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A Brief Overview of the 13th Five-Year Plan for the Protection of Ecological Environment

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Foreword »

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Since its opening-up and reform, China has been in the process of rapid economic development with its people enjoying an increasingly improved standard of life. Meanwhile accompanying this dramatic economic growth is the degradation of environment which has, to some extent, damaged the gains of the opening-up and reform and prevented the economy from a healthy and sustainable development. The Chinese government is increasingly aware of that without addressing the environmental issues it is facing now, will jeopardize its long term goal of the great rejuvenation of the Chinese nation. Given the magnitude and complexity of the environmental issues in China, there is no easy way in addressing them and the solution to them entails an equal priority being given to environmental protection, ecological conservation and economic development or even higher than the latter by mainstreaming the former into the overall socio-economic decision-making process. As a matter of fact, China has been in the struggle against environmental

pollution since the very beginning of its economic take-off and trying to explore a pathway that could help address China's environmental issues in the way most suitable to China's specific circumstances.

In recent years, especially since the 12th Five-Year Plan period, the enhanced measures including legislation, policy, regulatory and economic means have been taken by the Chinese government in dealing with environmental problems, of which environmental policies have played an important role in this regard. Corresponding to this situation and in meeting the demand of governments at different levels for environmental policy tools, the environmental policy research projects on topics of a wide range have been conducted by some Chinese environmental research institutions including the Chinese Academy for Environmental Planning (CAEP).

CAEP founded in 2001, is a research advisory body supporting governments in the

development of key environmental planning, national environmental policies, and major environmental engineering projects. In the past more than 10 years, CAEP has accomplished the development of the overall planning of national environmental protection for the 10th, 11th and 12th Five-Year Plan periods; water pollution prevention and control planning for key river basins; air pollution prevention and control planning for key regions; soil pollution prevention and control planning; and some regional environmental protection plans. In the same period of time, CAEP also actively engaged in research on such topics as green GDP, environmental taxation, emission trading, ecological compensation, green financing, etc. By so doing, CAEP has become an indispensable advisory body in the environmental decision-making in mainland China. According to *2013 Global Go To Think Tanks Report and Policy Advice* published by University of Pennsylvania, CAEP was ranked 31 in the field of environment in the world. Many of CAEP's research results and project outcomes regarding environmental policies have drawn great attention of decision makers and international institutions, and have been utilized to contribute to the formulation of national environmental policies concerned.

The Chinese Environmental Policy Research Working Paper (CEPRWP) is a new internal publication produced by CAEP for the purpose of facilitating the academic exchange with foreign colleagues in this field, in which the selected research papers on environmental policies from CAEP are set out on the irregular basis. It is expected that this publication will not only make

CAEP's research results on environmental policies be known by foreign colleagues but also serve as a catalyst for creating opportunity of international cooperation in the field of environmental policies, and environmental economics in particular, with a view of both the academic research and practical policy needs.

Under the instruction of the Ministry of Environmental Protection, CAEP has been working on the research for the formulation of 13th Five-Year Plan for Protecting the Ecological Environment (the Plan) since 2013. Based on a three-year research and more than a hundred topic-specific studies, the Plan was issued by the State Council on November 24, 2016. Required by the State Council as one of the 22 fundamental sector-specific plans, the targets, main tasks, and action projects of the Plan underlie national environment protection work during the 13th Five-Year Plan period, and will be implemented by various responsible departments and governments at all levels. With an introduction to the Plan's formulation and rationale, this paper provides an overview of the 13th Five-Year Plan for the Protection of Ecological Environment, covering its context, major targets, main tasks, national action projects and the implementation.

Contents >>

1. Introduction to The Plan's Formulation	1
2. General framework, Basic Principles and the Rationale	1
2.1 General framework of The Plan	1
2.2 Guidelines and basic principles	2
2.3 The rationale behind The Plan	2
3. Overview of the Nationwide Environmental Protection Background	3
3.1 Positive progress during the 12th Five-Year Plan period	3
3.2 The 13th FYP context: A weakness in eco-environmental quality on building a moderately prosperous society in all aspects	4
3.3 Opportunities and challenges of protecting the ecological environment during the 13th FYP period	5
4. Targets and Indicators	6
4.1 Basic considerations when formulating the targets framework	6
4.2 Main targets and indicators for 2020	6
5. Main Tasks Framework	8
5.1 Strengthening control of pollution at source to lay the groundwork for green development	8
5.2 Enhancing quality-oriented management with the implementation of the Three Action Plans	11
5.3 Launching special projects on particular sectors and areas for standard-complying discharge and emissions reduction	14
5.4 Carrying out overall supervision for environmental risks mitigation and management	17
5.5 Strengthening ecological protection and restoration	19
5.6 Speeding up institutional innovation to modernise environmental governance system and capacity	21
6. National Action Projects on Protecting the Ecological Environment	23
7. The Implementation and Delivering of The Plan	24
Reference	26



1. INTRODUCTION TO THE PLAN'S FORMULATION

Since 2013, the Ministry of Environmental Protection (MEP) has been working on the draft of 13th Five-Year Plan for the Protection of Ecological Environment (The Plan), in cooperation with the National Development and Reform Commission, the ministries of Education, Science and Technology, Industry and Information Technology, Finance, Land and Resources, Housing and Urban-Rural Development, Transport, Water Resources, Agriculture, the General Administration of Quality Supervision, Inspection and Quarantine, the State Forestry Administration and other authorities.

The formulation and revision of The Plan is open to public review through online and off-

line public surveys, on-site reviews, seminars, seminars and written comments. It has incorporated opinions from various parties, including local authorities, departments of the central government, experts and scholars as well.

Approved by the State Council Executive Meeting on November 15th, 2016, the Plan became fundamental to the national environment protection work during the 13th Five-Year Plan (FYP) period. To ensure the implementation of The Plan, detailed tasks and their responsible departments with bounded targets have been defined clearly, which is allocated in accordance with the division of departments' responsibilities.

2. GENERAL FRAMEWORK, BASIC PRINCIPLES AND THE RATIONALE

2.1 General framework of The Plan

The Plan consists of three parts.

The first part focuses on the general situation of ecological and environmental protection across the nation, with an overview of the guidelines, basic principles and main objectives of The Plan. The key aim is to achieve overall improvement of ecological and environmental quality by 2020. The Plan puts forward both binding and anticipated targets, including 12 binding ones covering eco-environmental quality and total pollutants discharge.

The second part of The Plan thoroughly explains the main tasks from six aspects, aiming at improving the eco-environment quality, which include strengthening control

of pollution sources and reinforcing the base for green development, enhancing quality management and implementing the Three Action Plans actively, launching special projects for carrying forward emission reduction and ensuring standard-complying discharge, carrying out supervision of environmental risks from beginning to end and minimising the risks effectively, strengthening protection efforts and enhancing ecological restoration, speeding up institutional innovation and improving the modernisation of eco-environmental management system and capacity. Furthermore, a series of major projects for ecological and environmental protection at the national level is provided to deliver The Plan's main tasks.

The third part of The Plan puts forward



measures to support the implementation, including clarifying responsibilities and division of task, increasing investment, strengthening international cooperation, promoting pilot and model projects, and conducting strict evaluation and appraisal. According to The Plan, enterprises and local government will play a main role in major projects investment, in which diversified investment will be encouraged as well. The central government will provide financial support in accordance with the division of responsibility and power between central and local authorities.

