friendly real estate sector, which can easily turn the elderly-friendly real estate into a pretext of the real estate developers. The affinity community in Shanghai is a successful example in the for-rent mode.

The Service Management System of Virtual Elderly-care Community, Lanzhou (© http://www.bkvito.com)

China has explored the establishment of virtual elderly-care community, which is an information service platform set up by the governments to integrate social resources in elderly-care services and provide professional services to home-based elderly care. The elderly people can have access to convenient room services by making a call or sending a message online. The detailed service standards and the socialized management and supervision by governments have made virtual elderly care a new trend in the community-based and home-based elderly care services. Canglang District of Suzhou city has taken the lead to explore the virtual elderly-care community, and by relying on the modern electronic and information technology and through professional, regulated and standardized operation, developed the Home Happiness 211 Service System, which can effectively integrate the various quality social resources and provide 53 items of standardized, family-style, all-around and 24/7 elderly-care services of 6 categories to the elderly people living in their own houses. This government-led and enterprise-operated initiative has achieved excellent social benefits and wide recognition from various places in China. By now, such cities as Lanzhou, Shanghai, Tianjin and Yantai have started similar explorations in this field.

5.1.4 Exploration into the Smart Communities

In July 2013, eight ministries including the MOHURD and Ministry of Industry and Information Technology (MIIT) jointly released the *Guiding Opinions on Facilitating the Healthy Development of Smart Cities*, and identified strategies, principles, major targets and information security requirements for the development of the smart cities of China.

Up to now, two batches of about 200 cities, counties, districts and towns have applied to join the smart cities pilot project, which involves 10 fields including smart transportation, smart grid, smart healthcare and smart community. Based on the community-based IT technology, the smart community has achieved substantial progress as the project is most closely related to the daily life of urban residents.

5.1.4.1 Development of Smart Communities with standards

Local governments have released the construction plans, guidelines and standards for smart communities and promote the application of information technology through standardization. For example, Beijing released the *Guiding Standards on Smart Communities of Beijing (Trial)* and the *Implementation Opinions on Initiating the Construction of Smart Communities in Beijing* in the end of 2012 and fully activated the pilot project of smart communities construction. Suzhou released the *Standards of Suzhou City on the Construction of Cabled Smart Communities* and the *Methods of Checking and Accepting the Demonstration Communities (Villages) and Towns of Cabled Smart Communities in Suzhou City* in early 2013 and promoted the construction of Cabled Smart Communities within the whole administrative region. In the end of 2013, the Ministry of Civil Affairs, the State Development Planning Commission, the MIIT, the Ministry of Public Security and the Ministry of Finance released the *Guiding Opinions on Promoting the Construction of Integrated Information Platform for Community Public Services,* which symbolized that the construction of China's smart communities had grown out of the local self-initiated exploration in various places to the new stage of overall planned development.

5.1.4.2 Diversified Modes of Smart Communities

Relying on the high-speed broadband network environment supported by optical fiber networks and supplemented by wireless networks, the smart community information service stations in China have basically covered cities above prefecture level and formed the integrated community information platforms which comprise the district-street-residence three-level vertical connections and city-district-street-residence four-level information management. Various forms of IT-based community management including the Beijing Mode (government invested and managed), Guangzhou Mode (cooperation between the government and the grassroots branches) and Hangzhou Mode (support from government and operation by enterprises) have come into being.

Smart communities have also showed diversified development in its contents and forms. On one hand, the community service platform based on traditional telephone calls has become mature, which includes the 96156 community service call center in Beijing, 96345 citizens' service call center in Hangzhou, 81890 service call center in Ningbo and Wuliqiao Street Community Information Service Platform in Luwan District, Shanghai. On the other hand, the smart community solutions based on the full integration of Internet of Things technologies and traditional information technologies have gradually emerged. For example, Beijing Guangnei Street and Shanghai Biyun Community have offered the smart services in property management, distance charging, community health care

Chatting via Virtual E-Connection between the Elderly in Guangnei Street, Beijing (©/ http://www.xinhuanet.com)

Box 5-2:
Diversified Exploration into Smart Community

The first phase of Smart Community in Guangnei Street, Xicheng District, Beijing includes 14 sub-systems under four parts: smart center, smart e-government, smart business and smart livelihood, which can record information about all the people, places, materials and events in Guangnei Street, classify and regulate the work-related responsibilities of the departments, divisions and communities, and has created a series of application systems to serve the enterprises and residents, including the building service center, residents and enterprises service card, enterprise service center, virtual nursing homes, smart parking service and digital homes.

Jinqiao Biyun Smart Community system in Pudong, Shanghai has completed the four fundamental projects of intelligent family terminal, Jinqiao Biyun Card, community information service portal and cloud computing center. Through the Biyun E-Manager, community residents can make inquiries into the public service information, discount information, service orders and directly pay and place orders based on the various information about the businesses connected to the Jinqiao Biyun Card and community service agencies and enjoy customized services.

The residents in the Information Home community of Guangzhou can enjoy intelligent residence management like distance control on electric appliances, video supervision on domestic security and TV programs through the broad-band network and fixed-line telephones. In addition, the residents have access to home services, place orders on commodities through the 114 call center and the Information Home portal. These smart communities have not only brought tangible benefits but also provided examples for the planning, design and construction of the future smart communities.

provision, domestic services and public information inquiry. Through the integrated information platform, innovation has been made to create a series of plans and applications that can serve the daily needs of residents.

5.2 Urban Transportation Space

Transportation is the lifeline of cities. With the intense inputs and rapid construction in the urban transportation system of China, the vertical transformation framework has basically come into being. The public transportation services have been continuously improved and transportation management further enhanced, which have effectively promoted the social and economic development, remarkably improved people's travel environment and changed their lifestyle. However, with the rapid urban development and ever growing population, the urban transportation system also faces the restrictions in land, resources, and environment and a series of challenges of traffic bottleneck, traffic safety and vehicle emission, as a result of the rapid growth of vehicle fleets. At the same time, with the improvement in people's life, the residents have increased new demands on traffic safety, environment protection and healthcare. Diversified needs on transportation have raised higher requirements on the quality of transportation services.

Faced with the new challenges and requirements of urban transportation system, China has identified the aim of promoting the low-carbon and green development of urban transport system, upgraded the service capacity and level of urban transport system and created the livable and work-friendly transport environment, and established the priority for upgrading the transport quality by developing diversified public transport system, guiding the rational development of private cars and creating the open, smooth, low-carbon, smart, impartial, safe, modern and service-based integrated transportation system.

5.2.1 Facilitation of Regional Transportation

5.2.1.1 Public Transport System for Regional Transportation

According to the statistics of China Railway Corporation, with the commissioning of such railways as Nanjing-Hangzhou High Speed Railway, Hangzhou-Xiaoyong High Speed Railway, Panjin-Yingkou High Speed Railway, Xi'an-Baoji High Speed Railway, Xiangtang-Putian Railway, Xiamen-Shenzhen Railway, Liuzhou-Nanning Railway, Hengyang-Liuzhou Railway, Chongqing-Lichuan Railway, and Guangxi Coastal Railway, the total operating mileage of high-speed railways reached 11,000 kilometers in 2013, accounting for 45% of the total operating mileage of world's high-speed railways and ranking China as the first in the world. With the all-weather transportation, comfort and convenience, the high-speed railways have gradually become a priority choice for residents' travels. According to the statistics from the railway authorities, from the beginning of 2007 to the end of 2012, the CRH (China Railway High-speed) trains transported 1.57 billion passenger-times, and its percentage in the total railway transport volume increased from 4.3% to over 30%.

Two Children Attending the Activity of "10,000 People Travelling Via High-Speed Railway between Nanjing and Hangzhou"
(Photo by Sun Can)

Table 5-1: The construction of high-speed railways in China

Name of High-speed Railways	Total mileage (km)	Date of Project Commencement	Service Date
Beijing-Shanghai High-speed Railway	1318	2008.04	2011.06
Qingdao-Jinan High-speed Railway	363	2006.10	2008.07
Shijiazhuang-Taiyuan High-speed Railway	189	2005.06	2009.04
Beijing-Guangzhou High-speed Railway	2298	2005.09	2012.12
Shanghai-Chengdu High-speed Railway	2078	2005.07	2013.12
Hangzhou-Shenzhen High-speed Railway	1450	2005.10	2013.12
Beijing-Harbin High-speed Railway	904	2007.08	2012.12
Xi'an-Baoji High-speed Railway	138	2009.11	2013.12
Zhengzhou-Xi'an High-speed Railway	505	2005.09	2009.06
Shanghai-Hangzhou High-speed Railway	160	2009.02	2010.10

Among them, the total mileage of high-speed railways (including intercity high-speed railways) in the Yangtze River Delta area has reached 2,901 kilometers with the highest density in China at 2.91 kilometers of high-speed railways per 100 square kilometers. The intercity high-speed railways have also adopted the public transport operation by arranging a large number of high-density departures each day. For example Shanghai-Nanjing High-Speed Railway has 74 operating departures and 74 arrivals each day with the highest number reaching 98 each day, which has greatly improved the convenience to the urban residents' travel. This high capacity, high density and public transport-style organization mode has changed people's style of work and living. Traveling from the south of the Yangtze River in the morning and arriving in the northern areas of the Great Wall, or traveling from Guangdong to Fujian in one day, is not a dream any more. Such areas as the Bohai Rim, Yangtze River Delta, Pearl River Delta, Guanzhon Urban Cluster and Wuhan Urban Agglomeration, have created the 2- or 3-hour living circles and witnessed the emergence of a group of people who rely on high-speed railways for commuting. To live and work between two cities around the high-speed railways has gradually become generally accepted.

In addition, the combined airway-railway transport has become a new mode of travel and facilitated the residents' long distance travel. In May 2012, China Eastern Airlines joined Shanghai Railway Bureau to take advantage of the connection of Hongqiao Airport with the high-speed railway station, and offered the first combined airway-railway transport product: Air-rail Connection, which enabled the seamless transfer and one-ticket-only transport of air and high-speed railway transport at the same location. The combined airway-railway transport has brought the win-win achievements for the formerly competitive airlines and railways and promoted the combined hub of airport and high-speed railway stations to become a strategic space for future urban development.

5.2.1.2 Inter-provincial and Inter-city Railways

With the growing number of subway cities, the cross-region and even cross-city and cross-province railways have become a new trend for intercity transport. In October 2013, the first inter-city rail transit line of China- Shanghai Metro Line 11, connecting Shanghai and Kunshan, Jiangsu Province- was launched into operation. With a total operating mileage of 72 kilometers, Shanghai Metro Line 11 has become the longest metro line in China, which includes 6 kilometers and 3 metro stations of Zhaofenglu, Guangminglu and Huaqiao in Kunshan, Jiangsu Province. The three stations are included in Shanghai Metro Line 11 and the ticket price of Huaqiao station also follows the current ticket price system of Shanghai metro. The travel from Huaqiao Station in Kunshan to Xujiahui Station in Shanghai takes about 70 minutes and the ticket is RMB 7 Yuan per person times. The urban transport infrastructure facilities exceeding the restriction of administrative divisions have facilitated the travel and commuting of the people in Jiangsu and Shanghai, promoted the process of regional integration, enhanced the one-city effect of the wide area, and provided a demonstrative sample for cross-region connection between rapidly developing urban rail transit networks for various metropolitan areas across the country.

It is noteworthy that the interconnection between the urban rail transit systems is becoming a trend. By now, Suzhou and Wuxi of Jiangsu Province have planned to directly connect their light rail transit systems with Shanghai metro system. In addition, the intercity rail transit lines for Nanjing-Jurong, Nanjing-Yizheng and Nanjing-Tianchang of Anhui Province have been approved and the construction is expected to commence during the period from 2015 to 2020.

Table 5-2: The service of Combined Airway-Railway Traffic in Current China

Airlines Company	Railway Company	Service Date	Route	Name of Product
Air China Limited	Shanghai Railway Bureau	December 1, 2012	Between Shanghai and Suzhou, Changzhou, Hangzhou, Wuxi, Kunshan, Jiaxing, Yiwu, Ningbo and Taizhou; Between Hangzhou and Ningbo	Rail-Air Travel
	Chengdu Railway Bureau	August 31, 2013	Between Chengdu, Chongqing, Dazhou and Nanchong; Between Dazhou and Nanchong	Combined Airway-railway Traffic
China Eastern Airlines	Shanghai Railway Bureau	April 28, 2012	Between Shanghai, Suzhou, Changzhou, Wuxi, Nanjing, Hangzhou, Ningbo and Taizhou	Air-rail Connection
Spring Airlines	Shanghai Railway Bureau	August 13, 2013	Between Hangzhou, Wuxi, Suzhou, Changzhou and Jiaxing; traffic service to 10 cities of East China including Kunshan, Ningbo, Yiwu and Zhenjiang in September	Air-rail scheme
Hainan Airlines	Yuehai Railway Company Limited	April 23, 2012	Between Haikou and Sanya; Haikou to Wenchang, Qionghai, Bo'ao, Wanning and Lingshui	Air-rail Travel

5.2.2 Prioritized in Development of Public Transport System

The public transport has developed very rapidly. By the end of 2012, the total length of designed bus lanes in cities and county towns was 5,255.8 kilometers; the area of parking lots for buses and trolley buses was 46,945,000 square kilometers; the area of maintenance and repair stations was 9,731,000 square kilometers; and the total number of operating buses and trolley buses was 474,900 and 528,200 standard units in China. The delivery volume of the urban passenger-dedicated system was 122.844 billion person-times in the whole year, including the 74.980 billion person-times by urban buses and trolley buses with the operating mileage of 34.682 billion kilometers; 8.729 billion person-times by rail transport system with the total mileage of 281 million kilometers; 39.003 billion person-times by taxies with the total mileage of 156.628 billion kilometers, average number of passengers per taxi-times of 1.96 persons; and 131 million person-times by passenger ferries.

