CHAPTER 3

The Pressure of Green Transformation and Development

1 Internal Objective Pressure on China's Green Transformation and Development

1.1 Resource Constraints

Long-Term Tight Constraints on Land Resources

China occupies 1/15 of the world's land area, ranking the third in the world. In 2012, the per capita land area was 0.0071 square kilometers, and the per capita level in the world was 0.018 square kilometers. China is 39% of the world's average. The per capita arable land is 0.08 hectares, compared with 0.2 hectares in the world. The per capita arable land in China is 40% of the world average. China has a large area of land that cannot be used, such as deserts, gobi and bare rock mountains, which account for 23.49% of the country's total land area. China has insufficient reserve land resources, with only 14.5% of the total cultivated land. According to the second national land survey, in 2009, China's arable land was 135.4 million hectares, and in 2012, it was 135.1 million hectares, with a decrease of 0.0027 million hectares. A considerable part of cultivated land in China needs to be returned to forest, grass, wet soil and fallow, and a considerable amount is not suitable for farming due to pollution. And a certain number of them have been affected by the destruction of the topsoil layer and the overexploitation of

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groundwater and so on. Accordingly, farmland protection situation still is austere. With the development of industrialization and urbanization, construction land continues to expand. From 1996 to 2012, the area of cultivated land and garden increased, the area of grassland and forest decreased, and the area of residential and industrial land increased (see Figs. 1 and 2). China's urban built-up areas are expanding faster than its urban population. In addition, the structure and layout of urban land use are unreasonable. The proportion of industrial land in cities is too large. The proportion of land for commercial services and municipal environment is lower than that of foreign comprehensive cities (5 ~ 10%).

The Overall Constraint of Energy and Resources Is Too Tight

China's per capita coal, oil and natural gas are only 69, 6.2 and 7.7% of the world average, respectively. With the development of economy and society and the acceleration of industrialization and urbanization, the large-scale construction of infrastructure and housing in China needs a large number of energy-intensive products, and the increment of energy used by residents keeps increasing. In the past 30 years and more, China's total energy production increased from 628 million tons of standard coal in 1978 to 3.4 billion tons in 2013, and its total energy consumption increased from 571 million tons of standard coal in 1978 to 3.75 billion tons of standard coal in 2013. China is the world's largest producer and consumer of energy. China's energy consumption structure is dominated by coal. In 2013, coal accounted for 75.5% of China's

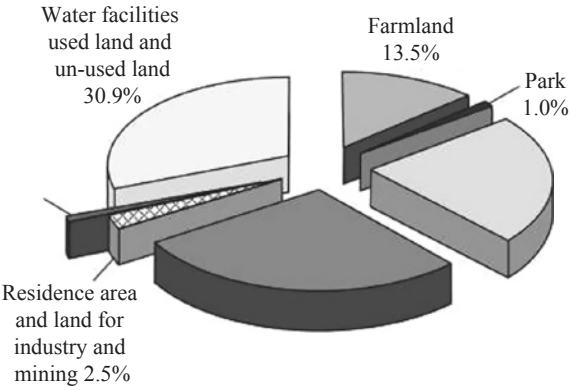

Fig. 1 General situation of land use in China in 1996

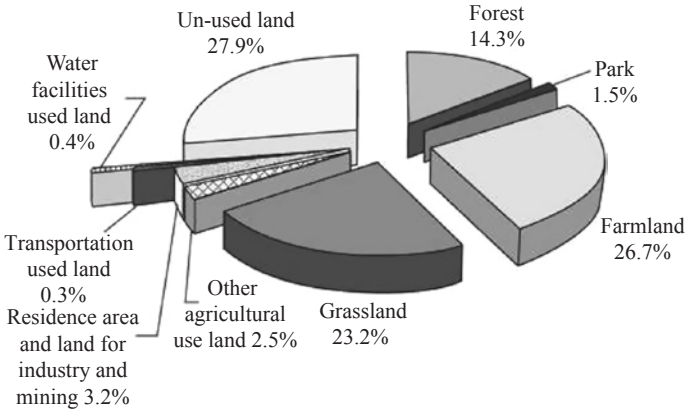

Fig. 2 General situation of land use in China in 2012

disposable energy, and China's coal consumption accounted for 50.31% of the world's total consumption. It is compiled according to the BP statistical review of world energy 2014 workbook. China's energy shortage looms large. According to the comparison between the mining amount and the proved reserves, based on the mining amount in 1950, China's coal can be mined for 3816 years. According to the amount of mining in 2000, it can be mined for 88 years. According to the amount of mining in 2011, China will be without coal in 33 years. Wang Wentao, Liu Yanhua. *China's Energy Outlet for Sustainable Development*. Chinese Society for Sustainable Development (ed.) *Green Development: A Global Perspective and China's Choice*, People's Post and Telecommunications Press, 2014, page 9. Since 1993, China has become a net importer of oil. In 2013, China imported a net 299 million tons of oil, and its dependence on foreign countries was 58.98%. Since 2007, China has become a net importer of natural gas. In 2013, China imported 446 million cubic meters of natural gas, and its dependence on foreign countries was 27.53%. Even relatively rich coal resources need to be imported in large quantities. Since 2011, China has become a net importer of coal, with a net import of 170 million tons in 2013 and dependence on foreign countries was 4.43% (see Fig. 3). The contradiction between supply and demand of energy resources is increasingly prominent in China. In 2009, the United Nations released the *World Water Development Report: Water in A Changing World*, and China was listed as a country with severe