2.2 Guidelines and basic principles

The guidelines of The Plan adhering to and putting into practice the new thinking and strategy of Innovative, Coordinated, Green, Open and Shared way of development, are providing people with more high-quality ecological products and contributing to the realisation of the Two Centenary Goals and the Chinese Dream of great rejuvenation of the Chinese nation. According to the decisions of the Central Committee of the Communist Party of China (CPC) and the State Council, the core is to improve the overall environmental quality, which requires implementing the most stringent environmental protection system and intensified efforts to combat pollution in air, water, and soil. It also calls for steps to protect and restore ecosystems, strictly control and manage against ecological and environmental risks, as well as modernise national eco-environmental governance system and capacity by improving eco-environmental management process to be more systematic, science-based, detail-oriented, and relying more on rule of law as well as information technology.

The Plan's basic principles include “Five Persistence”, which respectively refers to:

- 1) being Persistent in green development as a fundamental approach to tackling various environmental issues at source,
- 2) being Persistent in taking systematic measures of pollution control, emission reduction and ecological conservation with eco-environmental quality improvement at its core,
- 3) being Persistent in optimising spatial planning and promoting classified management based on specific situations,
- 4) being Persistent in reform and innovation in environmental protection as well as enhancing rule of law, and
- 5) being Persistent in performing authorities' duties, enterprises' responsibilities, and encouraging public participation and multi-governance on environmental protection.

2.3 The rationale behind The Plan

Firstly, The Plan is in line with China's general development strategies and the Guideline of the 13th Five-Year Plan (2016-2020) on National Economic and Social Development as well. It highlights green development, supply-side structural reform and technological innovation. In addition, it echoes principal national strategies, including the development strategies for the Beijing-Tianjin-Hebei Region, Yangtze River Economic Belt, and the Belt and Road Initiative (BRI).

Secondly, it centres on enhancing environmental quality, urging coordinated actions on improving environmental quality, ecological protection and environmental risk control.

Thirdly, The Plan emphasises a stringent system on environmental protection in the light of ecological civilisation reform. The



government's officials will face inspection, submission of statement of assets and liabilities and auditing when leaving a post. And enterprises will be restrained by permits and laws.

Fourthly, following the idea that mountains, rivers, forests, farmland and lakes form a community of shared life, The Plan calls for strengthening ecological conservation and restoration, increasing the supply of

ecological products, and enhancing stability and services of the ecosystem.

And fifthly, The Plan stresses integrated management to ensure standard industrial emission, pollution prevention and risk management in terms of heavy metal pollution, hazardous waste disposal, toxic chemical products, the nuclear and radiation safety.

3. OVERVIEW OF THE NATIONWIDE ENVIRONMENTAL PROTECTION BACKGROUND

3.1 Positive progress during the 12th Five-Year Plan period

The CPC Central Committee and the State Council of China attach great importance to environmental protection. At the beginning of the 12th FYP period, the authorities have taken a resolute stance against pollution in air, water and soil, and they made a great effort to protect the ecological environment and to improve environmental quality. It is thanks to these efforts that environmental quality in China has seen significant improvement and all major targets and tasks set down in the National 12th FYP for Environmental Protection have been accomplished.

First of all, during the 12th FYP period (from 2011 to 2015), ecological civilisation has become a national strategy. The CPC Central Committee and the State Council have given high priority to promoting ecological civilisation and incorporated it into the national strategic plan, which is followed by a range of policies and plans from introducing the Integrated Reform Plan for Promoting Ecological Progress, as well as the respective

Action Plans on Prevention and Control of Air, Water and Soil Pollution (generally called as the Three Action Plans).

Secondly, the 12th FYP period has seen a moderate improvement in environmental and ecological quality. In 2015, the annual average concentration of fine particulate matter (PM_{2.5}) of 338 major cities reduced to 50 µg/m³, in which the level of the Beijing-Tianjin-Hebei Region went down by 27.4%. The proportion of acid rain area fell to 7.6%. There is also a significant improvement on the water quality of main rivers. Also, the forest and the general grassland coverage rate have increased to 21.7% and 54% respectively. There has been a reduction of desertification as well. A total of 2740 nature reserves have been built, providing protection for a majority of terrestrial ecosystems, and wild species. The population of rare and endangered species such as giant panda, Manchurian tiger, crested ibis, Tibetan antelope and Yangtze alligator has a slightly increase.

Thirdly, pollution control and emission reduction targets have been overachieved



during the 12th FYP period. The majority of the coal-fired power generators were equipped with desulfurization and denitrification facilities by 2015, and those generators with an installed capacity of 160 million kW were transformed to ultra-low emissions. The sewage treatment and waste treatment system have been more environmental-sound within urban area, whereas 72000 villages have taken measures to improve environment conditions comprehensively. As a consequence, there had been a reduction of COD, ammonia nitrogen, SO_2 , and NO_x by 12.9%, 13%, 18%, and 18.6% respectively during the 12th FYP period.

Fourthly, the 12th FYP period has witnessed a positive progress in conserving and enhancing ecosystems. A number of major ecological conservation and restoration projects have been steadily carried out, including projects on natural forests protection, shelter forests construction, soil and water conservation, desertification control, wildlife protection and the development of nature reserves.

Fifthly, environmental risk management has become more effectively over the last five years. A group of facilities for the disposal of hazardous waste and medical waste have been built. Nuclear technologies were used and managed in full compliance with relevant standards and procedures. Radiation environmental quality remains good.

Moreover, during the 12th FYP period, a sound legal framework on ecological and environmental protection has been reinforced. China has introduced and amended major environmental laws such as the Revised Environmental Protection Law, the Law on Prevention and Control of Air Pollution, and the Measures on Accountability for Damage of Ecological Environment. And

the ecological compensation mechanism has been further improved. The entire society has been more aware of the significance of rule of law on protecting ecological environment.

3.2 The 13th FYP context: A weakness in eco-environmental quality on building a moderately prosperous society in all aspects

In spite of all these progress, however, China still faces serious challenges of unbalanced and unsustainable socio-economic development, intertwined with complex environmental problems that are rooted in different stages of development.

Firstly, it remains a heavy and spreading pollutants discharge coupled with severe environmental pollution nationwide, additionally, a wide gap in urban-rural environmental public services adding difficulty in managing and improving the environment. Secondly, poor coordination in protecting mountains, the water, forests and farmlands has caused huge ecological damage. Up to 55% of territorial land is ecologically venerable to some extent, and nearly 20% of land suffers from desertification. The overuse and excessive exploitation of natural resources greatly impairs the ecosystem, which makes systematic protection of eco-environment even more challenging. Thirdly, and last, unbalanced industrial structure and layout pose a high environmental risk. As a major chemical producer and consumer, with toxic and hazardous pollutants becoming increasingly diversified, China is facing ever growing environmental risks that are evident in a regional, structural or distributional scale. In the last decade, there were over 7600 forest fires annually (on average) and



11.7 million hectares of forest hit by insect pests. Also, it has been an obvious increase in risks of animal and plant infection or of the invasion of pests that have been quarantined from the national border.

Given the considerable gap between current eco-environmental quality and people's needs and expectations, it remains China's priority to improve environmental quality and governance capacity to overcome the weak link of ecological environment in achieving a moderately prosperous society in every aspect.

3.3 Opportunities and challenges of protecting the ecological environment during the 13th FYP period

The 13th FYP period presents both opportunities and challenges for China. It is a crucial period for China to press ahead and is very likely to make a significant progress under unprecedented pressure.