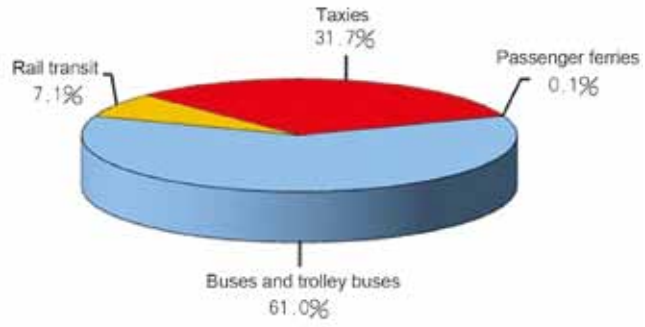


Figure 5-3: Composition of Urban Transport System in 2012

5.2.2.1 Rapid Development of Urban Rail Transit

In order to effectively alleviate the traffic pressure of large cities, China has enhanced the efforts in the construction of urban rail transport system. In October 2013, the *Decision of the State Council on Matters Concerning Administrative Approval Items to Be Cancelled and Delegated to Lower Levels* has declared to decentralise the power to examine and approve urban rapid rail transit projects and further promoted the development of urban rail transit system. By the end of June 2013, there were a total of 16 cities in China Mainland who offered operation of 67 urban rail transit routes, with a total length of operating routes reaching about 2,037 kilometers, and the number of operating station reaching 1330. In addition, 27 cities had rail transit projects under construction, with 70 routes under construction, which involves the length of over 2100 kilometers and a total investment of RMB 1.5 trillion Yuan. Among them, Beijing was the city with the longest subway operating mileage of 456 kilometers in total, involving 17 operating routes. According to the statistics of Beijing Municipal Commission of Transport, the average number of subway stops for daily travel of each subway passenger is 11 with the distance of about 15 kilometers. By now, the daily passenger volume of the subway system has reached 9.50 million person times and reached the record high of 10.5725 million person-times on July 5, 2013.

Table 5-3: The Statistics of Urban Rail Transit

No.	City	Number of Operating Routes	Length of Operating Routes	Number of Operating Stations
1	Beijing	17	456.3	271
2	Shanghai	12	439.1	288
3	Guangzhou	8	229.3	144
4	Shenzhen	5	175.7	131
5	Tianjin	4	130.7	82
6	Dalian	2	63.2	18
7	Changchun	1	31.1	33
8	Nanjing	2	81.6	57
9	Chongqing	5	143.7	90
10	Wuhan	2	56.6	46
11	Shenyang	2	48.3	41
12	Chengdu	2	48.3	43
13	Xi'an	1	19.9	17
14	Suzhou	1	25.2	24
15	Kunming	2	40.2	14
16	Hangzhou	1	48.0	31
Total		67	2,037.2	1,330

Note: Latest data up to June 2013.

5.2.2.2 Rise of Modern Tramcars

Modern tramcars are on the rise. March 9, 1959 was the last day for the operation of Beijing's tramcars and later on, the five tramcar routes in Beijing were abolished and the overhead wires of the tramcars were demolished. In 1970s, Shanghai, Tianjin, Dalian and other cities began to demolish the overhead wires for tramcars and only Anshan, Changchun, Dalian and other cities reserved the tramcar routes. Among them, Dalian reserved 3 tramcar routes running through the city center from east to west with the total length of 15 kilometers.

After China included the development of urban modern tramcars into the *Integrated Transportation System Planning for the 12th Five-year Plan Period*, which identified the strategy of prioritized development of public transport system and the promotion of the urban rail transport network including the light rail transit, subway and tramcars, tramcars regained a conspicuous position in the urban transport system and witnessed rapid development in recent years.

According to the statistics of the First Seminar on Urban Modern Tramcars Technology, by the end of 2013, a total of 26 cities had tramcar projects under construction, including the developed cities including Beijing, Shanghai, Guangzhou, Shenzhen, Zhuhai and Suzhou, and the emerging cities including Quanzhou, Hefei and Liupanshui. There were over 50 tramcar routes and over 1200 tramcars. By 2020, the length of the operating routes of modern tramcars would exceed 2000 kilometers, with the estimated total project investment of over RMB 200 billion Yuan. The market size of the modern tramcar vehicles is RMB 30-40 billion Yuan and the average annual value of demand for modern tramcar vehicles is about RMB 3.8-5.0 billion Yuan.

Despite its advantages in safety, low-carbon and convenient operation and high price/performance ratio, there are still many disputes: firstly, the tramcar requires fixed rails on the road, which will occupy the public road space; secondly, there is the trend of investment-driven projects which have not been well studied; and thirdly, the tramcar can bring certain noise and vibration to the areas along the routes.

5.2.2.3 Promotion of Low pollution and Low Energy-consumption Buses

As a response to combat the increasingly serious traffic-related pollution, China has been popularizing the green buses. In June 2012, the state promulgated the *Planning for the Development of the Energy-Saving and New Energy Automobile Industry*, explicitly advocating the replacement of fuel oils with natural gas and developing LNG buses. Then the Ministry of Transport issued the *Key Points in Energy Conservation and Emission Reduction of the Transport Industry in Year 2013* and proposed the priority in advancing the development of natural gas for vehicles and LNG initiative and encouraged the use of new energy vehicles.

Now over 100 cities are implementing the clean vehicles initiative. By the end of 2012, the registered gas vehicles reached about 1.40-1.50 million and in the next 5-10 years, the number would reach over 5 million with 15,000 newly-built fueling stations for gas vehicles. By now there are nearly 2500 CNG fueling stations and nearly 300 LNG fueling stations in operation in China. However, by distribution, these fueling stations are centered in Xinjiang, eastern coastal region, Sichuan and Chongqing and can hardly be found in central and western regions and the northeastern region.

5.2.2.4 Pilot Project of Taxi Sharing

As a measure to solve the periodic difficulty in find a taxi for the morning and night rush hours and cope with bad weathers, cities of Beijing, Nanchang, Chongqing, Qiqihar, Nanjing, Jinan initiated the pilot project of taxi sharing in 2013. Beijing stipulated that the two persons sharing the same taxi should

Tramcar in Shenyang (Photo by Yu Haiyang)

Box 5-3:
Explorations into Independent Right-of-way of Modern Tramcars in Hunnan New Area, Shenyang

On August 6, 2013, the Modern Tramcar Network of Hunnan New Area, Shenyang, also known as the first modern tramcar network of China, was launched into operation with the coverage extending to such key urban locations as the National Games Village, Xiantao International Airport, and Shenyang Hi-Tech Industrial Development Zone. The tramcar network comprises 4 routes and 67 stations with the total length of about 60 kilometers. All the operation vehicles are the 100% and 70% low floor modern tramcars designed and manufactured by China CNR Corporation Limited. The vehicles consume limited energy at 0.07 kWh for every1 kilometer with passenger on the vehicle, which is about one fourth of the Bus Rapid Transit (BRT).

An important difference between modern tramcars and old-fashioned tramcars is the wide adoption of independent right-of-way. The operation sections with independent right-of-way arrangements generally account for over 50% of the newly-built routes in an effort to ensure the operating speed of the tramcars. In order to enjoy the independent right-of-way, Shenyang authorities adopted the following methods: firstly, the green belt is used as the right-of-way of the tramcars and the rails on the green belt can ensure the complete separation of the tramcars from other traffic flows. Secondly, the routes adapted from former suburban railways or industrial railways are used and ballasted tracks are reserved. So the curbs are laid to ensure complete separation and independent right-of-way in regular operation. Thirdly, tramcars have to wait for the traffic light to turn green before they can move forward, but the special traffic lights are provided for the turning at the crossroads when the tramcars turn left or right to avoid collision with other vehicles moving straight forward. In the future, wireless signals will be used to ensure the comparatively preemptive right-of-way for the tramcars. The smart traffic system will adjust and shorten the countdown time of the traffic lights ahead before the tramcars approach and when the tramcars arrive, the traffic lights will turn green and they will move forward without waiting.

The Meter of Taxi Sharing in Nanchang (Photo by Zhou Mi)

each pay 60% of the total taxi fare; Qiqihar stipulated that each of the people sharing the taxi shall pay 70% of the taxi fare based on the actual vehicle mileage; and Sharing Meters were installed on taxies for separate metering in Nanchang.

5.2.2.5 Public Bicycle System: A New Highlight

Public bicycle system symbolizes the transformation of bicycles from individual transport to quasi-public transport and it is an important measure to construct the green urban transport system and implement the public transport priority strategy. Based on its convenience and low consumption of energy, the public bicycle system has been implemented and developed in over 60 cities including Beijing, Shanghai, Hangzhou, Suzhou, Shenzhen and Nanjing as a part of the urban livelihood program. As the first city in China to integrate public bicycle system into the urban public transport system, Hangzhou had over 2000 services stations and over 60,000 public bicycles in 2012, with the average daily amount of bicycles rented reaching 230,000 person times. The red public bicycles have become a new city logo of Hangzhou.

The red public bikes have become the new city logo of Hangzhou (©/ http://www.cctvhjpd.com)

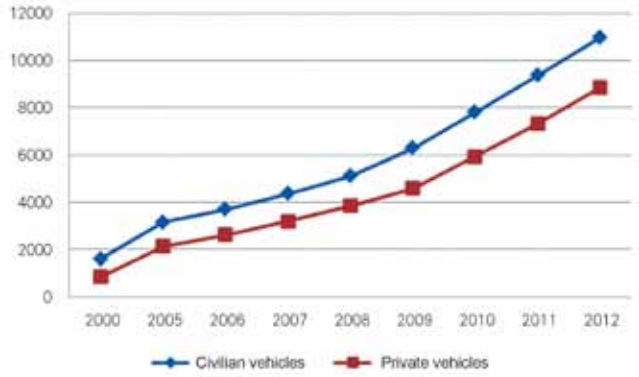


Figure 5-4: The Yearly Amount of Registered Automobiles in China (10,000) (©/ China Statistical Yearbook 2013)

5.2.3 Rational Development of Private Cars

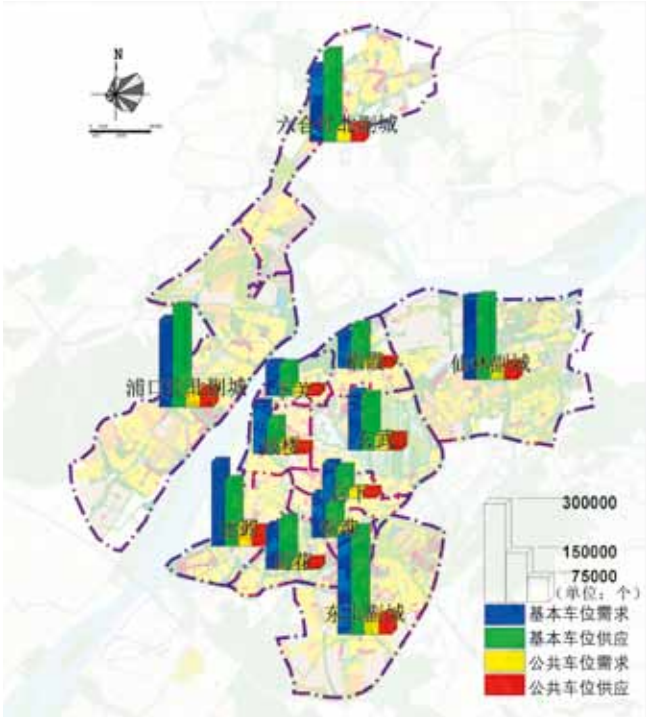
5.2.3.1 Strengthening Traffic Control

According to the Statistical Communiqué of the National Bureau of Statistics, by the end of 2012, the registered civilian motor vehicles in China reached 109,330,900, including 88,386,000 registered private cars. The registered vehicles in each of the 18 large and medium-sized cities exceeded one million and the registered motor vehicles in Beijing exceeded 5,200,000. In order to solve the traffic jams and automobile exhaust pollution in cities, Beijing, Shanghai and Guangzhou have announced the policy-limit on car purchase, followed by Tianjin and Shijiazhuang. In addition, cities including Beijing, Chengdu and Lanzhou have adopted the policy to limit the use of vehicles based on the last number of the vehicle license plates.

5.2.3.2 Strengthening Planning and Administration of Parking Facilities

In order to solves the problems of not enough parking lots and promote the effective transfer between private transport and public transport, cities including Hangzhou and Nanjing have further optimized the planning of the parking facilities. For example, the *Site-selection Plan on Key Parking Lots (Garages) in Urban Areas (Eight Districts) of Hangzhou* has identified 41 transfer parking lots which are within 500 meters away from subway stations and are mainly for parking and transfer purposes.