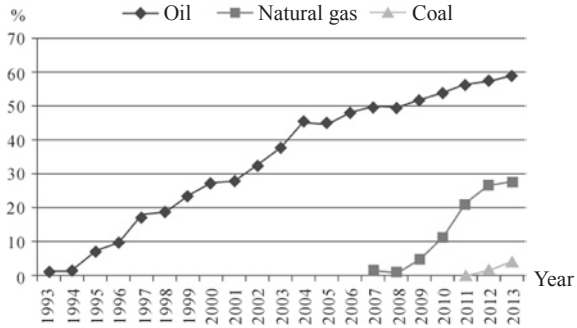

Fig. 3 China's energy dependence on foreign countries in the past 20 years

water shortage. Over the past 50 years, China has lost more than 1000 lakes, with an average of 20 lakes drying up each year. Of the 665 cities, nearly 400 are short of water, and about 200 are severely short of water. China's cities are short of water by 16 million cubic meters per day and 6 billion cubic meters per year. Water shortage has become a normal situation in China.

China's Water Shortage Has Long Restricted Social and Economic Development

In 2013, China's per capita water resources were 2059.7 cubic meters, only one-fourth of the world's per capita level, and the spatial and temporal distribution of water resources was seriously uneven.

The Problem of Resource Depletion (Region) Is Prominent

In 2008, 2009 and 2011, China identified 69 resource-exhausted cities (counties and districts) in three batches. The irrationality of the industrial structure of resource-based cities is increasingly prominent. When the pillar industry of resource-based city declines, the whole city will be in an embarrassing situation of more input, less output and poor benefit. The problem of sustained economic growth and social stability in resource-exhausted regions or cities has become an important factor affecting the sustained economic growth and social stability of the whole country. Such areas are often vulnerable to becoming "problem areas" or "trouble areas". In this regard, special attention should be given to the process of transformation and development.

1.2 Environmental Constraints

China's increasingly serious water pollution, air pollution and solid waste pollution have poisoned the ecosystem, directly affecting people's quality of life and even threatening people's life safety.

The Pressure of Water Pollution Persists

In 2013, China discharged 69.544 billion tons of wastewater, including 23.527 million tons of chemical oxygen demand (cod) and 2.457 million tons of ammonia nitrogen. The country's surface water is generally mildly polluted. Of China's top ten river systems, IV ~ V classes and poor V class water quality section ratio were 19.3 and 9.0%, respectively; part of the urban river pollution is heavier. In the water quality of provincial boundary waters, IV ~ V classes and poor V class water quality section ratio were 18.2 and 19.5%, respectively. The proportions of mild pollution, moderate pollution and severe pollution in lakes (reservoirs) were 26.2, 1.6 and 11.5%, respectively. The proportions of eutrophication, moderate nutrition and poor nutrition were 27.8, 57.4 and 14.8%, respectively. Among the monitoring points of groundwater environmental quality, the proportion of poor and extremely poor was 43.9 and 15.7, respectively, as shown in Fig. 4.