China will embrace an important strategic opportunity in terms of the protection of ecological environment in the 13th FYP period. Benefited from the restructuring and upgrading of the economy, as well as supply-side structural reform gathering pace, China will move fast in cutting excess capacity of heavy pollution, expanding

supply of ecological products and easing the pressure from incremental discharge of pollutants. With a growing public awareness of environmental protection, all parts of the society are now pulling together for protecting the environment for all.

On the other side, however, as industrialisation, urbanisation and agricultural modernisation are still in progress, it remains challenging to protect and improve the environment at the same time. Given economy downward pressure, existing conflict between economic development and environmental protection becomes even more acute. The cut in environmental expenditure with regard to some local authorities has posed more pressure on environmental governance and environmental quality improvement. There is a growing regional disparities in terms of eco-environment quality, and pollution is spreading from one single source in a small area to one that covers a wider range of different areas. As China has played an active role in coping with global climate change and pushing forward the Belt and Road Initiative, international communities, especially the developed countries, are calling on China to take on more environmental responsibilities. It is faced with ever-growing challenges for China in deepening engagement in global environmental governance.



4. TARGETS AND INDICATORS

4.1 Basic considerations when formulating the targets framework

The Plan fully implements the Guideline of the 13th FYP on National Economic and Social Development (13th FYP Guideline), which is in line with China's general development strategies in terms of promoting economic, political, cultural, social, and ecological progress comprehensively. It highlights green development, supply-side structural reform and technological innovation.

In addition, The Plan centres on enhancing environmental quality over the 13 FYP period, urging coordinated measures of environmental quality improvement, emission reduction, ecological protection and environmental risk control. It has established eco-environmental quality as the primary standard for assessing overall progress, with detailed targets and tasks assigned to regions, watersheds, cities and control units across China.

As mentioned above, the key aim is to achieve overall improvement of ecological

and environmental quality by 2020, which means advances in green and low-carbon production and lifestyle, substantial reduction in pollutant emission, and more effective environmental risk management. Meanwhile, ecological system will become more stable by controlling the decline in biodiversity. Also, the ecological security barriers will be in place, with material progress in the national environmental governance system and ability.

4.2 Main targets and indicators for 2020

The Plan introduces both binding and anticipated targets, 12 of which are binding ones, covering the air, water and soil quality, as well as ecological conditions and major pollutants discharge. It should be mentioned that two of targets on soil quality are required by the Action Plan on Soil Pollution Prevention and Control (the Soil Action Plan), which the other 10 targets are compulsory to the 13th FYP Guideline, and it is the first time that environmental quality targets are required by the 13th FYP Guideline. Detailed indicators and targets are as follows.

Table 1. Main Targets of The Plan (2016-2020)

Indicator		2015	2020	Cumulative ^[1]	Nature
Eco-environmental quality					
1. Air quality	Percent of days with good air quality in cities at prefecture-level and above ² (%)	76.7	>80	-	Binding
	Reduction of fine particle concentration in cities at prefecture-level or above failing to meet the standard(%)	-	-	[18]	Binding
	Decline in the percent of days with heavy pollution or even worse in cities at prefecture-level or above(%)	-	-	[25]	Anticipated



2. Water quality	Percent of surface water with quality at or better than Grade III ³ (%)	66	>70	-	Binding
	Percent of surface water with quality worse than Grade V (%)	9.7	<5	-	Binding
	Percent of major rivers and lakes attaining water quality standards (%)	70.8	>80		Anticipated
	Percent of groundwater with very poor quality (%)	15.7 ⁴	Around 15	-	Anticipated
	Percent of coastal waters with excellent and good water quality (I, II) (%)	70.5	Around 70	-	Anticipated
3. Soil quality	Safe utilization rate of contaminated farmland (%)	70.6	Around 90	-	Binding
	Safe utilization rate of contaminated fields (%)	-	Above 90	-	Binding
4. Ecological conditions	Forest coverage(%)	21.66	23.04	[1.38]	Binding
	Forest stock volume (100 million m ³)	151	165	[14]	Binding
	Stock wetland (667 km ²)	-	≥8	-	Anticipated
	Vegetation coverage of grassland (%)	54	56		Anticipated
	Environmental condition index of counties in areas with key ecological functions	60.4	>60.4	-	Anticipated
Eco-environmental quality					
5.Reduction of major pollutants discharge (%)	Chemical oxygen demand (COD)	-	-	[10]	Binding
	Ammonia nitrogen	-	-	[10]	
	Sulphur dioxide (SO ₂)	-	-	[15]	
	Nitrogen oxides (NO _x)	-	-	[15]	
6.Reduction of regional pollutants discharge (%)	Volatile organic compounds (VOCs) of key industries in key regions ⁵	-	-	[10]	Anticipated
	Total nitrogen (TN) inkey regions ⁶	-	-	[10]	
	Total phosphorous (TP) inkey regions ⁷	-	-	[10]	
Eco-environmental quality					
7. Protection rate of wildlife under national priority protection (%)	-	>95	-	Anticipated	0
8. Natural shoreline retention rate (%)	-	≥35	-	Anticipated	0
9.Newly protected land under desertification control (10,000 km ²)	-	-	[10]	Anticipated	0
10.Newly protected land under water and soil erosion control (10,000 km ²)	-	-	[27]	Anticipated	0

Note: 1. Five-year cumulative number in brackets [].

2. Air quality assessment covers 338 cities nationwide (including prefecture-level, league-level and some county-level cities under provincial jurisdiction, excluding Sansha and Danzhou).

3. Water environmental quality assessment covers surface water sections under national monitoring program which increased from 972 (during the 12th FYP period) to 1,940.

4. Data of 2013.

5. More than 10% of total VOCs emission would be cut through strengthened control over its emission in key industries and key regions.

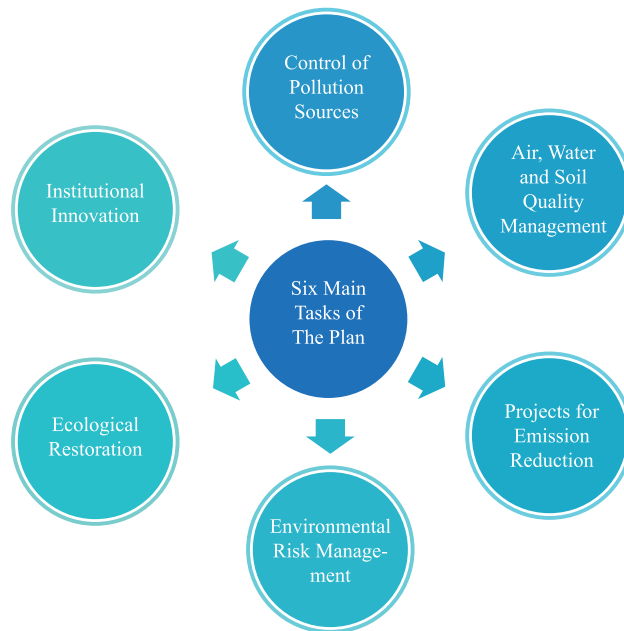
6. Total TN control covers 56 coastal cities and 29 eutrophic lakes and reservoirs.