While the number of parking facilities is increased, how to maximize the utilization of existential parking facilities has become a new focus. Beijing, Hangzhou, Shenzhen and other cities are exploring the management measures for sharing parking lots. For example, the municipal governmental agencies in Beijing have taken the lead to open their parking lots for the public and implemented the alternating parking project. When these government agencies are off work, 58 parking lots or 7750 parking spaces are opened for urban residents.



Map 5-4: The Demand and Supply Analysis of Parking in Nanjing
[©/ Planning on Urban Parking Facilities in Nanjing, Jiangsu Institute of Urban Planning and Design (2012)]

Hangzhou municipal governmental have also taken the lead to implement the alternating parking project, and asked the 503 government offices and non-for-profit institutions of Hangzhou to make inventory of their own parking spaces and offer parking spaces to the neighboring residents while ensuring the spaces for government vehicles. By now, Hangzhou municipal government has reached agreement to share parking lots with some enterprises, non-for-profit institutions and communities. The *Research and Implementation Plan on Parking Policies of Shenzhen Municipality* jointly formulated by the Urban Planning Land and Resources Commission and Traffic Police Detachment of Shenzhen Municipal Public Security Bureau encourages eligible institutions to open parking lots of the office buildings at non-working hours and for the public uses encourages supermarkets and malls to open their parking lots at night time for fee or with charge.

5.3 Leisure and Recreation Space

With the development of the reform and opening up and the modernization, the urban and rural residents of China have seen great improvements in their living standards. By the end of 2012, the GDP per capita of China was RMB 38,354 Yuan or about US$ 6,100; the disposable income per capita of urban residents was RMB 24,565 Yuan and the net income per capita of rural residents was RMB 7,917 Yuan. People's needs for recreation

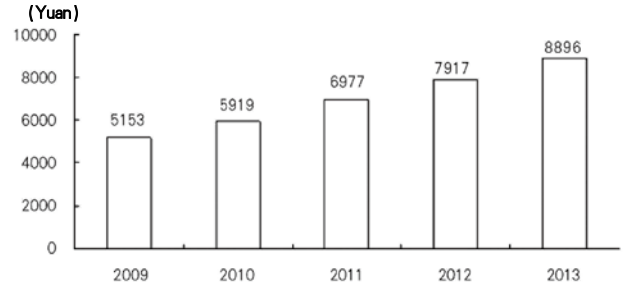


Figure 5-5: The Per-Capita Net Income of Rural Residents and Real Growth Speed
(©/ Statistical Communiqué of the People's Republic of China on the 2013 National Economic and Social Development)

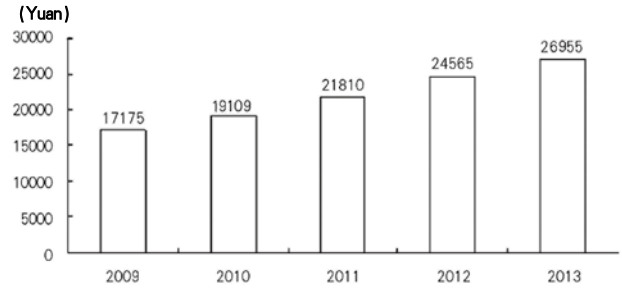


Figure 5-6: The Per-Capita Disposable Income of urban Residents and Real Growth Speed
(©/ Statistical Communiqué of the People's Republic of China on the 2013 National Economic and Social Development)

and cultural entertainment have increased with the economic development. At the same time, stimulated by the national strategic measures of promoting the consumption and expanding the domestic needs, the residents' consumption drive has been increasing. The living expenditures per capita of urban residents nearly doubled to reach RMB 16,674 Yuan in 2012 from RMB 7,998 Yuan in 2000, where the share of expenditures on cultural entertainment reached 12.2%. In addition, the residents' consumption has gradually showed the diversified consumption features of the post-industry era, and tended to become more environment-friendly, local and individualized.

5.3.1 Improvement of Quality of Public Environment

5.3.1.1 Development of Public Open Spaces

With the modern urban development with high plot ratio and high density, the change of people's lifestyle has increased the need for open spaces, and open spaces have gradually grown out of their pure landscape and ecological value, and put more emphasis on their social and cultural function in meeting people increasing needs for activities. In order to meet people's cultural and living needs of modern cities, local governments are building more parks. By the end of 2012, the area of built-up parks across China reached 306,245 hectares, and the per capita area of park green spaces was 12.26 square meters.

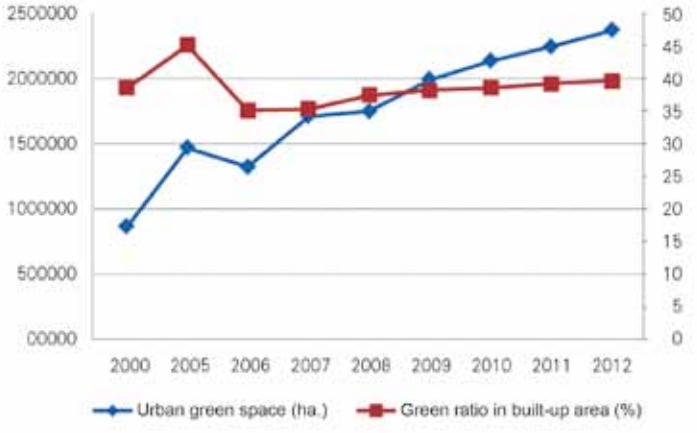


Figure 5-7: Urban Green Space and Ratio in China
(©/ China Statistical Yearbook 2013)

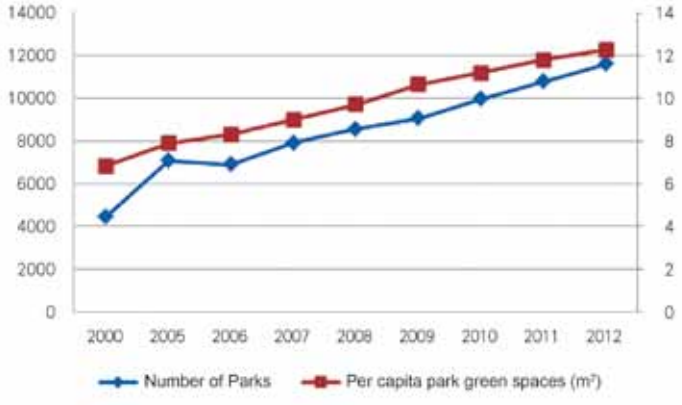


Figure 5-8: Development of Parks in China
(©/ China Statistical Yearbook 2013)

Recent years have seen the holding of various large-scale ecological and cultural recreational activities and improvement of urban environmental quality. In 2013, the successful holding of the 9th China (Beijing) International Garden EXPO, the 8th China (Changzhou) Flower Expo, the 7th Horticultural Expo of Jiangsu Province and the 3rd Guangxi Garden & Horticulture Expo, etc. not only expanded the regional influence of the host cities, but also improvement the living environment of the local residents. For example, Beijing Garden Expo Garden has a green area of 349 hectares, which effectively alleviates the noise pollution, decreases the lad surface temperature, absorbs 103,700 tons of smoke and dust and produces 89,000 tons of oxygen. Compared with the past, the concentration of atmospheric pollutants in the Garden area has dropped by over 60% in average and the Garden has become the new "green lung" of Beijing. By taking advantage of the urban-rural environment protection project, the places near the Garden has completed the afforestation covering an area of 4,537 mu, green road belts of 111.83 hectares, integrated renovation of the peripheral roads and roads along the rail transport routes, and burying of 1800 meters long overhead wires in underground tunnels. The overall urban environment has witnessed a qualitative frog-leap.

Green Riding in Longchishan Bicycle Park in Yixing
(©/ http://www.tyj.wuxi.gov.cn)

Map 5-5: The Planning of Longchishan Bicycle Park
(©/ http://www.zzz.yixing.gov.cn)

The recreation and body fitness of urban residents is also an important part of the construction of public open spaces. For example, the Longchishan Bicycle Park in Yixing, covering an area of 6.33 square kilometers, has focused on low-carbon travel, slow life and public recreation sightseeing, by taking full advantage of the existing ecological tourism resources including tea gardens, bamboos and reservoirs to create the recreation and sports theme park integrating the bicycle sports, landscape and Yangxian Tea culture. The first phase of the park basically consists of the current roads, abandoned pits and empty land reformations. By protecting the existing good ecological environment and integrating the idea of low-carbon and people-oriented planning, the park provides a green space with mountains and rivers for urban residents to have a place for body fitness and relaxation at weekends.

Map 5-6: Country Park Planning around Changzhou City Area
(©/ Country Park Planning around Changzhou City Area, Changzhou City Planning and Design Institute)

In addition, the countryside parks and wetland parks have become major livelihood projects for cities to implement the ideas of ecological improvement. In order to optimize the spatial pattern of the cities and construct the slow-speed ring roads around the cities and connect the urban and rural areas, Shanghai, Changzhou and other cities have taken the lead to formulate the plans on countryside parks surrounding the cities and explore into building the metropolitan recreation spatial pattern in compliance with urban development. The countryside parks have attracted large number of urban residents to walk, do body exercises, hike, hold BBQs and camp in the parks and have become a good destination for residents' recreation and relaxation.

5.3.1.2 Urban Renewal

It has become the major target of urban renewal to provide the beautiful and comfortable public spaces and reflect the urban features to the maximum. In their urban redevelopment, Shenzhen and Guangzhou have taken urban renewal as a spatial fund-raising pattern to readjust the land-use structure for the construction of public facilities to change the past focus on the industrial, commercial and residential development and address serious insufficiency of recreation and public infrastructure. In order to regulate the urban renewal initiatives, Shenzhen municipal government released and implemented a series of supportive policies including the *Administrative Measures on Urban Renewal of Shenzhen, Implementation Details on Urban Renewal of Shenzhen, Opinions on Further Promoting Urban Renewal, Special Action Plan for Accelerating Urban Renewal of Shenzhen, Basic Operation Procedures for Urban Renewal Projects under Demolition and Reconstruction Category (Trial), Guidance on Submission of Formulation Planning on Urban Renewal Units Planning of Shenzhen (Trial), Operation Rules for Examination and Approval of Urban Renewal Units Planning, and the Provisional Measures on Mixed Building Ratio of Social Housing in Urban Renewal Projects of Shenzhen,* which provided the legal foundation for urban renewal and the expansion of public spaces.

5.3.2 Rapid Development of Consumption Space

5.3.2.1 Diversified New-type Consumption Spaces

Consumption exerts critical influences on economic development. Faced with the slowdown of world's economic growth, the promotion of consumption and the expansion of domestic demand have become the strategic measures for China's economic development in recent years. A series of new consumption spaces have emerged in the cities as a response to the increase of consumption needs, which include, for example, Tianjin Urban Recreation Business District (RBD) along the South Canal, Qingdao Olympic Sailing Center Tourism District (CTD), Wuhan Hanzheng Street Cultural Tourism Business District (TBD), and Chongqing Dadukou Central Entertainment District (CED). In addition, the large-scale theme parks have found a reason to mushroom in China. According to the statistics of the *Report of In-depth Market Research and Forecast and Analysis on Investment and Development on China's Theme Parks Industry 2012*, there are now over 2500 theme parks in China.

The demand for the consumption of cultural products by residents has increased and the patterns of consumption have diversified. By the pattern of cultural consumption of the urban residents, their consumption has developed from low-level recreational and entertainment consumption to high-level knowledge-based, development-oriented and intelligent consumption. Movies, tourism, sports and body fitness and dances have occupied an increasingly important role in urban residents' cultural life. The public participation in exhibitions, art collections and art training have become more extensive. For example, in 2012, the number of film viewers in China was 500 million person-trips and the yearly box office revenue exceeded RMB16.5 billion Yuan, a year-on-year increase of 28%. The number of screens also increased from 9200 in 2011 to 13000 in 2012, which marked the era of 10,000 film screens, only after the USA and make China the second largest film market in the world.

5.3.2.2 Emergence of Online Consumption Spaces

According to the China Online Shopping Market Research Report in 2012 released by China Internet Network Information Center (CNNIC), by the end of 2012, the transaction value of China's online shopping market reached RMB 1,259.4 billion Yuan; the proportion of the transaction value of online retail market in the total retail sales of consumer goods reached 6.1% in 2012; the number of online shoppers reached 242 million persons and the annual online shopping consumption per capita reached RMB 5,203 Yuan. Among them, the number of transactions completed on the platform of Alipay on November 11th 2013 reached 170 million and the transaction value of RMB 35 billion Yuan, which is nearly three times the transaction value of the Cyber Monday of the previous year (RMB 12.1 billion) in the USA.