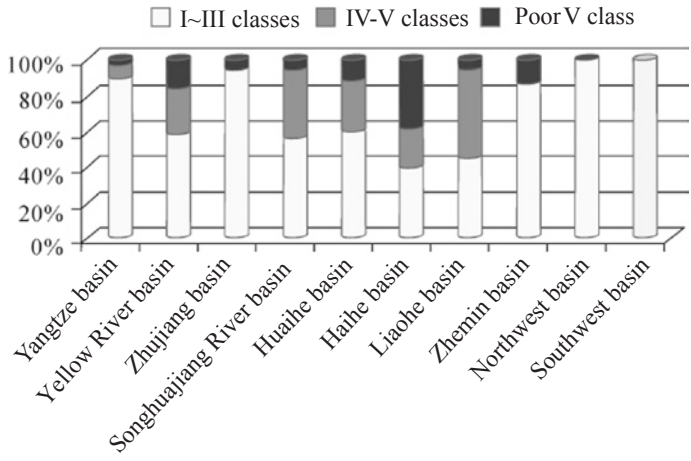

Fig. 4 Environmental quality status of China's top ten water systems in 2013

There Is a Long Way to Go in Dealing with Haze

With the further development of urban and regional economy, the fine particulate matter and ozone pollution in the atmosphere are aggravated, vehicle exhaust, dust from construction sites and other man-made emissions are seriously polluted, and the occurrence and severity of haze weather are increased. China is the world's largest emitter of sulfur dioxide and ozone-depleting substances. In 2013, it emitted 20.439 million tons of sulfur dioxide, 22.273 million tons of nitrogen oxides and 12.7814 million tons of smoke (powder) and dust. Of the 74 cities in the Beijing-Tianjin-Hebei region, the Yangtze River delta, the pearl River delta and other key regions, as well as municipalities directly under the central government, provincial capitals and cities city specifically designated in the state plan, 95.9% had air quality exceeding the standard. The proportion of cities exceeding air quality standard was 95.9%. The average number of haze days nationwide was 35.9 days, 18.3 days more than that in 2012 and the most since 1961. Fog and haze are frequent in the central and eastern regions, and the number of fog and haze days ranges from 50 to 100 in most areas from the central and southern parts of north China to the northern part of south China, and more than 100 days in some areas. In January and December 2013, two large-scale regional haze pollutions occurred in central and eastern China. Both processes of haze pollution show wide pollution scope, long duration, severe pollution degree and rapid accumulation of pollutant concentration, which is the highest in history and the world. PM2.5 "storm table" and "cough in Beijing" have aroused people's great concern about air pollution.

Soil Pollution Has a Wide and Far-Reaching Impact

Soil is the basic environmental element of ecological system, the material basis for human survival, and the indispensable important resource for economic and social development. The overall situation of soil environment in China is not optimistic. Some areas have heavy soil pollution, the quality of soil environment in cultivated land is worrying and the soil environment in abandoned industrial and mining areas is prominent. Due to human activities in industry, mining, agriculture and other reasons as well as the high background value of soil environment, the overall over-standard rate of soil was 16.1%, among which the proportions of slight, mild, moderate and severe pollution sites were 11.2, 2.3, 1.5 and 1.1%, respectively. From the perspective of land use type, the

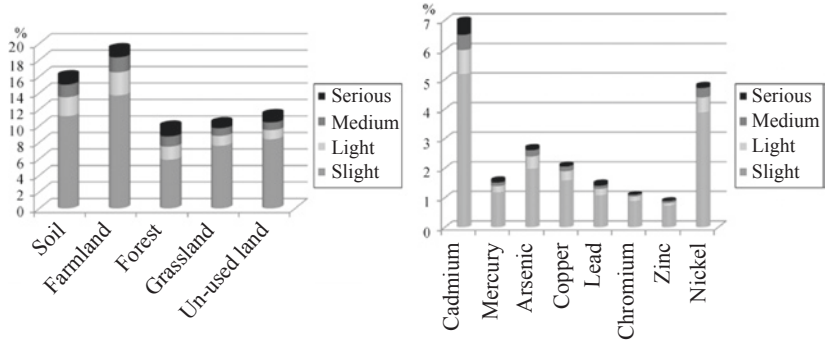

Fig. 5 Soil pollution in China

over-standard rate of cultivated land is 19.4%, woodland 10.0%, grassland 10.4% and unused land 11.4% (see Fig. 5). In terms of the types of pollution, the majority were non-organic, accounting for 82.8% of the total. Cadmium, mercury, arsenic, copper, lead, chromium, zinc and nickel were found to have exceeded the standard by 7.0, 1.6, 2.7, 2.1, 1.5, 1.1, 0.9 and 4.8%, respectively (see Fig. 5). The point overrun rates of organic pollutants including BHC, DDT and PAHs were 0.5, 1.9 and 1.4%, respectively. Heavy and moderate soil pollution poses a serious threat to the quality and health of agricultural products. The pollution of heavy metals on soil is basically an irreversible process, and the pollution of many organic chemicals also takes a long time to degrade, which is very difficult to control.

1.3 Ecological Constraints

The Overall Trend of Ecological Environment Deterioration Has Not Been Fundamentally Curbed

In 2008, China's total ecological footprint reached 2.9 billion hectares worldwide, the largest of any country in the world. The per capita ecological footprint is 2.1 hectares, lower than the global average per capita ecological footprint (2.7 hectares), 80% of the world average, ranking 74th in the world. However, China's per capita biological carrying capacity is 0.87 hectares, which is nearly 2.5 times of its per capita biological carrying capacity. China ecological footprint report 2012.

China's per capita water consumption footprint is less than half the global average, yet China has a large population and correspondingly less water per capita. Therefore, China faces greater pressure and challenges in water resources. In 2009, the water resource pressure of large cities and the northern region dominated by agricultural economy in China was under severe pressure, while the water resource pressure of the lower reaches of the Yellow River and the Yangtze River in north and central China was high to severe pressure, and the water resource pressure in most regions gradually increased, showing a trend of extending from the north to the south.