7. Total TP control covers units with excessive TP emissions and related upstream areas.



5. MAIN TASKS FRAMEWORK

■ Figure 1 Main Tasks Framework of The Plan



5.1 Strengthening control of pollution at source to lay the groundwork for green development

As The Plan proposed, it will properly manage ecological space to optimize spatial layout in line with green development, protect the environment to catalyze supply-side structural reform, and innovate in green technologies to facilitate environmental governance. With all these efforts set in place, it's aimed to promote green and coordinated development in key regions, optimize spatial planning and industrial structure conducive to environmental protection and resource conservation, and develop a green way of life and production to protect the environment from the source.

(1) Strengthen management of ecological space.

It is crucial to China for the proper management of ecological space to optimise spatial layout in line with green development. First of all is to thoroughly implement function-oriented zoning policy, which shall play a fundamental role in developing and protecting China's territorial space. To be specific, for those regions where development is strictly prohibited, mandatory steps must be taken to control human activities from damaging the natural ecosystem or the environment. In major grain producing areas where development is restricted, priority shall be given to protecting the soil environment of farmland to ensure the supply and quality of agricultural products. Whereas in areas that development remains a priority, cities will be developed in an intensive, compact, green and low-carbon manner, where green space will be optimised. The function-oriented zoning policy also includes guiding on territorial waters for a better use and protection of the



marine resources.

Secondly is to set and hold firm to redlines for ecological conservation. China will complete the survey and delineate lines for ecological conservation across the country, putting in place a redlining system by the end of 2020, in which Beijing-Tianjin-Hebei region and cities along the Yangtze River Economic Belt will be basically delineated by the end of 2017, and other provinces, autonomous regions and municipalities will be set by the end of 2018.

Besides, integrated spatial planning will be promoted nationwide. China will regulate development activities more effectively through introducing a series of guidelines and stringent standards. Meanwhile, technical specifications for ecological conservation redlines, environmental quality bottom lines, resources utilisation ceilings and environmental negative lists of access will be developed and implemented to push forward integrated spatial planning. It is expected to introduce eco-environmental protection guidelines into integrated spatial planning. And first-phase studies of spatial planning for better protecting the ecosystems and environment, focused on province-, region- and city cluster-level respectively, will be initiated from 2018.

(2) Advance supply-side structural reform.

As the Plan proposed, it will establish a mechanism through hard-line measures to cut heavy polluting capacity as well as excess capacity. There will be continued efforts to revise and refine The Comprehensive Directory of Environmental Protection, and phase out those production technologies, equipment and products generating heavy pollution or posing high environmental risks. It's also required to adjust and optimise

industrial structure and replace technological backward or excess capacity in terms of coal, steel, cement and flat glass industries.

Enterprises will be upgraded or transformed with stringent energy consumption requirements. Both the total energy consumption and the consumption intensity will be controlled to conserve energy in key sectors of manufacturing, construction, transportation and public institutions. There will be supporting policies to make enterprises more capable of clean and green manufacturing, and to encourage industrial parks and enterprises to apply distributed energy systems.

Production and supply of green products will be promoted, which means entire manufacturing life cycle ranging from product design to raw material selection, production, procurement, packaging and recycling system should be green. To boost ecological and organic agriculture, there will be measures to develop organic food bases and industries in a bid to supply more organic products. It is aimed to generally build a green manufacturing system by 2020 with a hundred of green design model enterprises, a hundred of demonstration industrial parks, and a thousand of green demonstration plants.

It will also advance circular development, which includes steps to collectively dispose municipal low-value waste, develop resource-recycling demonstration bases and ecological industrial parks. It is planned by 2020 the comprehensive utilisation rate of industrial solid waste of China will reach 73%, and no more increase in fertiliser usage. In addition, within in China's major grain-producing counties and modern agriculture demonstration sites by 2020, integrated recycling of agricultural resources is aimed to



be achieved.

Energy-saving and environment-friendly industries will be encouraged as well. China will facilitate research, development (R&D) and commercialisation of core environmental technologies, which serve to advance low-carbon and circular development, pollution control and emissions reduction, as well as environmental monitoring and supervision. China will also motivate its people to start business and make innovations in the field of ecological conservation and environment protection, fully leveraging the role of civil environmental societies and technology-field organisations in scientific and technological innovation and in commercial transformation.

(3) Drive growth through green technology innovation.

Integrating green development with innovation comes first. As regards green development increasingly underpinning China's national innovation and economic transformation strategies, it is of great importance to thoroughly incorporate green development into the advancement of up-to-date technologies. Efforts will be made to develop an integrated set of technologies to facilitate ecological restoration, source prevention and terminal tip control in terms of air, water and soil pollution.

A science and technology (S&T) innovation system for environment protection will be developed. It will focus on formulating a theoretical system of S&T innovation led by scientific research, as well as a research and development (R&D) system underpinned by demonstration projects. A group of universities in developing basic science and applied science on environmental protection will be supported, and meanwhile, an

award-system for environmental protection professionals will be established.

S&T innovation platforms for environmental protection will be founded, including key laboratories, engineering and technology centres, scientific observation and research stations as well as environmental think tanks. It also calls for an integration of all S&T resources to reform the S&T system on environmental protection.

It will continue to implement key national S&T projects on environmental protection field. Key S&T projects include, for example, controlling and treating water pollution, tracking air pollution causes and pollution control, restoring and protecting typical fragile ecosystems, clean and efficient use of coal. There will also be pilot projects in the Beijing-Tianjin-Hebei region, the Yangtze River Economic Belt, as well as places along the BRI region, where new technologies will be applied to solve various environmental issues and improve environmental governance.

Environmental standards and policy systems on technologies will be revised and improved, which cover environmental quality and pollutant emission standards, and policies concerning environmental protection technologies. China will also expedite the development of technologies policies for key industries such as electric power, metallurgy and nonferrous metals. Standards and technology system for recycling, utilisation, disposal and environmentally sound processing of hazardous waste will be established.

(4) Promote green and coordinated development at the regional level.

Apply four of regional strategies on green and



coordinated development, based on differing economic and environmental circumstances of the country. Western China must take ecological conservation as a top priority, appropriately utilising resources such as oil, coal and natural gas, and developing featured resources such as ecological tourism and agricultural and livestock products. On north-eastern China, efforts will focus on protecting forest ecosystems, building shelter-belts, and protecting farmland soil and wetlands. On the central part of China, development must take full consideration of the region's resource and the environmental capacity. Whereas eastern China will expand the ecological space, and take the leading role in improving ecological environment quality, enhancing resources usage efficiency, and accelerating industrial upgrading.

A green Belt and Road Initiative (BRI) development will be strengthened. China will reinforce existing bilateral cooperation mechanisms with Russia, Kazakhstan, and multilateral cooperation mechanisms of China-ASEAN cooperation and Shanghai Cooperation Organization. It will actively promote all-dimensional and multi-channel exchange mechanism, including communications and cooperation with environment officials, scholars, young people from countries along the BRI region. Key BRI strategies and projects must first go through environmental impact assessment (EIA) to get well prepared for potential environmental risks. Accordingly, a domestic plan on protecting ecological environment along the BRI region will be set in place.

As the national strategy required, coordination in protecting the Beijing-Tianjin-Hebei region will be enhanced, through jointly addressing air, river and lake pollution, as well as building regional scale ecological-security

shields. Traditional manufacturing industry in Tianjin will be transformed towards a green model at an early date, and part of the city functions in Beijing that are thought not essential to a capital city will be gradually transferred to Hebei Province. It's planned that by 2020 coordinated environmental protection mechanism in Beijing-Tianjin-Hebei region are able to operate effectively and eco-environment quality in this region will be improved remarkably.