With the emergence of the charm of e-business, novel phrases likes virtual enterprises, virtual banking, online marketing, online shopping, online payment and online advertisements, etc. are becoming increasingly familiar and recognized by people and changing people's patters of consumption. The attraction of online shopping comes from the initiatives of the consumers who reserves the right to shop and the consumers can complete the transactions in a self-help and easy manner, which fully reflects the consumers' power in online shopping. The continued expansion of the online shopping market has exerted influence on the traditional urban consumption spaces. The combination of human and electronic communications have greatly improved the efficiency of business activities in the whole process of these activities, and reduced the unnecessary intermediate links. The traditional manufacturing industry takes the advantage to enter the era of small wholesales and multiple categories and zero inventories became a possibility. The traditional retail and wholesale industries have created the new patterns of no-shop online marketing and various online services have provided totally new patterns of services for the traditional service industry. This influence can bring both cons and pros for the traditional consumption spaces. By current analysis, the industries with high level of standardization of commodities like home appliances and books have been greatly impacted and the number of physical bookstores is dropping. The supermarkets and fresh products stores have been impacted because they rely on non-standard production with lower unit prices that are not cost-efficient for logistics and delivery.

Tapping on the great potential of e-business, the eight ministries including the Ministry of Commerce initiated the demonstration project of e-business districts, and Hangzhou, Yiwu, Shenzhen and other cities also released the plans of e-business districts. For example, the Yiwu International E-business Mall has started the construction with the aim of building a new online mall. The mall will rely on the market entities and industrial advantages to create the global online shopping delivery center, global online business distribution center, regional express mail dispatching center, the third-party platform system and vast information processing center.

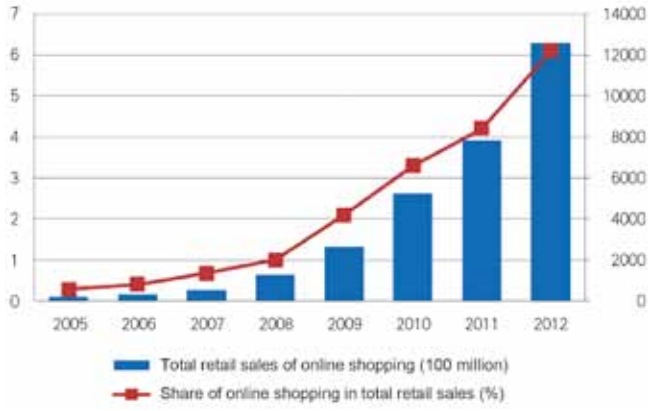


Figure 5-9: The Development of Online Shopping Market in China
[©/ China Online Shopping Market Research Report (2013)]

Hall A of Hong Kong-Shenzhen Biennale 2013——Value Factory (©/www.zsyw.com)

The Busy Logistics after November 11, 2013 (Photo by Meng Delong)

5.3.3 Creation of Urban Characteristics

5.3.3.1 Enhanced Protection and Utilization of Historic and Cultural Heritages

With the residents' pursuit of high quality of life, recreation has become an important content of the life of urban residents and one of the important functions of modern cities. Recreation spaces with special characteristics, including the famous historical and cultural cities and historical blocks with rich historical stories and local cultural connotations, have become the first choices of residents. Chinese cities attach great important to the protection and rejuvenation of historical blocks and emphasize the integration of heritage protection, improvement of living environment of urban residents and cultural rejuvenation plans with the overall development of the cities. For example, the protection and rejuvenation project of in the southern part of Nanjing City not only repaired such important historical and cultural locations as the Former Residence of Shen Wansan, Former Residence of Jiang Shoushan, Former Residence of Fu Shanxiang and Shangjiang Examination Shed, but also renovated ancient buildings representing the local Qinhuai cultures, including the Junhui Bookstore and Wenqu Tea House, renovated and constructed a batch of ancient-style residence clusters with special characteristics, and assembled featured businesses as folk life experience, intangible heritage exhibition, exhibition for public benefits, catering and snacks, recreation and entertainment and special museum, etc. These places have become new recreational attractions to reignite residents' memory of Nanjing.

The exploration of Suzhou in demonstration of famous historical and cultural urban areas is also meaningful. In 2013, as an effort to sustainably enhance the protection of state-level famous historical and cultural cities of national importance, accelerate the creation of the unified historical and cultural heritage protection system, and further improve the systematic famous historical and cultural cities, Suzhou city created Gusu District by combining the Pingjiang District, Canglang District and Jinchang District and established the Suzhou Demonstration Zone for the Protection of Famous Historical And Cultural City of national importance. The protection zone and Gusu District adopted the administrative pattern of the one administrative team under two names. Suzhou also revised the overall plan on famous city protection-*Plan for the Protection of Famous Historical and Cultural City in Suzhou (2013-2030)* - for the fifth time, and raised the idea of creating the historical and cultural heritage protection system at different levels, ages and series.

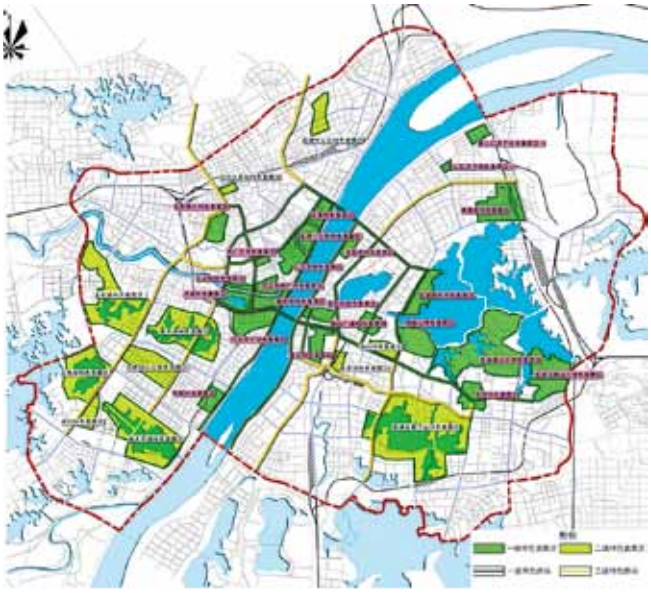
There are both successful cases of integration of historical and cultural heritage protection and utilization and failures to be remembered. Overall speaking, the way has been very difficult in China for the protection of the historical and cultural heritages and characterized by both protection and damage at the same time. In the past over 30 years after the State Council approved the 24 cities as the first batch of state-level famous historical and cultural cities and released the Cultural Relics Protection Law in 1982, the number of state-level famous historical and cultural cities has increased to 121. The number is increasing, but the quality of protection is worrying. In 2013, the MOHURD and the State Administration of Cultural Heritage jointly released the notice to criticize on the poor efforts of eight counties and cities in Shandong, Hunan, Yunnan and Hebei who failed in protection of their cultural heritage and caused serious damage to the historical and cultural heritages and severely jeopardized the historical and cultural value of the famous cities.

5.3.3.2 Enhanced Guidance on the Planning

To honor the characteristics of the cities, exhibit the local cultural connotations, China has enhanced the guidance on the planning of featured recreational spaces. Guangdong, Jiangsu, Hebei, Hubei and other provinces have used the creation of urban characteristics as an important means and way to upgrade the spatial quality of the cities and

Kunqu Opera performance at Laomendong Area, Nanjing
(Photo by Yang Bo)

Donghaochong full of green in Guanghzou (Photo by Liu Jianwei)



Map 5-7: The Scope of Special Purpose Areas (SPA) in Wuhan
(©/ Study Series on Spatial Pattern of Wuhan City, Wuhan Urban Planning and Consultant Service Center 2011)

organized their counties and cities to formulate the plans on urban spatial characteristics. For example, Wuhan has established the planning and control system on urban spatial characteristics, and formulated the Control Guidance on *Spatial Characteristics in Sub-districts and Special Purpose Areas in Central of Wuhan City.* The Special Purpose Areas refer to the areas with concentrated historical resources, landscapes and landmark buildings. The main purpose of the Guidance is to identify the areas within the central part of Wuhan City that can reflect the urban spatial characteristics, and enhance the control and guidance on urban spatial characteristics in plan formulation, plan management and concrete construction. Efforts have been made to identify the location, building height and historical position of the special purpose areas according to the planning of Wuhan and the current planning formulation system.

5.4 Rural Space

The No.1 Document of the CPC Central Committee in 2013, *titled the Opinions of the Central Committee of the Communist Party of China and the State Council on Speeding up the Development of Modern Agriculture to Further Increase the Development Vitality of Rural Areas*, for the first time raised the target of building a "Beautiful China", and vowed to further enhance the ecological improvement, environmental protection and integrated renovation of the rural areas. From then on, various local governments have started the Beautiful Village initiative relying on the major grippers of village environment renovation and rural tourism development.

5.4.1 Village Environment Renovation in an Orderly and Step-by-step Manner

By the end of 2012, China had 2,670,000 unincorporated villages (including 552,000 locations of villagers' committees). The village environment renovation was initiated in 2005 and, by the end of Year 2012, an accumulative number of 214,000 villages had conducted renovation. The central fiscal budget arranged a special fund of RMB 13.5 billion Yuan for rural environmental protection, and local fiscal budget allocated of over RMB 18 billion Yuan to support the environmental renovation of 26,000 villages across China, and directly benefited over 60 million rural residents. According to the plans, the environment of another 300,000 villages will be renovated by 2020.

In order to ensure the orderly progress of village environment renovation and avoid the campaign-style construction, the MOHURD released the *Method of Formulation of Village Renovation Plans* in 2013, and demanded the local governments to take into consideration of the village characteristics and formulate specific renovation plans from such aspects as the improvement of village public environment and supporting facilities. The Ministry of Environmental Protection distributed the *National Key Points in the Protection of Natural Ecological Systems and Rural Environment in 2013* and the *Technology Guideline on the Integrated Control of Rural Environment*, to guide regional rural environment pollution control and build beautiful villages.

Zhejiang and Jiangsu provinces are among the first provinces to have started the village environment renovation. Zhejiang initiated the project of 1000 demonstration villages and 10,000 renovation villages and achieved remarkable achievements. Its experiences in operation based on local conditions, classified guidance, planning first, improved mechanism, highlighted priorities and overall planning and coordination have been promoted in China. Jiangsu has improved the relevant policy

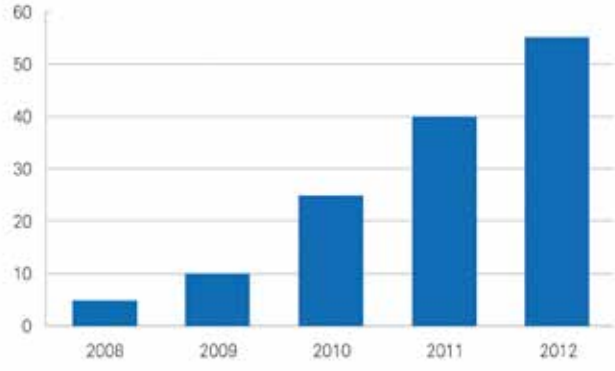


Figure 5-10: Investment for Rural Environmental Protection from Central Fiscal Budget, 2008-2012 (RMB 100 million Yuan)

measures and released the following documents: the *Opinions on Fully Upgrading the Urban-rural Development Guided by Integrated Urban-rural Development*, the *Plan on Village Environment Renovation Initiative in Jiangsu Province, the Formulation Methods of Village Environment Renovation Planning, Methods of Evaluation of Performance in Village Environment Renovation in Jiangsu Province, Methods of Evaluation and Scoring on Village Environment Renovation in Jiangsu Province, and Methods for Supplement Funding and Prize in Village Environment Renovation*. Guangdong Province has formulated the *Plan Action on Integrated Village Environment Renovation Initiative in Guangdong Province* and *Guidance on Formulation of Village Environment Renovation Planning of Guangdong Province. Sichuan Province has formulated the Implementation Plan for Integrated Rural Environment Pollution Control in 2012 of Sichuan Province.* Hebei Province has formulated the *Introductory Rules on Formulation of Village Environment Renovation Plans of Hebei Province.* All these activities have promoted the village environment renovation in an orderly and stable way.

5.4.2 Demonstration of Beautiful and Livable Villages

In 2013, the MOHURD released the *Notice on Creating Models for Beautiful and Livable Towns and Villages*, which noted that the beautiful and livable villages refer to the administrative villages with beautiful landscape, beautiful village environment and beautiful life, with the core value of being livable and work-friendly, and the with feature of being beautiful, special and green. Later on, the MOHURD announced the first batch of models for building beautiful and livable villages and summarized the village renovation experiences from 7 provinces including Zhejiang and Jiangsu.

5.4.3 Planning Beautiful Villages

The planning precedes the beautiful village project. Zhejiang Province has taken the lead to explore into the definition, significance, target system and main tasks of the overall planning for building beautiful villages, and formulated the beautiful villages plans on different levels, including the *Plan on Beautiful Villages Initiative of Zhejiang Province (2011-2015), Master Plan of Chinese Beautiful Villages of Anji County* and the *Plans on Building Daxi Village, Dongqiao Town, Fuyang Municipality into Beautiful Villages*. The Province has effectively guided the building of beautiful villages.