Biodiversity Is Still Declining

China is one of the most bio-diverse countries in the world, and one of the areas where species are most threatened and where biodiversity is declining at an alarming rate. In the past 50 years, about 200 species of plants have become extinct in China, and as many as 4000–5000 species of wild higher plants are endangered or threatened, accounting for 15–20% of the total species, and gymnosperms and orchids are up to 40%; China's endangered animals and wild animals are increasingly endangered, 233 vertebrates are facing extinction and about 44% of the wild animal population is on the decline (see Table 1).

Soil Erosion Is Still Very Serious

According to the first national water conservancy survey, the total area of soil erosion in China was 2.9491 million square kilometers, accounting for 30.72% of the country's total land area. Among them, the hydraulic erosion was 1.2932 million square kilometers, and the wind erosion was 1.6559 million square kilometers. The total area of desertification was 2.6237 million square kilometers, accounting for 27.33% of China's total

Table 1 Endangered animals in China

Animals	*Family*	*Genus*	*Species*	*Proportion of animal species (%)*	*Endemic to China*
Fish	24	78	92	11.7	66
Mammals	35	91	133	22.9	26
Amphibians	3	13	31	10.6	17
Reptiles	20	54	96	24.3	30

land area. Desertification covers an area of 1,731,100 square kilometers, accounting for 18.03% of China's total land area. State Forestry Administration: *Bulletin on Desertification and Desertification in China*, 2011. China has 395 million hectares of natural grassland, accounting for 41.15% of the country's total land area. However, due to long-term overgrazing, excessive digging and cutting, 90% of available grasslands have been degraded to varying degrees. Especially in the north, the degradation area was about 51% at the beginning of 1990s, and it developed to about 52% at the end of 1990s. The degradation rate was quite fast, and the production capacity of grassland decreased and the grass yield decreased. China's forest coverage rate is 22.6%, and the world's forest coverage rate is 31%. Primitive natural forests have decreased from about 4% of the total land area in 1949 to 1.2% today. This is worrying.

2 External International Pressure on China's Green Transformation and Development

From a global perspective, with the rise of emerging economies such as China and India, the pattern of world resources and environment has also changed, and resource and environment issues have become the focus of international attention.

2.1 International Environmental Friction

In the era of globalization, when ecological and environmental systems are being destroyed and energy and resources are increasingly scarce, the world's resource and environmental problems are evolving into comprehensive and complex problems involving resources and environment, politics, economy, diplomacy and other aspects. In order to gain more power and resources in the world, all countries have the initiative and the right to speak on ecological and environmental issues.

The economic development of all countries are seeking international environmental cooperation ways, making the international environmental laws and regulations, fulfill the international environmental conventions and agreements, international environmental disputes and the surrounding resources and processing of foreign territory, the territorial disputes environment, take the initiative and control on environmental issues, secure in its voice in the international environment problem,

which results in the friction of international environment. China's extensive mode of development promotes rapid economic development, but at the expense of the ecological environment. In 2011, China's GDP accounted for 7.6% of the world's total. The share of major resource consumption and pollutant emissions in the world is much higher than the share of GDP. Primary energy consumption accounts for 21.4% of the world, and finished steel consumption accounts for 45.1% of the world. A considerable proportion of resources, such as oil, iron ore, copper, aluminum and potash, are obtained by imports. China's air pollution level is worsening, has formed a cross-administrative complex pollution pattern. The water resources pollution develops into the regional pollution, and the shortage degree is aggravating; China faces deforestation, grassland degradation, soil desertification, soil erosion, loss of biodiversity and extreme climate change, among other environmental problems. It not only threatens the survival and development of the country, but also causes international environmental friction.

Western countries have been creating the "China threat theory" and attacking China for it, calling China "one of the biggest polluters in the world", one of the biggest demander of energy and resources, advocating "China's ecological environment threat theory", "China's ecological environment responsibility theory", "China's energy crisis theory", etc. (see Table 2). China is blamed for global air and water pollution, low resource and energy efficiency, and negative response to greenhouse gas emission reduction. They complicate China's ecological problems and put pressure on China. One is the internationalization of China's environmental problems, they provoke the relationship between China and foreign countries, such as the use of the Songhua River pollution problems to alienate the relationship between China and Russia, make the use of coal-fired power plants such as acid rain, soil pollution problem to alienate the relationship between China and South Korea and other countries, and so on, which has caused China environmental disputes with its neighbors. Second, China's environmental problems have been infiltrated into international trade to curb China's development. For example, through carbon emission restrictions, carbon tariffs, carbon labels and other green barriers, the responsibility and cost of ecological and environmental governance will be transferred to China and other foreign trade powers, in order to weaken the market competitiveness of China and other developing countries, causing environmental friction in international trade. The third is to infiltrate environmental issues into the diplomatic field. Fourth, China's environmental problems