It will prioritise protecting and restoring the ecological environment of the Yangtze River through promoting ecological civilisation and building a green ecological corridor there. Environmental protection, resources usage and economic development strategies will be varied among the upstream region, the middle reaches, and the lower reaches. It's also required to formulate an integrated plan to regulate the resources utilisation and development intensity along the Yangtze River coastal line. There will also be cross-sectional assessment of quality of water sections to promote coordinated governance.

5.2 Enhancing quality-oriented management with the implementation of the Three Action Plans

Aiming at improving the environment quality, China will promote joint prevention and control of pollution and coordinated management of river basins, and develop roadmaps for implementing the action plans on prevention and control of air, water and soil pollution. As conditions in regions, watersheds and different types of pollutants are differing from one another, there will be differentiated policies for different regions and coordinated control of multiple pollutants to make the efforts more targeted



and effective. Bottom lines of environmental quality will be drawn up, and based on which, phased targets will be set for improving environmental quality, and a checklist of environmental governance responsibilities will be developed and implemented, so as to address prominent environmental problems of public concern.

(1) Improve ambient air quality in line with regional background conditions.

The objective-oriented management and deadline-based planning for ambient air quality improvement will be implemented, with regard to both province-level and city-level. China will further carry out the Air Action Plan(Action Plan on Prevention and Control of Air Pollution), with the measures of reducing SO₂, NO_x and PM emissions substantially, controlling VOCs pollution, and piloting ammonia emission control.

As it planned, the response mechanism to severe air pollution will be improved. There will be efforts to better operate and manage the Centres of air quality forecast at all levels to make the forecast reliable and timely. Emergency response mechanism will be enhanced by developing technical standards for assessing plans for emergency response to severe pollution, and strengthening inspection on the implementation of the mechanism.

Regional cooperation in preventing and controlling air pollution will be strengthened, especially cooperation within the Beijing-Tianjin-Hebei region and the surrounding areas, the Yangtze River Delta region and the Pearl River Delta region. It will be carried out on a regular basis subject to unified standards, planning, monitoring and control of air quality. Also, China will also implement policies on the management of

vessels in emission control areas (ECAs) in terms of waterbodies of the Pearl River Delta region, Yangtze River Delta region and Bohai Rim (Beijing-Tianjin-Hebei Region).

Detailed speaking, **PM concentrations in the Beijing-Tianjin-Hebei Region** and its surrounding areas is aimed to be lessened significantly. The total coal consumption in Beijing, Tianjin, Hebei, Shandong and Henan will decrease by 10% during the 13th FYP period. A regional monitoring platform for vehicle emissions will be set in place. **The Yangtze River Delta will centre on reducing PM_{2.5} concentration.** During the 13th FYP period, the total coal consumption will be cut by about 5% in Shanghai, Jiangsu, Zhejiang and Anhui. **Air quality in the Pearl River Delta** is expected to meet standards first. The region will make an overall plan for prevention and control of PM_{2.5} and ozone pollution, with coordinated actions to control both VOCs and NO_x pollution simultaneously. The Pearl River Delta region will generally meet national air quality standards and basically eliminate incidents of severe air pollution by 2020.

(2) Upgrade water quality with a target-oriented management system and measures.

An objective-oriented system for water quality management will be developed based on control units. It will define terrestrial control units according to function-oriented zoning and administrative divisions. And the government will establish a three-tier water management system including river basins, aquatic ecology control areas, and aquatic environment control units. The control units mainly polluted by non-point sources or those with severe water shortage should be managed by introducing incentives, strengthening regulation to ensure ecological



flow and improve aquatic environment. From, 2017, all provinces are required to regularly release information to the public on their progress in attaining the water quality objectives of its control units. The Plan has provided a detailed table on Control Units in Need of Improvement of Water Quality in Each River Basin.

The pollution in key river basins will be controlled comprehensively, with the implementation of the Action Plan on Water Pollution Prevention and Control in Key River Basins. According to the Plan, systematic protection would be enhanced in the Yangtze River Basin, Haihe River Basin, Huaihe River Basin, Yellow River Basin, Songhua River Basin, Liaohe River Basin and the Pearl River Basin, as well as the Taihu Lake, Chaohu Lake, Dianchi Lake.

Apart from that, the Plan has proposed to prioritise protection of the waters in good quality, ensuring sustained improvement in drinking water safety; to control and prevent groundwater pollution in a comprehensive approach; to purify turbid or smelly waters in built-up urban area; and to improve ecological environment quality of estuaries and offshore waters.

(3) Tackle soil contamination by category and land use.

First of all, the basic soil pollution survey and monitoring network construction will be advanced with the all-round implementation of the Soil Action Plan. Detailed investigation of soil contamination will be carried out, focusing on agricultural land and the land use of specific industries and enterprises. It will make an overall plan to integrate and optimise the distribution of soil quality monitoring sites across the country. Nation-level soil environment quality

monitoring sites are expected to be set and thus basically forming a national monitoring network by the end of 2017. Full coverage of monitoring sites from nation-level to county-level within every China's city is supposed to be realised by 2020.

Soil environment quality of agricultural land will be managed by category in three pollution-levels. Based on degree of contamination, agricultural land is classified into three categories:

a) Prioritized for Protection, referring to land with no or slight contamination, b) Safe to Use, referring to land with slight or intermediate contamination, and c) Strictly Controlled, referring to land with heavy contamination. Use of agricultural land classified as Strictly Controlled will be under strict control.

To enhance management and control of environmental risks in construction land, it will establish a compulsory soil quality investigation and assessment system for construction land. China will incorporate soil environment management requirements into urban planning and land use management, which emphasises that land use development must meet soil quality requirements. For contaminated sites unsuitable for developed or yet for remediation, local governments shall identify the area boundary and issue public notice. Local authorities should also be responsible for soil environmental monitoring, plus background monitoring on surface water, groundwater and air.

Remediation and control of soil contamination will be accelerated. Targeted on typical contaminated agricultural land or sites in other land use, it will carry out 200 pilot projects on soil contamination control



and trials of remediation technologies. Cities with densely distributed contaminated sites, including those in the Beijing-Tianjin-Hebei region, Yangtze River Delta region, Pearl River Delta region and the industrial bases in northeast China, should carry out pollution control and remediation in a standardised and organised manner. While province-level regions with densely distributed contaminated farmlands should develop plans with regard to farmland control and remediation, and performing as planned by the end of 2018.

Prevention and control of soil contamination will be strengthened in key areas, which include Beijing-Tianjin-Hebei region, the northeast (of agricultural land) and southwest (exploited land with mineral resources) of China, Pearl River Basin, Xiangjiang River basin, and pilot regions in six areas across China.

5.3 Launching special projects on particular sectors and areas for standard-complying discharge and emissions reduction

With up-to-standard discharge as the bottom line and implementation of key projects as the starting point, it is planned to improve the total emissions control system, and facilitate multi-pollutant control and reduction with coordinated actions between urban and rural areas. Increment of emission will be strictly controlled, and stock of pollutants will be sharply reduced to mitigate pressure on the ecological environment.

(1) Implement action plans on up-to-standard discharge from each of industrial pollution sources.

All industrial pollution sources are supposed to conduct self-monitoring and information

disclosure of their pollution discharge. Local authorities at all levels should improve the warning mechanism for excess and abnormal discharge by major pollutant-discharging organisations, and develop an information collecting and opening procedure gradually, which would facilitate public supervision.