Wuzhen, Zhejiang Province (Photo by Wang Jingke)

Shitang Village, Jiangning District, Nanjing
(Photo by Liu Zhen)

Box 5-4:
List of First Batch of Models for beautiful and livable villages

Shitang Village, Hexi Street, Jiangning District, Nanjing, Jiangsu Province; Niyuan Village, Yizhuang Town, Tongshan District, Xuzhou, Jiangsu Province; Huanxi Village, Jiangnan Town, Tonglu County, Hangzhou, Zhejiang Province; Gaojiatang Village, Shanchuan Town, Anji County, Huzhou, Zhejiang Province; Liqiao Village, Xilian town, Tongling County, Tongling, Anhui Province; Longchuan Village, Yingzhou Town, Jixi County, Xuancheng, Anhui Province; Zhuocun Village, Jiangtuan Town, Laiyang, Yantai, Shandong Province; Haotang Village, Wulidian Office, Pingqiao District, Xinyang, Henan Province; Hukou Village, Bajiao Dong Town, Enshi, Enshi Tujia and Miao Autonomous Prefecture, Hubei Province; Nongke Village, You'ai Town, Pixian County, Chengdu, Sichuan Province; Jiefang Village, Hongshui Town, Qianxi County, Bijie, Guizhou Province; Yuanjia Village, Yanxia Town, Liquan County, Xianyang, Shaanxi.

Box 5-5:
Huanxi Village in Tonglu - clear rivers and picturesque landscape

Huanxi Village in Tonglu, surround by rivers on three sides and a mountain on the other side, has Tianziyuan and Qingyuan Rivers converging before the entry of the village and that's how it got its name Huanxi (surrounded by rivers). As one of the ancient villages at the provincial level historical and cultural protection zone, the village boasts various ancient buildings including the famous Ailian Hall, Shangzhi Hall, Anlan Bridge and Bao'an Bridge, etc. The 1000-year-old ginko tree, a famous site of the village at the entry of the village, has been known as the Love Tree.

The long history and beautiful landscape didn't bring fame to the village. And before 2007, the village was notorious for the stinky ditches, flying wastes, and lumps of wastes in the rivers despite the modern furniture in the villagers' home.

The Clean Village Project brought a change to the village. In 2008, taking advantage of the drive to build the new socialist countryside, with wastewater treatment project and ancient village protection project, Tonglu County water conservancy authority carried out integrated renovation to the river channels of the village, invested RMB 8 million to improve the six-kilometer channels near the village, RMB 2.8 million Yuan to establish 9 domestic wastewater treatment centers. Consequently, wastewater from households flew into the wastewater pipes. The most innovative practice was the ecological treatment of wastewater by man-made wetlands – backyard gardens with katharobic plants like cannas, calamuses and monkey grass. The waste water was turned to clean water after collection, settlement, anaerobic treatment and wetland treatment.

With the successful implementation of the four projects for domestic wastewater treatment, ecological river channel renovation, ecological habitat improvement and ecological and cultural heritage upgrading, Huanxi Village has taken on a new look and has been included in the List of First Batch of Models for beautiful and livable villages released by the MOHURD.

Box 5-6:
Beautiful Villages in Anji, China

Anji County has made various planning explorations in the process of building beautiful villages. On the county level, the local government has made the *Master Plan of "the Chinese Beautiful Villages" of Anji County* based on a high standard, also formulated the plan on building the ecologically-improved county, and printed the general atlas for rural residential buildings. On the township level, the local governments have formulated master plans and ecological improvement plans for all towns, with 95% of the county sent under the control by detailed plans. On the village level, the county has formulated village plans for all administrative villages and based on the plans, formulated the environment renovation plans and special plans on environment improvement for each village. In 2010, the county made the *Evaluation Index and Method of Acceptance for Building Chinese Beautiful Villages of Anji County*, and identified the content and evaluation standards for building the beautiful villages. The drive has promoted the economic and social development of the county. Under the guidance of the planning, Anji County has obtained the titles of first pilot counties for ecological improvement project in China, state-level demonstration county for sustainable development, demonstration county of Chinese beautiful village at state-level, and the first demonstration county for recreational agriculture and village tourism. Anji is also the first county who has obtained the China Habitat Environment Award.

Beautiful Villages in Anji (©/ http://ajnews.zjol.com.cn/)

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Appendixes

I. Basic Data of China's 288 Cities at and above Prefecture Level in 2011

Name of Cities	Total Land Area of Administrative Region(sq. km)	Total Population at Year-end (10 000 persons)	Total Residents of the Sixth National Population Census (10 000 persons)	Area of Built-up District (sq.km)	Gross Regional Product (10 000 yuan)	Per Capita Gross Regional Product (yuan)	Water Coverage Rate(%)	Wastewater Treatment Rate(%)	Per Capita Public Green Space (sq.m)	Domestic Garbage Treatment Rate(%)
Beijing	16411	1277.9	1961.24	1231	162519300	81658	100.00	81.68	11.33	98.24
Tianjin	11760	996.4	1293.87	711	113072800	85213	100.00	86.75	10.30	100.00
Shanghai	6340	1419.4	2301.92	886	191956900	82560	100.00	84.42	7.01	82.72
Chongqing	82829	3329.8	2884.62	1035	100113700	34500	93.41	94.62	17.87	99.55
Hebei										
Shijiazhuang	15848	997.3	1016.38	210	40826833	39919	100.00	95.46	14.50	100.00
Tangshan	13472	737.1	757.73	234	54424541	71565	100.00	94.61	14.82	100.00
Qinhuangdao	7802	289.8	298.76	92	10700808	35691	100.00	92.53	19.80	100.00
Handan	12062	980.0	917.47	117	27890278	30270	100.00	97.48	20.98	100.00
Xingtai	12433	736.9	710.41	72	14289231	20027	100.00	83.93	14.20	100.00
Baoding	22185	1160.7	1119.44	133	24499000	21796	100.00	91.97	13.55	100.00
Zhangjiakou	36873	467.4	434.55	86	11186100	25649	100.00	88.70	10.97	82.00
Chengde	39548	374.3	347.32	107	11042013	31705	100.00	96.58	23.91	100.00
Cangzhou	14053	734.8	713.41	60	25851998	36053	100.00	100.00	9.63	90.25
Langfang	6429	424.9	435.88	61	16114156	36773	100.00	87.10	13.13	96.87
Hengshui	8837	441.6	434.08	46	9290736	21334	100.00	87.56	11.70	100.00
Shanxi										
Taiyuan	6977	365.0	420.16	300	20801243	49292	100.00	84.00	9.46	100.00
Datong	14127	318.9	331.81	108	8435722	25341	100.00	80.80	11.10	86.85
Yangquan	4570	131.4	136.85	53	5281145	38500	100.00	86.36	9.56	100.00
Changzhi	13896	334.3	333.46	59	12186017	36425	96.00	92.21	10.34	100.00
Jincheng	9425	217.5	227.91	41	8949773	39205	96.01	94.99	11.30	94.00
Shuozhou	10674	172.6	171.49	41	8552006	49692	98.15	96.70	8.15	64.30
Jinzhong	16392	323.3	324.94	39	8902376	27300	96.99	96.03	12.37	33.20
Yuncheng	14181	516.7	513.48	55	10168221	19733	93.02	90.47	9.26	95.00
Xinzhou	25117	310.1	306.75	30	5545452	18019	91.03	93.96	3.04	
Linfen	20275	440.1	431.66	42	11360573	26220	92.72	89.09	13.80	100.00

Name of Cities	Total Land Area of Administrative Region(sq. km)	Total Population at Year-end (10 000 persons)	Total Residents of the Sixth National Population Census (10 000 persons)	Area of Built-up District (sq.km)	Gross Regional Product (10 000 yuan)	Per Capita Gross Regional Product (yuan)	Water Coverage Rate(%)	Wastewater Treatment Rate(%)	Per Capita Public Green Space (sq.m)	Domestic Garbage Treatment Rate(%)
Lvliang	21239	389.2	372.71	22	11307118	30224	99.79	81.29	11.90	100.00
Inner Mongolia										
Huhhot	17453	232.3	286.66	174	21772669	75266	99.90	73.41	16.40	97.99
Baotou	27768	221.8	265.04	185	30054000	112372	92.06	83.00	12.34	97.17
Wuhai	1754	54.1	53.29	63	4832452	89521	97.69	91.72	12.02	82.68
Chifeng	90021	459.9	434.12	82	13471906	31121	90.68	83.79	9.02	100.00
Tongliao	59535	320.1	313.92	66	14488194	46167	92.07	100.00	15.09	100.00
Ordos	86752	158.2	194.07	118	32185400	163014	99.31	99.51	22.26	97.91
Hulunbeier	253356	270.4	254.93	28	11453101	45038	78.70	84.91	23.71	81.08
Bayannur	64413	186.8	166.99	38	7184502	43118	83.17	87.34	6.88	96.46
Ulanqab	54492	288.8	214.36	35	6900415	32246	88.55	97.47	32.35	100.00
Liaoning										
Shenyang	12980	722.7	810.62	430	59157142	72648	100.00	86.20	12.42	100.00
Dalian	12574	588.5	669.04	390	61506265	91295	100.00	95.05	12.14	100.00
Anshan	9255	351.6	364.59	163	23987633	68224	98.55	77.50	10.61	100.00
Fushun	11272	220.1	213.81	136	11133679	52245	96.30	67.79	9.30	100.00
Benxi	8411	154.3	170.95	107	10445851	60552	99.75	96.54	9.11	100.00
Dandong	15290	241.1	244.47	53	8886676	36841	96.83	84.99	10.66	100.00
Jinzhou	9891	308.3	312.65	71	11169266	35784	100.00	82.22	9.20	100.00
Yingkou	5242	235.5	242.85	103	12246540	50220	98.97	71.61	10.38	33.92
Fuxin	10399	192.1	181.93	77	4802605	26480	99.66	57.15	11.20	90.91
Liaoyang	4774	182.4	185.88	104	8886669	48594	100.00	83.40	8.88	100.00
Panjin	4071	131.2	139.25	61	11199202	79584	100.00	100.00	8.05	100.00
Tieling	12980	304.9	271.77	44	8738428	28647	97.54	89.87	9.78	100.00
Chaoyang	19698	341.0	304.46	57	8130202	26927	94.70	100.00	8.66	100.00
Huludao	10415	281.3	262.35	75	6500636	24789	100.00	84.91	14.42	100.00
Jilin										
Changchun	20604	761.8	767.44	418	40030775	52649	99.70	87.26	12.91	91.08
Jinglin	27126	433.3	441.32	166	22080487	50914	97.86	93.90	11.94	100.00
Siping	14080	341.1	338.52	51	9845977	28874	65.93	70.38	7.40	100.00
Liaoyuan	5140	122.5	117.62	46	5004925	40844	93.98	91.64	7.29	100.00
Tonghua	15608	226.0	232.44	48	7802319	34515	88.63	88.02	11.90	95.17
Baishan	17485	128.5	129.61	38	5314342	41325	95.54	85.39	10.83	100.00
Songyuan	21090	292.1	288.01	45	13609668	46749	94.00	91.40	11.17	93.61
Baicheng	25745	202.5	203.24	38	5545757	27374	98.02	39.35	7.86	100.00
Heilongjiang										
Harbin	53068	993.3	1063.60	367	42421894	42736	92.17	73.94	10.00	79.73
Qiqihar	42469	567.4	536.70	140	10658065	19815	97.75	61.57	9.95	49.72
Jixi	22531	188.9	186.22	79	5078321	26864	99.91	35.00	9.31	60.47
Hegang	14659	108.8	105.87	46	3130593	28774	82.18	41.19	15.29	
Shuangyashan	23209	151.2	146.26	58	5029164	33215	100.00	72.89	14.62	37.89