Table 2 Various "China threat theories" in the world

Traditional	China's political threat theory	"China's political threat theory" means that China's political system and values are incompatible with the west, and China is a "totalitarian state"
	China economic threat theory	"China economic threat theory" refers to that China will retaliate against the west if it becomes economically powerful, China is a competitor in the international market
	China's military threat theory	"China's military threat theory" means that China's military is opaque, a strong China will expand and China will challenge US hegemony
Unconventional	China's civilization threat theory	"China's civilization threat theory" means that there will be a clash of civilizations between the Western world and the non-Western world, and the combination of the Chinese civilization and the Islamic civilization will threaten the Western civilization
	China's energy threat theory	"China's energy threat theory" means that China is the "predator" of international energy, and its large import of energy leads to the increase of energy prices
	China's environmental threat theory (China's climate threat theory)	China's massive consumption of resources and energy damages the global environment and threatens human survival (China's massive emission of greenhouse gases and failure to commit to emission reduction obligations threaten human development)

have been infiltrated into the field of human rights. The pattern of overseas investment, development and mergers and acquisitions led by state-owned enterprises is causing "alarm" and "fear" in some countries about China's rise.

2.2 International Trade Frictions

With the development of global economic integration, the scale of international trade is expanding, and the problem of resources and environment is becoming more and more prominent. *Agenda 21*, adopted by the United Nations conference on environment and development in 1992, points out that the relationship between man and nature must be coordinated along the path of sustainable development. It is urgent for all countries to resolve the contradiction between coordinated development and environmental protection. In this context, the green wave swept across the world, the concept of green people, green economy has become the mainstream of global economic development, hence green trade came into being. In order to develop green trade, all countries in the world, especially developed countries, have formulated the green trade system one after another. The WTO/GATT has also included environmental protection into the multilateral trade system, such as the "right of exception for environmental protection" stipulated in the GATT, since all countries adopt environmental standards based on protecting their own environment and promoting their own level of economic development when formulating their own laws and regulations related to green trade. Therefore, different standards set by different countries lead to different standards for measuring the same product, which limits international trade to a certain extent and leads to green trade barriers. The main forms of green trade barriers are: technical regulations and standards system, green tariffs and market access, environmental labeling system, green packaging system, green health inspection and quarantine system, green subsidy system, etc. Green trade barriers affect a wide range of products from food and clothing to digital mechanical and electrical, and can be set up barriers by green trade barriers. Through the Uruguay round negotiations, green barriers to trade have permeated services, intellectual property and investment.

Export is one of the three engines driving China's economic growth, which has effectively promoted China's economic and social development. In 2013, China's imports and exports of goods totaled us $4.16 trillion, ranking first in the world. However, in the structure of China's export trade, high pollution and resource-intensive industries account for a large proportion in the traditional export industries, such as textiles, leather and products, chemicals, food and agricultural products, cement and building materials, coke and steel. In the international industrial

division of labor system, China is located in the low-end industry supply chain, more than 55% of exports from the processing trade, 90% of the high-tech products in the form of processing trade exports; China's exports of services are lower than those of goods. As a result, Chinese products are greatly impacted by green trade barriers in the international market and frequently encounter various forms of trade restrictions such as anti-dumping, countervailing, safeguard measures, special safeguard measures, product recall or notification. In the first three quarters of 2013, a total of 63 relief investigations were launched by 17 countries (regions) against China's export products, an increase of 10.5% year-on-year, involving many large leading enterprises in China's strategic emerging industries. In the first three quarters of 2014, a total of 75 relief investigations were launched by 21 countries (regions) against China's export products, up 17% year-on-year. Many of these frictions are aimed at China's strategic emerging industries and involve large amounts of money. Green trade barriers have affected the development of China's foreign trade, almost all areas of China's foreign trade exports.

On the one hand, China's environmental standards are relatively low and poorly implemented. One is accepting the transfer of pollution from developed countries to China. Developed countries transfer a large number of resource-intensive and labor-intensive industries from developed countries to China through investment, trade and other means. Many environmentally harmful technologies, processes and equipment that have been eliminated or will be eliminated in developed countries have been transferred to China in the form of trade. China has become the world's processing plant and importer of pollution. Second, many domestic enterprises are weak in environmental protection awareness and weak in green technology innovation. As a result, the products made in China fail to meet international standards and are frequently rejected in export, exposing a huge "made in China" crisis. On the other hand, China's foreign trade powers are the European Union, the United States, Japan and other countries, which have accumulated high environmental awareness and advanced technological advantages, and are the leading framers of green trade standards and systems. China is a passive recipient of the green trade system. Strict technical standards and strict environmental protection laws and regulations, quarantine system, certification system and so on set up numerous barriers for Chinese products, and many Chinese export products are excluded from the international market because they cannot meet their green standards. The "301"

investigation and the "Anti-dumping and anti-subsidy investigations" investigation carried out by the United States on Chinese clean energy enterprises, the European Union's levy of carbon emission tax on aviation, etc., various green trade barriers have a particularly obvious impact on China's export, which has formed an impact on China's foreign trade transformation and upgrading, and the foreign trade situation is grim.