By a thorough investigation, a list of below-standard industrial pollution sources would be released. A colour system for environmental credit evaluation will be developed to explore a quantitative management approach where excess discharge by enterprises will be scored. Enterprises failing to meet discharge standards or exceeding discharge limits for major pollutants will be warned with a “yellow card” and restricted or suspended from production. Those that fail to meet requirements after improvement or that seriously violate relevant laws and rules will be given a “red card” and shut down for a given period of time.

A deadline-system for enterprises in key industries to meet discharge standards will be carried out. It will facilitate reform of enterprises to meet discharge requirements in key industries such as steel, cement, petrochemicals, non-ferrous metals, glass, coal-fired boilers, papermaking, printing and dyeing, chemicals, coking, fertilizer, agro-food processing, bulk pharmaceutical chemicals (BPC) manufacturing, leather, pesticides, and electroplating.

In addition, centralised sewage treatment facilities in industrial parks will be improved. Waste water in industrial parks will be collected and disposed separately by category and quality, with a separation system of waste water and rainwater. Demonstration projects will be developed as well.



(2) Further minimise major pollutants discharge.

Reforming and improving the overall emissions control system: it will develop a differentiated management system at all levels which identifies requirements for overall emissions control, with province as the main unit of calculation, counting major reduction projects as the starting point.

Promoting pollution control and emission reduction projects in 10 of key industries: all province-level regions are planned to develop special pollution control projects for ten of key water-related industries, such as paper-making, printing and dyeing, MSG industry and phosphorus chemical industry, so as to cut pollution discharge substantially.

Measures will be adopted to control VOCs emissions in key industries and key areas. It will strictly control VOCs emission in key industries such as petrochemicals, organic chemicals, surface coating, packaging and printing. Provinces with high-level PM_{2.5} and ozone pollution will carry out total VOCs emissions control in relevant industries.

Implementing total emissions control in river basins or regions that exceed its discharge limits on total phosphorus and total nitrogen respectively: control units failing to meet discharge limit on total phosphorus and related upstream regions should control their total phosphorus emissions, while total nitrogen emissions control will be applied in coastal cities at the prefecture level or above and in rivers flowing into eutrophic lakes or reservoirs.

Table 2. Areas under Total Emissions Control based on Regions or River Basins

1. VOCs

VOCs control will be applied in 16 provinces and municipalities with serious PM_{2.5} and ozone pollution, namely Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Anhui, Shandong, Henan, Hubei, Hunan, Guangdong, Chongqing, Sichuan and Shaanxi.

2. Total phosphorus

Total phosphorus control will be applied in the control units exceeding discharge limits of total phosphorus and relevant areas upstream, namely Baodi District in Tianjin, Jixi in Heilongjiang, Qiannan Buyi and Miao Autonomous Prefecture and Qionghongnan Miao and Dong Autonomous Prefecture in Guizhou, Luohe, Hebi, Anyang and Xinxian in Henan, Yichang, Shiyan, Changde, Yiyang and Yueyang in Hubei, Nanchang and Jiujiang in Jiangxi, Fushun in Liaoning, Yibin, Luzhou, Meishan, Leshan, Chengdu and Ziyang in Sichuan, Yuxi in Yunnan.

3. Total nitrogen

Total nitrogen control will be applied in 56 coastal cities or regions at the prefecture level or above, including Dandong, Dalian, Jinzhou, Yingkou, Panjin, Huludao, Qinhuangdao, Tangshan, Cangzhou, Tianjin, Binzhou, Dongying, Weifang, Yantai, Weihai, Qingdao, Rizhao, Lianyungang, Yancheng, Nantong, Shanghai, Hangzhou, Ningbo, Wenzhou, Jiaxing, Shaoxing, Zhoushan, Taizhou, Fuzhou, Pingtan Comprehensive Experimental Zone, Xiamen, Putian, Ningde, Zhangzhou, Quanzhou, Guangzhou, Shenzhen, Zhuhai, Shantou, Jiangmen, Zhanjiang, Maoming, Huizhou, Shanwei, Yangjiang, Dongguan, Zhongshan, Chaozhou, Jieyang, Beihai, Fangchenggang, Qinzhou, Haikou, Sanya, Sansha, and county-level divisions directly under Hainan Province.

Total nitrogen control will be applied in the catchments of 29 eutrophic lakes and reservoirs, including Chaohu Lake and Nanyi Lake in Anhui, Longgang Lake in Anhui and Hubei, Huairou Reservoir in Beijing, Qiaoshui Reservoir in Tianjin, Baiyangdian Lake in Hebei, Songhua Lake in Jilin, Hulun Lake and Ulsu Lake in Inner Mongolia, Nansi Lake in Shandong, Baima Lake, Gaoyou Lake, Hongze Lake, Taihu Lake and Yangcheng Lake in Jiangsu, West Lake in Zhejiang, Dianshan Lake in Shanghai and Jiangsu, Dongting Lake in Hunan, Gaozhou Reservoir and Hedi Reservoir in Guangdong, Luban Reservoir and Qionghai Lake in Sichuan, Dianchi Lake, Qilu Lake, Xingyun Lake and Yilong Lake in Yunnan, Shahu Lake and Xiangshan Lake in Ningxia, and Ebinur Lake in Xinjiang.



(3) Advance infrastructure construction for the sake of environmental protection.

It will strengthen the construction of urban sewage treatment and pipelines, making more efforts to transform pipelines for separating rainwater and clean water from sewage. In environmentally sensitive areas (major lakes, reservoirs and catchments of coastal waters), all urban sewage treatment facilities should meet Grade I-A discharge standard by the end of 2017, while newly-developed sewage treatment facilities, running in built-up urban areas that fail to meet Grade IV standards for surface water, are required to comply with Grade I-A discharge standards as well.

Fully disposing urban waste and ensuring urban waste disposal facilities under stable up-to-standard operation: it will accelerate the construction of garbage treatment facilities in all counties to achieve full coverage of urban waste disposal facilities.

The development of Sponge Cities will be supported. The vision and guidelines for urban planning are aimed to be transformed to protect and restore urban ecology. The design of buildings, residential areas, roads, squares, parks, green space, rainwater storage and drainage facilities needs to take the function of “sponge” into consideration, which will facilitate water infiltration, retention, storage, purification, utilisation and discharge. Water-saving devices must be employed in all public buildings and will be encouraged in urban households.

Increasing the supply and use of clean energy: it will prioritise the grid integration of hydropower and clean energy projects such as wind, solar and biomass energy proposed in the National 13th FYP for Energy Development, and implement government-

subsidised full-price acquisition policy for renewable energy.

Clean coal utilisation will be greatly improved, through stringent quality management of commodity coal, restricting the exploitation and sales of high-sulphur and high-ash coal resources, and promoting coal washing and processing. As it planned, in built-up areas of cities at the prefecture level or above, all small coal-fired boilers with capacity less than 10 t/h will be phased out by 2017, except for those that must be retained for some reasons.

(4) Tackle agricultural pollution and improve rural environment in an integrated approach.

Comprehensively improving the rural environment: promote a group of large-scale improvement on rural environment especially in areas surrounding important water sources. Provincial governments where conditions permit should conduct full-coverage rural environmental improvement. Urban sewage and waste treatment facilities and services will be extended to rural areas, and toilets will be made environmentally friendly in rural areas.