Name of Cities	Total Land Area of Administrative Region(sq. km)	Total Population at Year-end (10 000 persons)	Total Residents of the Sixth National Population Census (10 000 persons)	Area of Built-up District (sq.km)	Gross Regional Product (10 000 yuan)	Per Capita Gross Regional Product (yuan)	Water Coverage Rate(%)	Wastewater Treatment Rate(%)	Per Capita Public Green Space (sq.m)	Domestic Garbage Treatment Rate(%)
Daqing	21219	281.6	290.45	225	37415389	133301	91.97	54.22	13.62	52.35
Yichun	32759	126.3	114.81	165	2296836	18142	71.54	36.61	20.25	
Jiamusi	32704	250.5	255.21	97	6253089	24853	91.83	39.59	12.90	78.49
Qitaihe	6221	92.7	92.05	62	3080590	33209	86.46	24.00	12.08	100.00
Mudanjiang	40876	267.2	279.87	81	9403461	33675	92.40	43.33	10.52	100.00
Heihe	82164	174.6	167.39	19	3160451	18103	80.42	100.00	14.69	76.47
Suihua	34873	581.9	541.82	28	9120937	15617	95.31	88.17	7.66	70.81
Jiangsu										
Nanjing	6587	636.4	800.37	637	61455200	76263	100.00	95.16	14.09	100.00
Wuxi	4627	468.0	637.44	289	68801509	107437	100.00	95.36	14.51	100.00
Xuzhou	11259	976.7	857.72	249	35516456	41407	97.81	86.55	16.01	87.95
Changzhou	4372	362.9	459.24	173	35809857	77485	100.00	91.69	12.41	100.00
Suzhou	8488	642.3	1045.99	336	107169900	102129	100.00	90.29	16.31	100.00
Nantong	8001	764.9	728.36	141	40802200	56005	100.00	92.09	10.65	100.00
Liangyungang	7615	505.2	439.35	130	14105200	32119	100.00	82.28	13.68	100.00
Suian	10072	543.2	480.17	130	16900000	35181	96.20	78.56	11.00	71.49
Yancheng	16972	820.7	726.22	92	27713300	38222	100.00	83.30	11.82	100.00
Yangzhou	6591	460.1	446.01	125	26303025	58950	99.83	92.83	17.19	100.00
Zhenjiang	3847	271.9	311.41	114	23114500	73981	100.00	88.03	16.46	100.00
Taizhou	5787	507.1	461.89	67	24226100	52395	100.00	83.75	9.01	100.00
Suqian	8555	555.1	471.92	68	13208278	27839	100.00	83.99	12.25	100.00
Zhejiang										
Hangzhou	16596	695.7	870.04	433	70190579	80478	100.00	95.47	15.50	100.00
Ningbo	9816	576.4	760.57	285	60592409	79524	100.00	86.85	10.55	100.00
Wenzhou	11786	798.4	912.21	190	34185315	43132	100.00	78.66	8.39	90.10
Jiaxing	3915	343.1	450.17	88	26770874	59256	100.00	87.30	13.41	100.00
Huzhou	5820	261.1	289.35	85	15200553	52477	100.00	88.29	16.25	100.00
Shaoxing	8256	440.0	491.22	109	33319960	75820	100.00	86.25	15.73	100.00
Jinhua	10942	469.1	536.16	74	24580703	45721	100.00	83.94	12.02	100.00
Quzhou	8845	252.6	212.27	60	9196209	36508	100.00	76.82	13.10	100.00
Zhoushan	1440	97.0	112.13	54	7727535	79765	99.51	81.84	14.66	100.00
Taizhou	9411	586.8	596.88	116	27544144	46011	100.00	82.79	10.73	100.00
Lishui	17298	251.3	211.70	33	7982174	37706	100.00	81.25	10.61	100.00
Anhui										
Hefei	11430	706.1	570.25	360	36366000	48563	99.73	99.83	13.87	100.00
Wuhu	5988	385.4	226.31	146	16582420	43095	100.00	87.44	12.62	100.00
Bengbu	5952	365.5	316.45	109	7802393	24574	100.00	96.83	7.19	100.00
Huainan	2584	245.6	233.39	98	7095384	30400	97.51	97.84	11.67	99.40
Maanshan	4042	228.6	136.63	83	11441815	52000	100.00	87.45	15.02	100.00
Huaibei	2741	221.8	211.43	79	5549156	26239	98.58	95.13	14.30	100.00
Tongling	1113	74.2	72.40	62	5794100	79704	94.11	79.74	13.22	100.00

Name of Cities	Total Land Area of Administrative Region(sq. km)	Total Population at Year-end (10 000 persons)	Total Residents of the Sixth National Population Census (10 000 persons)	Area of Built-up District (sq.km)	Gross Regional Product (10 000 yuan)	Per Capita Gross Regional Product (yuan)	Water Coverage Rate(%)	Wastewater Treatment Rate(%)	Per Capita Public Green Space (sq.m)	Domestic Garbage Treatment Rate(%)
Anqing	15318	618.7	531.14	80	12157400	22893	90.34	86.17	9.02	93.98
Huangshan	9807	148.1	135.90	47	3788148	25582	98.02	94.64	14.46	99.19
Chuzhou	13523	452.9	393.79	70	8504891	21634	99.80	92.01	12.82	100.00
Fuyang	9776	1025.8	759.99	83	8531905	11202	92.37	83.12	7.98	91.20
Suzhou	9787	649.1	535.29	58	8024267	14971	99.13	64.28	10.72	90.91
Liuanshi	17976	709.6	561.17	64	8210200	14586	94.56	80.36	13.21	94.01
Bozhou	8374	604.2	485.07	57	6266531	12868	91.22	96.69	10.19	100.00
Chizhou	8272	161.4	140.25	36	3724882	26345	96.13	90.36	18.20	98.06
Xuancheng	12313	279.4	253.29	48	6714000	26360	97.50	86.96	10.46	100.00
Fujian										
Fuzhou	13066	649.4	711.54	232	37363796	52152	99.26	84.58	11.21	99.94
Xiamen	1573	185.3	353.13	246	25393132	70832	100.00	90.40	11.19	99.20
Putian	4131	326.5	277.85	55	10506159	37724	99.00	85.20	12.90	100.00
Sanming	23094	273.4	250.34	29	12118142	48376	99.14	83.78	12.20	97.13
Quanzhou	11015	689.5	812.85	222	42708864	52245	98.73	86.01	11.90	100.00
Zhangzhou	12881	479.2	481.00	53	17682006	36641	99.65	88.30	10.88	99.79
Nanping	26308	313.4	264.55	28	8943055	33775	100.00	80.48	13.38	100.00
Longyan	19052	295.1	255.95	40	12421544	48554	99.41	90.26	11.56	98.50
Ningde	13248	340.0	282.20	21	9301166	32936	99.12	86.00	13.65	100.00
Jiangxi										
Nanchang	7402	505.0	504.26	208	26888724	53023	99.70	89.01	9.18	100.00
Jingdezhen	5256	164.6	158.75	73	5647106	35421	99.68	65.00	16.01	100.00
Pingxiang	3824	190.3	185.45	42	6581538	35350	100.00	81.22	12.28	100.00
Jiujiang	18823	502.4	472.88	89	12564149	26464	100.00	99.12	18.73	100.00
Xinyu	3178	119.4	113.89	67	7792129	68155	100.00	100.00	17.40	100.00
Yingtan	3650	122.0	112.52	30	4275959	37834	94.33	93.49	13.13	100.00
Ganzhou	39379	918.3	836.84	85	13359972	15895	100.00	82.21	12.43	100.00
Jian	25372	501.6	481.03	42	8790619	16830	94.03	81.00	16.86	100.00
Yichun	18669	566.9	541.96	55	10779820	19823	95.13	93.05	14.24	100.00
Fuzhou	18820	412.0	391.23	53	7425067	18907	99.82	91.25	17.19	100.00
Shangrao	22791	750.2	657.97	42	11105823	16813	99.73	90.28	15.88	100.00
Shandong										
Jinan	8177	606.6	681.40	355	44062900	64311	100.00	94.40	10.31	98.47
Qingdao	10978	766.4	871.51	292	66156000	75563	100.00	96.69	14.58	100.00
Zibo	5946	423.8	453.06	232	32802300	72176	100.00	92.87	15.47	100.00
Zaozhuang	4563	394.2	372.91	124	15616815	41746	99.19	92.49	13.26	98.28
Dongying	7950	186.0	203.53	109	26763500	130811	100.00	90.83	17.57	100.00
Yantai	13746	651.8	696.82	269	49068300	70380	99.85	91.14	20.48	100.00
Weifang	16143	877.6	908.62	149	35418400	38833	100.00	91.87	17.35	100.00
Jining	11423	847.0	808.19	118	28966900	35729	100.00	95.00	10.90	100.00
Taian	7762	559.5	549.42	111	23043100	41850	100.00	91.12	19.83	100.00
Weihai	5797	253.8	280.48	145	21109500	75316	100.00	93.89	24.76	100.00

Name of Cities	Total Land Area of Administrative Region(sq. km)	Total Population at Year-end (10 000 persons)	Total Residents of the Sixth National Population Census (10 000 persons)	Area of Built-up District (sq.km)	Gross Regional Product (10 000 yuan)	Per Capita Gross Regional Product (yuan)	Water Coverage Rate(%)	Wastewater Treatment Rate(%)	Per Capita Public Green Space (sq.m)	Domestic Garbage Treatment Rate(%)
Rizhao	5348	289.0	280.10	93	12140800	43205	100.00	91.77	21.67	100.00
Laiwu	2246	127.0	129.85	70	6118800	46983	100.00	91.32	18.49	100.00
Linyi	17191	1081.0	1003.94	173	27704500	27503	100.00	94.48	17.61	100.00
Dezhou	10356	576.0	556.82	89	19507100	34905	100.00	95.00	20.66	98.64
Liaocheng	8703	604.2	578.99	68	19194200	32968	97.05	90.92	11.54	100.00
Binzhou	9600	380.7	374.85	87	18175833	48326	100.00	92.35	17.73	100.00
Heze	12239	966.5	828.77	79	15565200	18746	97.74	79.54	11.68	100.00
Henan										
Zhengzhou	7446	1010.1	862.71	355	49798455	56855	100.00	98.08	6.48	89.71
Kaifeng	6444	543.4	467.65	94	10724197	22972	97.89	77.03	7.92	96.97
Luoyang	15200	711.1	654.99	187	27027571	41198	97.82	95.22	7.33	83.58
Pingdingshan	7904	548.9	490.47	71	14846148	30227	78.53	97.47	8.64	91.83
Anyang	7413	590.9	517.32	76	14866057	28806	100.00	97.70	9.23	100.00
Hebi	2182	164.1	156.92	58	5005192	31763	98.04	82.79	14.99	87.04
Xinxiang	8249	612.5	570.82	107	14894078	26198	98.54	87.60	10.04	100.00
Jiaozuo	4071	370.0	354.01	96	14426241	40809	99.80	85.60	9.71	93.18
Puyang	4266	416.6	359.87	82	8973433	25066	89.41	84.98	12.40	91.16
Xuchang	4996	494.1	430.75	80	15887419	36924	96.82	96.96	9.68	96.16
Luohe	2617	276.4	254.43	60	7517001	29487	91.37	70.66	14.93	95.00
Sanmenxia	10496	225.6	223.40	30	10304485	46049	97.26	91.86	16.33	96.55
Nanyang	26509	1200.9	1026.37	105	22023132	21590	90.69	65.13	10.58	70.37
Shangqiu	10704	926.8	736.30	61	13083722	17779	64.50	96.38	5.38	74.44
Xinyang	18847	876.6	610.91	73	12576828	20603	95.98	83.73	14.14	93.10
Zhoukou	11959	1238.5	895.38	56	14074894	15734	92.76	80.00	10.20	
Zhumadian	15083	892.1	723.12	55	12447731	17396	68.36	92.03	9.40	91.86
Hubei										
Wuhan	8494	827.2	978.54	506	67622000	68315	100.00	94.97	9.59	100.00
Huangshi	4586	260.1	242.93	70	9259600	38074	99.71	83.93	12.03	74.89
Shiyan	23680	348.4	334.08	65	8512500	25427	97.97	85.03	9.96	99.76
Yichang	21084	398.8	405.97	102	21406900	52673	100.00	90.46	14.09	89.33
Xiangfan	19728	593.6	550.03	116	21322200	38671	96.72	87.77	10.50	88.37
Ezhou	1594	109.4	104.87	56	4908900	46756	100.00	91.16	14.75	84.86
Jingmen	12404	301.9	287.37	52	9425900	32765	100.00	86.53	10.20	100.00
Xiaogan	8910	528.9	481.45	35	9581600	19880	96.34	91.46	10.96	100.00
Jingzhou	14092	662.7	569.17	68	10431100	18288	98.41	81.70	9.30	100.00
Huanggang	17457	746.3	616.21	135	10451100	16908	96.90	95.81	11.62	94.38
Xianning	9861	295.3	246.26	63	6520100	26448	88.05	83.14	13.80	100.00
Suizhou	9636	259.4	216.22	43	5179900	23914	99.01	93.48	9.71	100.00
Hubei										
Changsha	11816	656.6	704.10	306	56193285	79530	99.98	96.91	8.83	100.00
Zhuzhou	11248	391.4	385.71	107	15642651	40431	100.00	90.52	10.83	100.00
Xiangtan	5006	290.3	275.22	75	11241443	40753	97.19	90.12	8.72	100.00