In the face of green barriers and severe trade frictions, developing green economy and cultivating new competitive advantages in foreign trade are the key points to promote the healthy development of China's foreign trade.

2.3 International Image Contest

International image is the international community's cognition of a country. International image is also an important part of national interests. All countries in the world hope to establish a good national image. With the development of global environmental issues, environmental issues have become a major issue affecting a country's international image, and resource and environmental governance has become an important factor to consider a country's international image. Environmental issues can affect China's national image in terms of ideology, system, policy, diplomacy, culture and morality. China is actively participating in international environmental governance. China has been involved in climate negotiations since 1990, when the 45th session of the United Nations general assembly adopted resolution 212, setting in motion international negotiations on climate change. In 2009, on the eve of the Copenhagen climate change conference, the executive meeting of the state council proposed to reduce carbon dioxide emissions per unit of GDP (GDP) by 40 to 45% by 2020 compared with that in 2005, and incorporate it into the medium- and long-term plan for national economic and social development as a binding target. In 2011, the *Outline of the 12th Five-Year Plan for National Economic and Social Development of the People's Republic of China* refined these binding targets. It stipulates that by 2015, carbon dioxide emissions per unit of GDP will be 17% lower than 2010, energy consumption per unit of GDP will be 16% lower than 2010, and non-petrochemical energy will account for 11.4% of primary energy consumption. At the APEC meeting in 2014, China pledged to increase the share of non-fossil energy in primary energy consumption from 15% in 2015 to about 20% by 2030.

China has established the national leading group on climate change and relevant working bodies, and actively and constructively participated in international negotiations. It has formulated and implemented *China's National Program on Climate Change*, the 12th Five-Year Plan for Controlling Greenhouse Gas Emissions and the *National Strategy for Adapting to Climate Change*. China has signed more than 50 international environmental conventions.

China has made remarkable achievements in energy conservation and emission reduction. In 2013, China's carbon dioxide emissions per unit of GDP were 28.5% lower than in 2005, and the share of non-fossil energy in primary energy rose to 9.8%. The installed capacity of hydropower, wind power, nuclear power, solar water heaters and rural biogas users all rank first in the world. The forest coverage rate increased from 18.21% in 2005 to 21.6% in 2013. Our capacity to adapt to climate change in key areas such as water resources, agriculture and forestry, and disaster prevention and reduction has increased.

Ecological and environmental problems affect China's international image. After more than 30 years of rapid development, China's overall image has been increasingly recognized by the international community. In 2014, the majority of overseas people believed that China's economy developed rapidly, people's living standards were high and its technological innovation ability was enhanced. They recognized the international influence of China's economy and believed that China's economy promoted the global economic development. Severe environmental pollution and ecosystem degradation, such as the trans-boundary pollution of the Songhua River, the cyanobacteria incident in west lake, the PX incident in Xiamen, cadmium rice and Beijing cough, have affected China's international image. There is overseas public distrust of China's quality and food safety concerns, as well as the perception that Chinese enterprises' entry is a threat to local ecological environment, energy/resource plunder and destruction.

In the face of the international ecological environment and other issues to curb China's development, China on the one hand has to face up to the ecological environment; on the other hand, adjust the traditional way of development, promote green development, solve domestic environmental pollution problems with a positive attitude, take an active part in global environmental governance activities, eliminate the negative impact of the "China environmental threat theory" and other arguments in the international community, and construct a harmonious international environment for China's development.

3 Subjective Pressure from Chinese Citizens and Government

China's traditional development mode, while facing the above objective pressures at home and abroad, also faces increasing subjective pressure from two aspects: One is the growing pressure on China's citizens to become more environmentally aware and the second is the pressure to commit to construct a "responsible" good government.

3.1 Increasing Pressure on Chinese Citizens' Environmental Awareness

Pressure of Open and Transparent Environmental Information

The Chinese government's disclosure of information on environment, ecology, food regulation, water, atmosphere and soil, as well as the disclosure of ecological environment by newspapers, radio, television, Internet and other media, have enabled citizens to obtain more and more information and pay more and more attention to ecological environment.