Controlling and preventing pollution from livestock and poultry breeding: it will identify the environmental sensitive or important regions where large-scale livestock or poultry farms are prohibited, and strengthen classified management in different regions. Livestock and poultry breeding waste recycling will be promoted at a county-level. Also, the government will support transformation and construction of large-scale livestock farms (communities) to meet environmental standards.

Fighting against agricultural area-source pollution: agricultural structure and spatial



layout will be optimised, with enhancement of cleaner production technologies. It plans to achieve zero growth in chemical fertilisers and pesticides by 2020, with nationwide fertiliser utilisation rate increased to 40% and recovery rate of agricultural film to 80%.

Straw burning will be banned, and a comprehensive straw utilisation will be promoted. It will establish an implementation and supervision mechanism on comprehensive usage of the straw and putting a ban on straw burning at all levels, which combines incentive and restrictive measures with incentives as the main tool. Straw collection, storage, systematic recycling and commercialisation with the introducing of new technologies are aimed to be generally improved.

5.4 Carrying out overall supervision for environmental risks mitigation and management

According to The Plan, measures will be taken to improve the capacity of prevention and control of environmental risks, and regulate risks in a routine manner. A whole-process and multi-layer system will be developed to guard against risks in advance, well regulate risks during the event, and deal with risks after the event. The regulatory system and capacity building of nuclear and radiation safety will be enhanced to effectively control ecological and background environmental risks so as to safeguard the health and safety of the public.

(1) Improve the system of risk prevention, treatment and emergency response.

It is planned to strengthen risk assessment and applying the prevention and treatment from the source of the risks. First of all,

surveys, monitoring, and risk assessment on environment in relation to health will be carried out.

Second, early-warning on environmental risks associated with heavy air pollution, drinking water sources, toxic and hazardous gases, and nuclear safety, etc. will be strengthened.

Third, better managing the environmental emergency response: the environmental emergency management system that is coordinated across national, provincial, municipal, and county levels will be improved. In addition, the system of investigation, EIA and loss evaluation on environmental emergencies will be enhanced.

Fourth, strengthening the infrastructure and ability in preventing and responding environmental risks: A network of environmental risk monitoring and early-warning will be established and facilitated with information technologies, covering production, transportation, storage, and disposal.

And fifth, the equipment for environmental emergency response are encouraged to be commercialised and public-based. Standards on environmental emergency response capacity will be established.

(2) Step up the treatment and prevention of heavy metal pollution.

As the Plan proposed, the environmental management of key industries will be strengthened. The development of production capacity in heavy metals will be strictly controlled and outdated production capacity will be phased out.

The treatment and prevention of heavy metal pollution in key regions will be enhanced based on the categories of heavy



metal. Integrated control of heavy metal environmental problems in watersheds and regions such as the Xiangjiang River Basin will be speeded up. In addition, the allocation of environmental monitoring sites will be optimised in key regions to support the development of a national monitoring system

for heavy metals by the end of 2018.

Also, the treatment and prevention of mercury pollution will be built up as planned. Mercury emission control in such key industries as coal-fired power plants will be enhanced.

 **Table 3. Pilot Projects for the Treatment and Prevention of Heavy Metal Pollution**

1. Regional integrated prevention and control of heavy metal pollution (16 areas)

Jingjiang of Taizhou City (integrated prevention and control in electroplating industry), Pingyang County of Wenzhou City (industrial park upgrade and integrated prevention and control), Changxing County of Huzhou Prefecture (integrated prevention and control in lead-acid battery industry), Jiyuan City (integrated prevention and control and monitoring of heavy metal pollution), Daye of Huangshi City and its surrounding area (prevention and control of pollution from copper smelting and prevention and control of pollution from past production), Zhubu Port of Xiangtan City and its surrounding areas (prevention and control of pollution from past production), Shuikoushan of Hengyang City and its surrounding area (comprehensive pollution control and industry upgrade), Sanshiliuwan of Chenzhou City and its surrounding area (prevention and control of pollution from past production, monitoring and early-warning of environmental risks), realgar ore region in Shimen County of Changde City (prevention and control of arsenic pollution from past production, and of environmental risk), Jinchengjiang District of Hechi (industrial restructuring and pollution from past production), Xiushan County of Chongqing (comprehensive control of electrolytic manganese industry), Xichang of Liangshan Prefecture (prevention and control of pollution of non-ferrous metal industry and remediation of contaminated site), Wanshan District of Tongren City (comprehensive prevention and control of mercury pollution), Gejiu in Honghe Prefecture (industrial restructuring and prevention and control of pollution from past production), Tongguan County in Weinan (comprehensive pollution prevention and control of non-ferrous metal industry), Jinchuan District of Jinchang City (industrial upgrade and prevention and control of pollution from past production).

2. Integrated management of river basins (8 areas)

Fujiang River basin in Dayu County of Ganzhou City (arsenic pollution), Hongnongjian River basin in Lingbao of Sanmenxia (cadmium and mercury pollution), Lihe River-Nanquan River basin in Zhongxiang of Jingmen City (arsenic pollution), Hengshishui River basin in Dabaoshan mining area of Shaoguan City (cadmium pollution), Diaojiang River basin in Nandan County of Hechi City (arsenic and cadmium pollution), Duliujiang River basin in Dushan County of Qiannan Prefecture (antimony), Bijiang River basin in Lanping County Nujian Prefecture (lead and cadmium pollution) and Yongning River basin in Huixian County of Longnan City (lead and arsenic pollution).

(3) Enhance the disposal of hazardous waste.

Provinces, autonomous regions, and municipalities are required to evaluate the generation, disposal ability of hazardous waste, by which one can work out and implement a plan for establishing facilities to dispose hazardous waste in a concentrated and reliable way.

To control and prevent the environmental risks of hazardous waste, national survey of hazardous waste will be conducted as an starting point. As the Plan indicated, environmental requirements for the control

of secondary pollution from use and disposal of hazardous waste and for comprehensive utilisation process will be identified, and the upper limit on toxic and hazardous substances of the product will be set to facilitate safety use.

The safe disposal of medical waste will be promoted as it planned. The scope of service provided by primary medical waste disposal facilities will be expanded, and a regional coordination and emergency response mechanism will be established.

(4) Build up the capacity for chemical risk

**treatment and prevention.**

First is to assess the environmental and health risks of existing chemicals and its accumulation. Besides, as it planned, chemicals regulated by the Stockholm Convention on Persistent Organic Pollutants such as lindane, perfluorooctane sulfonate (PFOS) and endosulfan will be basically phased out by 2020. And thirdly, the pollution of chemicals with environmental hormones will be strictly controlled, with the survey, supervision, substitution and restriction of chemicals with environmental hormones.

(5) Strengthen management over nuclear and radiation safety.

As a great power of nuclear energy and nuclear technology, it is planned that in the 13th FYP period, nuclear safety regulation system and the capacity building will be strengthened, and rule of law for nuclear safety will be accelerated.

Improving the safety of nuclear facilities and radioactive sources: safe operation of nuclear power plants will be continuously improved, supervision on the quality of nuclear power plants under construction will be enhanced to ensure that new nuclear power plants meet the latest international standards.

The treatment and prevention of radioactive pollution will be upgraded, with regard to the aged nuclear facilities, radioactive waste, uranium mining and associated radioactive ores.

Mechanism for regulating nuclear and radiation safety will be strengthened at various regional scales. A national platform for monitoring, early-warning, and emergency response of nuclear safety will be established to improve the network of national radiation

environment monitoring. Meanwhile, the regulation capacity of nuclear and radiation safety at national, provincial, and municipal levels will be strengthened respectively.