Name of Cities	Total Land Area of Administrative Region(sq. km)	Total Population at Year-end (10 000 persons)	Total Residents of the Sixth National Population Census (10 000 persons)	Area of Built-up District (sq.km)	Gross Regional Product (10 000 yuan)	Per Capita Gross Regional Product (yuan)	Water Coverage Rate(%)	Wastewater Treatment Rate(%)	Per Capita Public Green Space (sq.m)	Domestic Garbage Treatment Rate(%)
Hengyang	15299	796.6	714.83	158	17342967	24231	100.00	74.73	9.48	100.00
Shaoyang	20830	797.5	707.17	52	9072264	12797	81.03	63.31	8.50	32.32
Yueyang	15087	569.2	547.61	83	18994920	34629	98.18	86.15	8.80	100.00
Changde	18910	625.7	571.46	79	18111879	31644	99.31	88.20	14.14	100.00
Zhangjiajie	9516	168.4	147.81	29	2980421	20082	97.98	56.98	16.90	100.00
Yiyang	12320	478.7	430.79	60	8836303	20496	81.61	86.44	6.98	100.00
Chenzhou	19730	506.5	458.35	67	13463756	29305	91.24	80.95	9.53	100.00
Yongzhou	22441	631.2	519.43	58	9453949	18168	98.85	67.70	5.73	100.00
Huaihua	27624	513.5	474.17	56	8456310	17816	96.68	68.78	6.59	100.00
Loudi	8117	435.8	378.46	45	8472625	22362	97.18	84.55	9.51	100.00
Guangdong										
Guangzhou	7434	814.6	1270.19	990	124234390	97588	99.70	79.43	15.05	91.80
Shaoguan	18463	329.7	282.62	84	8168058	28760	97.78	80.10	11.77	100.00
Shenzhen	1992	267.9	1035.84	841	115055298	110421	100.00	95.46	16.50	95.00
Zhuhai	1711	106.0	156.25	124	14049305	89794	99.70	86.03	13.81	100.00
Shantou	2064	529.4	538.93	185	12757412	23596	94.09	90.29	12.80	65.40
Foshan	3798	374.8	719.74	153	65802823	91202	100.00	95.91	10.42	100.00
Jiangmen	9504	393.7	445.07	134	18306373	41063	97.53	53.78	12.50	100.00
Zhanjiang	13225	792.1	699.48	106	17002272	24163	99.39	93.50	12.81	97.48
Maoming	11458	761.3	581.75	102	17453130	29811	100.00	68.29	11.12	100.00
Zhaoqing	15464	426.9	391.65	93	13244142	33642	99.96	85.43	22.57	98.22
Huizhou	11343	343.0	459.84	221	20930808	45331	96.95	91.73	12.16	100.00
Meizhou	15870	517.6	423.85	47	7075366	16623	73.03	59.32	11.85	100.00
Shanwei	5271	347.2	293.55	15	5505542	18682	94.46	60.02	12.11	60.02
Heyuan	15642	366.8	295.02	29	5792866	19505	100.00	89.38	12.10	99.66
Yangjiang	7955	284.6	242.17	45	7668241	31490	100.00	63.49	10.83	100.00
Qingyuan	19036	416.5	369.84	70	10030326	26957	99.85	24.03	11.42	76.10
Dongwan	2460	184.8	822.02	101	47353949	57470	99.92	65.21	16.46	100.00
Zhongshan	1800	150.7	312.13	42	21931985	70014	100.00	91.58	13.43	100.00
Chaozhou	3146	262.8	266.95	42	6472168	24169	100.00	86.00	12.21	100.00
Jieyang	5266	669.3	588.43	58	12258643	20780	97.75	71.02	13.14	90.99
Yunfu	7779	286.1	236.72	19	4813671	20302	100.00	98.52	12.60	100.00
Guangxi										
Nanning	22112	711.5	665.87	293	22114358	31172	93.52	64.64	12.97	100.00
Liuzhou	18617	374.8	375.87	162	15797154	41832	95.07	52.88	12.29	97.49
Guilin	27809	521.8	474.80	65	13360749	23786	84.98	88.18	9.31	100.00
Wuzhou	12572	327.6	288.22	37	7352445	25394	94.03	83.44	12.45	100.00
Beihai	3337	167.9	153.93	65	4965849	32103	99.31	81.36	9.93	100.00
Fangchenggang	6222	91.4	86.69	33	4137721	47416	100.00	65.80	7.95	58.10
Qinzhou	10843	391.2	307.97	55	6466515	22926	99.63	59.30	7.30	99.93
Guigang	10602	527.7	411.88	59	6308187	15245	97.58	49.43	11.91	85.28

Name of Cities	Total Land Area of Administrative Region(sq. km)	Total Population at Year-end (10 000 persons)	Total Residents of the Sixth National Population Census (10 000 persons)	Area of Built-up District (sq.km)	Gross Regional Product (10 000 yuan)	Per Capita Gross Regional Product (yuan)	Water Coverage Rate(%)	Wastewater Treatment Rate(%)	Per Capita Public Green Space (sq.m)	Domestic Garbage Treatment Rate(%)
Yulin	12838	684.8	548.74	62	10199447	18501	100.00	99.06	11.08	100.00
Baise	36202	385.3	346.68	37	6567051	18867	100.00	55.34	8.95	100.00
Hezhou	12053	233.3	195.41	36	3564003	18163	61.60	63.63	9.18	97.53
Hechi	32907	420.4	336.93	19	5119613	15141	91.74	74.55	5.09	100.00
Laibin	13411	261.7	209.97	29	4862126	23055	97.95	76.28	8.12	100.00
Chongzuo	17386	246.6	199.43	22	4918478	24557	100.00	27.72	8.21	46.94
Hainan										
Haikou	2305	162.4	204.62	98	7132980	35669	99.34	87.81	12.02	100.00
Sanya	1918	58.1	68.54	34	2837549	45421	99.26	72.56	19.18	100.00
Sichuan										
Chengdu	12121	1163.3	1404.76	483	68545786	48755	98.17	90.02	13.45	100.00
Zigong	4372	327.1	267.89	90	7803591	29101	84.65	89.80	8.62	89.49
Panzhihua	7440	111.7	121.41	60	6456623	53032	91.28	24.17	8.61	95.29
Luzhou	12228	503.0	421.84	94	9008666	21339	89.98	80.09	9.10	100.00
Deyang	5911	390.5	361.58	61	11374486	31562	100.00	87.12	9.65	100.00
Mianyang	20287	543.4	461.39	103	11891140	25755	99.02	89.15	10.38	100.00
Guangyuan	16319	311.3	248.41	40	4035362	16225	92.59	77.60	11.73	76.17
Suining	5325	382.7	325.26	67	6033565	18528	80.91	83.15	7.11	76.13
Neijiang	5385	426.1	370.28	42	8546836	23062	80.10	81.00	8.01	71.73
Leshan	12826	354.4	323.58	56	9180596	28339	91.69	63.78	7.06	96.69
Nanchong	12479	756.2	627.86	91	10294802	16386	96.99	67.67	8.86	83.33
Meishan	7186	350.8	295.05	45	6733376	22793	97.69	74.49	10.86	100.00
Yibin	13271	542.9	447.19	64	10911801	24424	95.34	64.21	14.77	98.03
Guangan	6344	468.5	320.55	31	6598977	20572	78.22	93.94	14.80	100.00
Dazhou	16580	690.7	546.81	32	10118289	18474	85.15	55.07	14.55	84.63
Yaan	15046	155.8	150.73	21	3501250	23147	99.23	77.43	8.92	87.55
Bazhong	12301	389.4	328.31	20	3433939	10433	88.39	76.01	7.68	59.62
Ziyang	7962	503.9	366.51	38	8364437	22931	90.81	87.05	9.67	95.29
Guizhou										
Guiyang	8034	376.1	432.26	162	13830724	31712	89.35	95.27	9.39	93.90
Liupanshui	9914	321.4	285.13	39	6138561	21522	96.51	77.92	2.40	99.35
zunyi	30762	771.9	612.71	65	11214632	18330	100.00	68.63	4.89	94.02
Anshun	9267	282.3	229.76	36	2855509	12468	91.05	92.04	1.36	61.26
Bijie	26853	851.7	653.75	41	7378833	11295				
Tongren	18003	427.2	309.32	25	2577155	11583				
Yunnan										
Kunming	21012	544.0	643.22	298	25095813	38831	94.73	99.42	9.76	97.18
Qujing	28904	632.3	585.51	61	12099332	20588	100.00	83.72	9.31	100.00
Yuxi	15285	231.8	230.35	26	8765508	37913	97.96	97.41	15.01	93.38
Baoshan	19637	254.2	250.65	22	3196451	12705	89.25	95.29	11.65	100.00
Zhaotong	22657	579.3	521.35	33	4650326	8877	97.48	80.80	5.73	100.00
Lijiang	21219	121.2	124.48	25	1785015	14279	100.00	88.96	30.38	100.00

Name of Cities	Total Land Area of Administrative Region(sq. km)	Total Population at Year-end (10 000 persons)	Total Residents of the Sixth National Population Census (10 000 persons)	Area of Built-up District (sq.km)	Gross Regional Product (10 000 yuan)	Per Capita Gross Regional Product (yuan)	Water Coverage Rate(%)	Wastewater Treatment Rate(%)	Per Capita Public Green Space (sq.m)	Domestic Garbage Treatment Rate(%)
Simao	45385	256.1	254.29	24	3011899	9773	100.00	72.57	7.91	93.65
Lincang	24469	235.7	242.95	16	2724334	11166	90.14	73.59	5.29	100.00
Tibet										
Lasa	29518	49.4	55.94	63	2224192	39176	98.17		5.07	99.79
Shaanxi										
Xian	10108	791.8	846.78	343	38642100	45495	100.00	86.55	10.44	97.64
Tongchuan	3882	85.5	83.44	41	2345280	28034	93.83	80.43	10.01	87.13
Banji	18117	383.2	371.67	95	11757520	31579	99.87	93.03	14.06	100.00
Xianyang	10189	525.7	509.60	83	13613200	27751	92.77	79.04	14.82	89.87
Weinan	13134	564.7	528.61	51	10289730	19424	99.50	81.69	12.13	87.75
Yanan	37021	232.9	218.70	36	11133500	50807	86.37	87.99	9.55	84.52
Hanzhong	27246	382.3	341.62	34	6474820	18952	81.86	90.41	14.95	81.41
Yulin	43578	370.7	335.14	52	22922550	68358	95.14	86.74	7.69	81.87
Ankang	23536	305.1	262.99	32	4071700	15477	80.65	58.20	10.59	100.00
Shangluo	19292	247.9	234.17	13	3628750	15510	75.98	83.07	11.36	100.00
Gansu										
Lanzhou	13086	323.3	361.62	197	13600299	37570	94.61	58.70	8.70	100.00
Jiayuguan	2935	19.5	23.19	55	2355352	101306	100.00	83.12	16.72	100.00
Jinchang	8896	46.6	46.41	39	2327546	50060	100.00	98.85	14.28	100.00
Baiyin	21158	179.4	170.88	56	3758008	20660	99.68	59.89	8.12	97.70
Tianshui	14403	369.6	326.25	42	3575508	10931	78.19	80.65	6.26	100.00
Wuwei	33238	192.0	181.51	30	2728506	15007	96.48	93.00	3.25	98.98
Zhangye	41924	130.9	119.95	36	2568376	21357	100.00	82.55	15.00	95.54
Pingliang	11170	233.0	206.80	22	2761872	13320	97.30	86.78	8.03	95.92
Jiuquan	193974	99.1	109.59	40	4815458	43825	100.00	88.08	9.84	95.24
Qingyang	27119	262.0	221.12	25	4543451	20506	96.74	86.99	4.64	96.89
Dingxi	20330	302.3	269.86	23	1869420	6916	89.59	83.15	9.89	92.86
Longnan	27914	283.2	256.77	14	1976822	6457	56.03	100.00	1.36	100.00
Qinghai										
Xining	7665	222.8	220.87	75	7707043	34743	99.97	71.04	10.32	92.29
Ningxia										
Yinchuan	9025	162.2	199.31	126	9866761	48964	99.45	92.00	14.61	59.80
Shizuishan	4467	75.1	72.55	100	3680209	50377	98.59	58.46	24.17	92.76
Wuzhong	20700	139.8	127.38	30	2719592	21107	89.17	89.86	19.87	98.73
Guyuan	13047	155.3	122.82	35	1337454	10785	93.81	68.90	8.34	93.33
Zhongwei	17441	119.2	108.08	36	2215901	19624	70.87	100.00	11.75	87.37
Xinjiang										
Urumuchi	13788	249.4	311.26	384	16900347	52649	99.94	80.18	9.07	91.86
Karamay	7734	37.8	39.10	53	8016855	129105	100.00	92.16	9.22	100.00

II. Notes to Basic Data of China's 288 Cities at and above Prefecture Level in 2011

The data sources and index explanations of the Basic Data of China's 288 Cities at and above Prefecture Level in 2011 are as follows:

I. Date Sources

Total Land Area of Administrative Region, Total Population at Year-end, Area of Built-up District, Gross Regional Product and Per Capita Gross Regional Product: Department of Urban Social and Economic Survey of National Bureau of Statistics, China City Statistical Yearbook 2012, China Statistics Press, Beijing, February 2013.

Wastewater Treatment Rate, Domestic Garbage Treatment Rate, Water Coverage Rate, and Per Capita Public Green Space: Ministry of Housing and Urban-rural Development of the People's Republic of China, China Urban Construction Statistical Yearbook (2011), China Planning Press, November 2012.

Total Residents of the Sixth National Population Census of various cities: Population Census Office under the State Council, Department of Population and Employment Statistics of National Bureau of Statistics, Tabulation on the Population Census of the People's Republic of China by County, China Statistics Press, Beijing, November 2012.

II. Explanation of Indexes

1. Total Land Area of Administrative Region refers to the total area of the land (including the water area) within the administrative regions. The land area shall be calculated on the basis of administrative regions.

—— China City Statistical Yearbook 2012, p.485

2. Total Population at Year-end refers to the total population of the city concerned by 24:00PM, December 31 of the current year, which is subject to the total population with residence registration at the public security authorities.

—— China City Statistical Yearbook 2011, p.485

3. Total Residents of the Sixth National Population Census refers to the permanent population in the Sixth National Population Census conducted at zero hour of November 1, 2010 as the reference time, including persons living in this town with their household registration at this town or with pending household registration; persons living in this town and having left the town (township or street) of their household registration for over 6 months; and persons with household registration in this town and having left this town for less than 6 months or studying overseas.

—— Communiqué of the National Bureau of Statistics of the People's Republic of China on Major Figures of the 2010 Population Census (No.2), April 29, 2011.