Frequent Environmental Events and Their Impact

The impact of environmental pollution on health has aroused the improvement of environmental awareness of citizens, and mass incidents of environmental protection have occurred continuously, promoting green transformation and development. China's traditional development mode causes resource depletion, environmental pollution and ecological damage. The water pollution is serious, and the water quality standard rate in the water function area is only 46%. The air quality is not good. Of the 74 cities in the Beijing–Tianjin–Hebei region, the Yangtze River delta, the Pearl River delta and other municipalities directly under the central government, as well as provincial capitals and cities specifically designated in the state plan, 95.9% exceeded the air quality standards. The average number of haze days nationwide is 35.9 days, more than 100 days in some regions, and acid rain occurs frequently in some regions. The discharge of waste water, waste gas and solid waste continues to increase, and the discharge areas spread from cities to rural areas, and rural pollution spreads rapidly. The state of the soil environment is grim, with 16.1% of the soil area contaminated, a wide range of heavy metals exceeding the standard, and 30.72% of the soil subject to wind

and water erosion. Water pollution, air pollution (haze) and soil pollution all cause serious harm to the public health, from food safety and water pollution to air pollution (haze) and soil pollution. “Melamine”, “arsenic poison”, “blood lead”, “chromium water”, “cadmium rice” and other teratogenic, carcinogenic, mutagenicity phenomenon occur frequently, which have an impact on the environmental awareness of citizens, arousing the environmental awareness of citizens. The environmental awareness of the public is increasing and the attention paid to the ecological environment and food which are closely related to their own life is increasing; the demand for fairness, justice, environmental protection and security is also increasingly high; the willingness to participate in national public affairs is increasingly strong; the demand for environmental rights and the right to health is also increasingly high; various types of environmental letters and visits, environmental mass incidents, etc., continue to occur, prompting the green transformation and development of the government (see Table 3).

Environmental Quality Becomes an Element of People’s Quality of Life
Citizens’ living standards have improved and increased green consumption demand “forced” green transformation and development. In 2011, China’s per capita GDP reached 5432 US dollars, surpassing the 5000 US dollars for the first time. In 2013, China’s per capita GDP reached 6807 US dollars, making it a middle-income country. With the development of national economy and the improvement of per capita income, people’s life will be transformed from subsistence to comfort, and their needs will be transformed from survival level to safety and other higher levels. They will pursue the improvement of life quality and quality of life, especially the higher requirements on environmental quality. People are able to bear the additional costs of green development based on their own income and cost estimates and trade-offs. And the way people live is changing in terms of diet; people choose pollution-free organic food and green food; choose public transportation, bike or walk when travel; construct and use energy-efficient and environmentally friendly buildings; adopt clean energy sources such as wind, solar and bio-energy; advocate clear plate campaign, etc. The increasing public demand for green consumption, to some extent, “forces” the greening of the supply of goods and services, puts forward higher and higher requirements for the government’s market regulation and promotes the green transformation of the production and service industries.

Table 3 Environmental mass incidents in China in recent years

Time	*Place*	*Design project*	*Environment impact of the project (possible)*	*Time of intervention*
June 2007	Xiamen, Fujian	PX chemical project	Located too close to the residential area, carcinogenic pollution	Before pollution
January 2008	Shanghai	Maglev project	Electromagnetic radiation and noise pollution	Before pollution
August 2008	Lijiang, Yunnan	Cement shaft kiln production line	Water pollution	After pollution
November 2009	Guangdong Panyu	Waste incineration plant	Toxic gas emissions	Before pollution
May 2011	Tin Linguo Lemeng, Inner Mongolia	Mineral resources development	Malignant criminal cases	After the case
September 2011	Zhejiang Haining	Jinko Solar Company	Water pollution, dead fish pollution	After pollution
July 2012	Sichuan Shifang	Molybdenum copper project	Groundwater and surface water pollution	Before pollution
July 2012	Jiangsu Qidong	Papermaking discharge project	Sewage discharge	Before pollution
October 2012	Zhejiang Ningbo	Sinopec PX project	Carcinogen pollution	Before pollution
July 2013	Guangdong Jiangmen	Nuclear fuel processing base	Nuclear radiation pollution	Before pollution

Source Strategic research group on sustainable development, Chinese academy of sciences. *2014 China Sustainable Development Strategy Report—Ecological Civilization Road in the Next 10 Years.* Beijing: Science Press, 2014

3.2 Pressure to Build a Responsible and Good Government

Over the past 30-plus years of reform and opening up, driven by the dividends of economic restructuring, China has made tremendous achievements in production, development and prosperity. China's economic strength and overall national strength have increased significantly, its economic and social structure has improved significantly, its people are leading a moderately prosperous life, and its international influence has increased significantly. In 2013, China had become the world's second largest economy, with a per capita GDP of US $6807, an urbanization rate of over 52%. The market economy has basically taken shape and, on the whole, it has entered the upper middle-income countries. Under the new normal of economic development, the Chinese government is also under pressure from economic growth, social stability and harmony, ecological environment and international climate change.

Pressure to Sustain Economic Growth

The global financial crisis has not only engulfed the Western countries, but also many emerging economies and developing countries, causing a sharp downturn in the world economy. To weather the crisis, many economies have rolled out fiscal stimulus packages and counter-measures in the hope of an early recovery. Unlike in the past, this financial crisis and global climate change are intertwined, creating a double global crisis. Although the economy of the United States and other countries has begun to recover, the prospects for recovery are not clear and the industrial recovery is not stable. With the withdrawal of the next round of stimulus policy and the tightening of monetary policy, the possibility of turbulence still exists and it is still difficult to predict the long-term sustainable growth.

China has also been severely affected by the global financial crisis. The government has implemented a number of measures, including the economic stimulus plan, the ten-industry revitalization plan and the vigorous development of new energy industry, to achieve the goal of maintaining economic growth. However, due to the focus of economic stimulus on traditional industries and large state-owned enterprises, the development of strategic emerging industries is still faced with problems such as insufficient funds, small scale, weak ability of independent innovation and so on. Small- and medium-sized enterprises are beset

with difficulties and various structural problems still exist. The short-term economic stimulus has led to the excessive development of traditional industries with high energy consumption, high pollution and high emissions, and the heavy industry has continued. Insufficient attention has been paid to energy conservation, emission reduction and ecological improvement, and the ecological and environmental effects of economic development have gradually begun to be released, leading to ecological crisis. In addition, the government also needs to address the impact of the financial crisis covered by the rise in production costs, insufficient innovation capacity, the extension of the growth model is difficult to maintain. In the period of shifting economic growth speed, painful structural adjustment and digestion of early stimulus policies, the government is faced with opportunities and challenges of green development mode transformation.

Pressure to Build a Harmonious Society

China still has a large number of poor people. According to 2011 standards, there are still 26.88 million people living in poverty. According to the poverty level raised in 2011, there are still 128 million poor people. Problems such as relative poverty and urban poverty have become increasingly prominent, and the phenomenon of returning to poverty has occurred from time to time, which has become a difficulty in building a harmonious society and realizing the goal of building a moderately prosperous society in all respects. With the development of the economy, the contradiction between the total supply and demand of China's labor force and the structural contradiction have emerged. In the next 10 years, about 10 million new urban jobs will be created every year. The vocational skills of the labor force do not adapt to the job demand, and problems such as transitional employment, youth employment and rural labor force transfer employment are becoming increasingly prominent. Therefore, it is urgent to implement more active employment policies. There is a large gap between urban and rural areas and between regions. Problems affecting the vital interests of the people, such as education, medical care and social security, are prominent. The fight against bureaucracy and anti-corruption is in a grim situation. Social crises caused by ecological and environmental problems occur frequently, and food safety is a concern. The government is faced with a huge problem of social governance.

Pressure for Resource Environment Governance

On the one hand, China faces serious resource security problems. First, as a large developing country, the most serious crisis facing China's sustainable development is the deepening domestic resource and environmental problems. In the face of rapid economic growth and upgrading of consumption structure in the heavy chemical industry stage, China's strategic resources and energy, especially high-quality energy and China's strategic mineral resources such as iron, copper, aluminum and uranium, will remain in a state of supply and demand tension for a long time, with a high degree of external dependence, threatening China's resources and energy security. Second is the deterioration of the ecological environment. China's ecological and environmental problems have undergone profound changes and are facing increasingly complex and diverse pollution patterns and extensive ecological degradation pressures. Driven by development interests, insufficient detection capability and lagging supervision capability, the overall trend of environmental pollution in China has not been comprehensively curbed, and has developed into regional air pollution, water pollution and soil pollution across departments and regions. Although China has carried out large-scale ecological construction projects since 1998 and achieved certain results, with the rise of central China and the implementation of the Western development, the ecosystems in the central and Western regions and some vulnerable areas will face new and broader ecological pressure.

On the other hand, China also faces severe environmental security problems. At present, the relationship between the Chinese people and nature is highly strained. There is a shortage of strategic mineral resources and energy, serious pollution of the atmosphere, water and soil, and worsening damage and degradation of the ecosystem. The situation of greenhouse gas emission reduction is grim, and resource and environmental challenges are becoming more and more comprehensive issues concerning economic development and social stability. The construction of ecological civilization reflects the major transformation of the party and the government's governing philosophy. We should change the old mindset of only depending on growth rate and GDP, adopt a comprehensive approach of promoting "five-in-one" development from the height of building ecological civilization, give priority to environmental protection and make use of the system to protect the environment and rebalance the relationship between "environment and development". Looking ahead, it is reasonable to believe that with the major changes in

the institutional framework and governance model of China's ecological civilization, sustainable development will gain new momentum.

In the face of international and domestic development and environmental challenges, China needs to become a responsible major country, actively promote green transformation and development, foster green industries, increase green employment, improve green competitiveness and realize green rise.