4. Area of Built-up District refers to the nonagricultural production and development areas developed through the requisition of land and the concrete construction within the municipal areas, including contiguous areas within the urban area and land developments that are scattered in suburban areas but closely connected with the city and basically equipped with complete municipal and public facilities (for example the airports, wastewater treatment plants and communication stations).

—— China City Statistical Yearbook 2012, p.485

5. Gross Regional Product refers to the final products at market prices produced by all resident units in a region during a certain period of time.

—— China City Statistical Yearbook 2012, p.485

6. Per Capita Gross Regional Product refers to the ratio of the Gross Regional Product of the city during a certain period of time to the average permanent population of the same period of time.

—— Notice of the National Bureau of Statistics on Improving and Regulation Regional GDP Accounting (Guo Tong Zi [2004] No.4)

7. Water Coverage Rate refers to the ratio of the urban population with access to tap water to the total urban population within the report period. The formula is:
Water Coverage Rate= urban population with access to tap water / (urban population + transient urban population) 100%.

—— China Urban Construction Statistical Yearbook (2011), p.624

8. Wastewater Treatment Rate refers to the ratio of the total sewage treatment volume to the total sewage discharge volume within the report period. The formula is:
Wastewater treatment rate = total sewage treatment volume / total sewage discharge volume ×100%.

—— China Urban Construction Statistical Yearbook (2011), p.624

9. Per Capita Public Green Space refers to the green space per capita in public space and parks within urban areas at the end of the report period. The formula is: Park land area per capita = green space in public space and parks within urban areas/ urban population + transient urban population.

—— China Urban Construction Statistical Yearbook (2011), p.624

10. Domestic Garbage Treatment Rate refers to the ratio of the domestic garbage treatment volume to the domestic garbage generation volume within the report period. The formula is:
Domestic garbage treatment rate = domestic garbage treatment volume / domestic garbage generation volume×100%.

—— China Urban Construction Statistical Yearbook (2011), p.625

III. Notes to Relevant Materials and Data

1. The Ministry of Civil Affairs issued the Official Reply of the Ministry of Civil Affairs on Approving the Renaming of Luxi City of Yunnan Province as Mangshi (Min Han [2010] No.166) on July 12, 2010 and the name of the city was already changed to Mangshi in the China Urban Construction Statistical Yearbook 2011. However, the China City Statistical Yearbook 2012 and the data of the Sixth National Population Census still used the name of Luxi. In this round of statistics, the name of Mangshi is adopted throughout the report.

2. The Ministry of Civil Affairs issued the Official Reply of the Ministry of Civil Affairs on Approving Yunnan Province to Convert Mengzi County to Mengzi City (Min Han [2010] No.219) on September 10, 2010. Upon the approval of the State Council, Mengzi County was converted to the County-level Mengzi City. In this round of statistics, the Total Residents of the Sixth National Population Census of the former Mengzi County is used as the data of Total Residents of the Sixth National Population Census as the newly-established County-level Mengzi City.

3. The Ministry of Civil Affairs issued the Official Reply of the Ministry of Civil Affairs on Approving Jiangxi Province to Establish the Gongqingcheng City (Min Han [2010] No.220) on September 10, 2010. Upon the approval of the State Council, the Gongqingcheng City was established. However, the Sixth National Population Census did not collect the separate statistical data on the population of Gongqingcheng City.

4. The Ministry of Civil Affairs issued the Official Reply of the Ministry of Civil Affairs on Approving Yunnan Province to Convert Wenshan County to Wenshan City (Min Han [2010] No.295) on December 2, 2010. Upon the approval of the State Council, Wenshan County was converted County-level Wenshan City was established. In this round of statistics, the Total Residents of the Sixth National Population Census of the former Wenshan County is used as the data of Total Residents of the Sixth National Population Census as the newly-established County-level Wenshan City.

5. The State Council issued the Official Reply of the State Council on Approving Anhui Province to Cancel Prefecture-level Chaohu City and on Some Adjustments of Administrative Divisions (Guo Han [2011] No.84) on July 14, 2011, cancelling the prefecture-level Chaohu City and the Juchao District of the former prefecture-level Chaohu City, establishing county-level Chaohu City and appointing the administrative division of Juchao District of the former prefecture-level Chaohu City as the administrative division of the newly-built county-level Chaohu

City. In this round of statistics, the Total Residents of the Sixth National Population Census of the Juchao District of the former prefecture-level Chaohu City is used as the data of Total Residents of the Sixth National Population Census as the newly-built county-level Chaohu City.

6. The State Council issued the Official Reply of the State Council on Approving Xinjiang Uygur Autonomous Region to Establish County-level Beitun City (Guo Han [2011] No.161) on December 20, 2011, establishing the county-level Beitun City, which shall be directly under the People's Government of Xinjiang Uygur Autonomous Region. Xinjiang Production and Construction Corps Tenth Agricultural Division and Beitun City shall adopt the administrative mechanism of combined Agricultural Division and City Administration. Due to the fact that the China City Statistical Yearbook 2012 did not collected the statistical data on Beitun city, the Statistical Communiqué of Xinjiang Production and Construction Corps Tenth Agricultural Division on the 2011 National Economic and Social Development is used as the substitute source of data in this round of statistics,

7. The Area of Built-up District of Baise City in the China City Statistical Yearbook 2012 was 3,371 square kilometers and it was found as a misprint. In this round of statistics, the Area of Built-up District of the central urban area of Baise City in 2011 was 36.5 square kilometers according to the Report on the Implementation Status of the Plan of Baise City on the 2011 National Economic and Social Development and Draft Plan on the 2012 National Economic and Social Development released by Baise Development and Reform Commission on January 17, 2012.

8. At present, due to the different paces of the permanent residence registration reform in different cities, some regions have completely included the transient population into the local population for administration, while some other regions still maintain the existing residence registration system which excludes the transient population. As a result, the concepts of total population of different cities vary greatly. This Basic Data of China's 288 Cities at and above Prefecture Level in 2011 has listed all the sources of population data and the data are for reference only.

III. Lists of Winners of China Habitat Award, 2012 & 2013 and China Best Practice Award for Habitat, 2012 & 2013

Winners of China Habitat Award 2012

Taicang, Jiangsu Province
Tai'an, Shandong Province

Winners of China Best Practice Award for Habitat 2012

1. Gucun Village Park, Baoshan District, Shanghai
2. Green City International Community Construction Management Program, Pudong New Area, Shanghai
3. Changjiangkou Qingcaosha Water Resources, Shanghai
4. China International Garden Expo Construction, Chongqing
5. Demonstration of Pedestrian System of Yuzhong Peninsula and Bicycle Traffic System of Chongqing New North Zone, Chongqing
6. Qilihe Water Environment Improvement and Greenway Construction, Xingtai, Hebei Province
7. Multipurpose Wastewater Reclamation and Comprehensive Utilization, Jinzhong, Shanxi Province
8. Renewable Energy Comprehensive Utilization, Houma, Shanxi Province
9. Aimin Jiayuan Community for Coal Mine Shanty Areas Relocation and Reformation, Wuda District, Wuhai, Inner Mongolia Autonomous Region
10. Ancient City Protection and Redevelopment, Dolon Nur Town, Duolun County, Xilin Gol League, Inner Mongolia Autonomous Region
11. Small Town Construction, Naji Town, Arun Banner, Hulunbeier, Inner Mongolia Autonomous Region
12. Puhe River Ecological Corridor Construction, Shenyang, Liaoning Province
13. Warm House Construction, Tonghua, Jilin Province
14. Urban-Rural Integration and Regional Water Supply Planning and Implementation, Jiangsu Province
15. Livable Housing Construction, Jintan, Jiangsu Province
16. Ecological and Livable Housing Construction, Bacheng Town, Kunshan, Jiangsu Province
17. Small Town Construction, Zhoutie Town, Yixing, Jiangsu Province
18. Old Residential Community Property Management Improvement, Hangzhou, Zhejiang Province
19. Tianziling Solid Waste Treatment Optimization Management, Hangzhou, Zhejiang Province
20. Digital City Management, Hangzhou, Zhejiang Province
21. County Town Riverside Areas Integrated Development, Tonglu County, Zhejiang Province
22. Integrated Old Port Area Environment Improvement and Riverside Park Construction, Wuhu, Anhui Province
23. Meixi River Integrated Water Environment Improvement, Xuancheng, Anhui Province
24. Village Environment Improvement, Yanwo Village, Qianshan County, Anhui Province
25. Integrated Urban River Improvement, Fuzhou, Fujian Province
26. Lianhua Mountain Cliff-Road, Longyan, Fujian Province
27. Rural Housing Construction and Dilapidated Housing Rehabilitation, Shandong Province
28. Social Housing Construction, Qingdao, Shandong Province
29. Existing Residential Building Heat Metering and Energy Efficiency Redevelopment, Rizhao, Shandong Province
30. Village Environment Clean Initiative, Rongcheng, Shandong Province
31. Urban Construction Wastes Treatment and Reclamation, Xuchang, Henan Province
32. Public Bicycle System Construction, Zhuzhou, Hunan Province
33. Urban Landscape Redevelopment and Human Settlements Improvement, Gongcheng Yao Autonomous County, Guilin, Guangxi Zhuang Autonomous Region
34. Urban and Rural Property Management Services and Community Development, Jinjiang District, Chengdu, Sichuan
35. Urban Reclaimed Water Utilization, Kunming, Yunnan Province
36. Urban Environment and Sanitation Standardized Management, Xi'an, Shaanxi Province
37. Dananshan Mountain Green Screen Construction, Xining, Qinghai Province

38. High-capacity Bus Rapid Transit (BRT) System, Urumqi, Xinjiang Uygur Autonomous Region

Winners of China Habitat Award 2013

Zhenjiang, Jiangsu Province
Chizhou, Anhui Province
Dongying, Shandong Province
Yixing, Jiangsu Province
Changxing, Zhejiang Province

Winners of China Best Practice Award for Habitat 2013

1. Cuihu Lake Wetland Park Ecological Protection, Haidian District, Beijing
2. Tianjin Cultural Center Environmental Construction, Tianjin
3. Guojiagou Ecological Village Improvement and Upgrading, Tianjin
4. Underground Municipal Tunnel Construction, Laiyuan County, Hebei Province
5. Digital City Management, Handan, Hebei Province
6. Zaishuiyifang Residential Community Building Energy Saving and Utilization, Qinhuangdao, Hebei Province
7. Hejiagou Integrated Environmental Improvement, Harbin, Heilongjiang Province
8. Comprehensive Waste Disposal Center, Changning District, Shanghai
9. New Jiangwan City Cultural Ecological Community, Yangpu District, Shanghai
10. Wujiaochang Regional Intelligent Transportation System Construction, Yangpu District, Shanghai
11. Integrated Urban-rural Waste Treatment and Reclamation Utilization, Bixi New Area, Changshu, Jiangsu Province
12. Small Town Human Settlement Construction, Lujia Town, Kunshan, Jiangsu Province
13. New-type Community Construction, Xinqiao Town, Jiangyin, Jiangsu Province
14. Xingfu New City - Dilapidated Residential Area Redevelopment Pilot, Suqian, Jiangsu Province
15. Ancient Huaihe River Environmental Improvement, Huai'an, Jiangsu Province
16. Zhonghe and Donghe River Integrated Protection and Redevelopment, Hangzhou, Zhejiang Province
17. Public Toilet Improvement and Upgrading, Hangzhou, Zhejiang Province
18. Energy Saving Demonstration, Nanhu New Area, Jiaxing, Zhejiang Province
19. Urban Street Green Space Construction, Lishui, Zhejiang Province
20. Ziyang Street Historical Block Protection and Development, Linhai, Zhejiang Province
21. Digital City Management Extension and Upgrading, Weifang, Shandong Province
22. New-type Rural Community Construction, Zhucheng, Shandong Province
23. Energy Saving and Redevelopment for Heating Ten-Thousand Houses, Yiyuan, Shandong Province
24. Shalihe River Redevelopment, Luohe, Henan Province
25. Sludge from Wastewater Treatment Plant and Food Waste Treatment, Xiangyang, Hubei Province
26. Yanghu Wetland Ecological Restoration and Protection & Park Construction, Changsha, Hunan Province
27. Xihe Beach Park Construction, Suxian District, Chenzhou, Hunan Province
28. City Management and Institutional Innovation, Zhuzhou, Hunan Province
29. Shenzhen Bay Seaside Recreation Belt Construction, Shenzhen, Guangdong Province
30. Low-carbon Ecological Green Island Construction, Bishan County, Chongqing
31. Laixi River System Integrated Water Environment Improvement, Rongchang County, Chongqing
32. Yiju Jiayuan - Redevelopment of "Villages in Town" and Shanties, Zhongwei, Ningxia Hui Autonomous Region
33. Building Energy Saving in the Urban District, Wuzhong, Ningxia Hui Autonomous Region
34. City Management Innovation with IT, Karamay District, Karamay, Xinjiang Uygur Autonomous Region
35. Historical and Cultural Blocks Protection in the Old Urban District, Kuqa County, Xinjiang Uygur Autonomous Region
36. Tianchi Scenic Area Integrated Environment Improvement, Xinjiang Uygur Autonomous Region

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