5.5 Strengthening ecological protection and restoration

Following the idea that "mountains, waters, forests and farmlands form a community of shared life", China will put protection first with natural restoration in dominance, promote ecological protection and restoration of key regions and important ecosystems, and build ecological corridors and biodiversity conservation networks to enhance the stability and service functions of various kinds of ecosystems.

(1) Safeguard national ecological security.

To safeguard the nationwide ecological security, efforts will be made in three aspects,

a) protecting the national ecological security in a systematic way, with ecological security shields and major rivers serving as the overall structure, ecological corridors, biodiversity conservation areas, and nature reserves as the main points,

b) building up national-level ecological security shields with "two-shields and three-belts", which represents two regions of Qinghai-Tibet Plateau and Sichuan-Yunnan-Loess Plateau, and three large-scale green belts of the Northeast China Plain, the northern China shelter-belt region, and the southern China hills region,

c) developing a biodiversity conservation network, and implementing the National Strategy and Action Plan on Biodiversity Conservation, as well as the United Nations Decade on Biodiversity.



(2) Manage and protect key ecological regions.

It is planned to implement the protection focusing on three types of ecological area, including the key ecological functional areas at the national level, the nature reserves, and a group of national parks that may comprise various protected areas.

(3) Protect important ecosystems.

According to the Plan, it will firstly improve natural forest protection system and strengthen the protection and nurture of natural forests. Besides, it will enhance the quality of forests in a well targeted way, putting equal emphasis on the quantity and quality of the forest with quality as the prime concern.

Meanwhile, grassland ecosystem will be conserved, by employing measures in strictly regulating the use of grassland, developing teams for grassland management, and cracking down illegal activities that damage grassland.

In addition, it will endeavour to protect wetland systems, including efforts in restoring ecological functions, expanding the total area of wetlands, and improving the management capacity in wetland protection. Trial projects on eco-compensation for wetland will be conducted as well.

(4) Enhance the environmental functions of ecosystem.

Aimed at enhancing the ecosystem functions, the Plan has proposed actions in five different fields, a) carrying out a large-scale greening campaign in order to develop shelter forests for farmland and promote coordinated green network of mountains, plains, rivers and lakes, cities and villages,

b) extending the scope and scale of a new round of “grain for green”, c) strengthening the development of shelter-forest systems in such regions as the Three-North (the northern China, north-eastern China and north-western China) areas, the Yangtze River basin and Pearl River basin, Taihang Mountains and coastal areas, d) developing reserve forests in different category based on the geographic background, and e) promoting widely engagement in nationwide greening and fostering new greening mechanisms, which involves specialised cooperative organisations, enterprises, social organisations and individuals participation in forest conservation and afforestation.

(5) Restore ecologically degraded areas.

Concerning various sorts of ecologically degraded areas, it aims to achieve the ecological restoration through dealing with water and soil erosion at a regional scale, promoting the control of desertification and stony desertification, as well as restoring the ecology and environment of mining area.

(6) Expand the supply of ecological products.

To provide the public with more ecological products and recreation, it will dedicate to developing green industries, building a comprehensive public service network in terms of ecological recreations, enhancing the protection and management of scenic spots and the world heritages, protecting urban natural ecosystems and restoring city greens.

(7) Conserve biodiversity and control bio-safety risks.

As it planned, it will devote to a) carrying out biodiversity background survey and observation, acquiring basic information on the biodiversity situation of all specified



priority regions by 2020, b) rescuing and protecting endangered wildlife, c) conserving specific biological and genetic resources, d) enhancing the regulation of wildlife import and export and e) guarding against biosafety risks as well.

5.6 Speeding up institutional innovation to modernise environmental governance system and capacity

As The Plan introduced, it will take a holistic approach to push forward a sound environmental governance system, which consists of a range of mechanisms involving the local authorities at all levels, the enterprises, and the civil society.

(1) Put in place a sound legal framework.

To push forward environmental protection and governance under the rule of law, the Plan proposes that a sound legal framework, concerning resources, environmental protection, ecological compensation and nature reserves et cetera, will be put in place. And the supervision of environmental law/regulations enforcement will be strengthened, through regional cooperation and collaboration with different departments. In addition, a firm link connecting administrative law enforcement with environmental justice will be reinforced. The environmental authorities are planned to enhance its communication and coordination with other authorities, especially the department of public security, the people's procuratorate and the people's courts.

(2) Improve market mechanism.

To upgrade the market mechanism for environmental protection, it is planned

that a) the emission trading system will be carried forward, b) financial and tax policies, especially the Environmental tax and the Resources tax, will play a guiding role in eco-environmental and resources protection, c) pricing mechanism will be further reformed to make prices of resources and the environment fully reflect the market supply and demand, the scarcity, the damage costs, and the remediation benefits etc. of the eco-environment, d) businesses and market-based way in environmental management will be further encouraged, e) a Green Finance system will be established, and f) a diversified eco-compensation mechanism will be pushed ahead, with compensation measures based on fund, policy, industry, and technology, and on regional cooperation as well.

(3) Ensure local authorities fulfil their due responsibilities.

As the Plan indicates, it will endeavour in ensuring the governments at all levels performing environmental protection duties as defined; Advancing governance mechanism and institutional reform on environmental protection; Promoting Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) on all development plans according to the scale; Formulating a sound mechanism for balance sheets of natural resource assets step by step, and coming up with major approaches for assessing and accounting natural resource assets at a national level; Establishing monitoring and early-warning mechanism for resource and environmental carrying capacity; Assessing and examining the performance in promoting ecological civilisation; Continuing with environmental protection inspection; and Establishing a lifelong accountability system for ecological



and environmental damages, applying to the officers of state.

(4) Strengthen the regulation of enterprises.

Concerning the regulation of enterprises, firstly it is planned to establish a business emission permit system covering all stationary pollution sources, and secondly is to ensure enterprises achieve environmental responsibility through “sticks and carrots”, rewarding enterprises that are energy efficiency and environmental-friendly and meantime punishing those failing to fulfil the obligation. In addition, efforts will be made on implementing and upgrading the assessment and compensation system on ecological environment damage.

(5) Mobilise public participation and social action in environmental protection.

First of all, it is aiming for raising public awareness of environmental protection. Efforts will be made in various areas. For example, a national environmental education platform will be set up to guide a shift towards green, simple and low-carbon lifestyle.

Secondly, it will advocate green consumption that covers all basic life necessities, including energy conservation, green building and green construction, public transit system and so on.

Thirdly, it is aimed for strengthening information disclosure, information

concerning ecological environment, pollutants emitters and EIA of construction projects are required to be easily accessible to the public.

And fourthly, it will reinforce public participation in environmental management and decision-making process by establishing effective channels and appropriate mechanisms. Also, public supervision of government performance in environmental protection and of enterprises in terms of pollution discharge will be encouraged.

(6) Build up governance capacity.

As the Plan indicated, endeavours will be made in a) improving eco-environmental monitoring network, b) building up capacity in environmental regulation and law enforcement, c) and upgrading the construction of environmental protection information systems.

Specifically, based on a comprehensive and national level planning, the distribution of sites on environment quality monitoring shall be further optimised. The Plan has also provided a detailed action programme of developing national monitoring network on ecological environment. Environmental management capacity will be enhanced through pushing forward grid management in exercising environmental regulation, optimising the allocation of regulatory forces and extending regulatory services to rural areas.

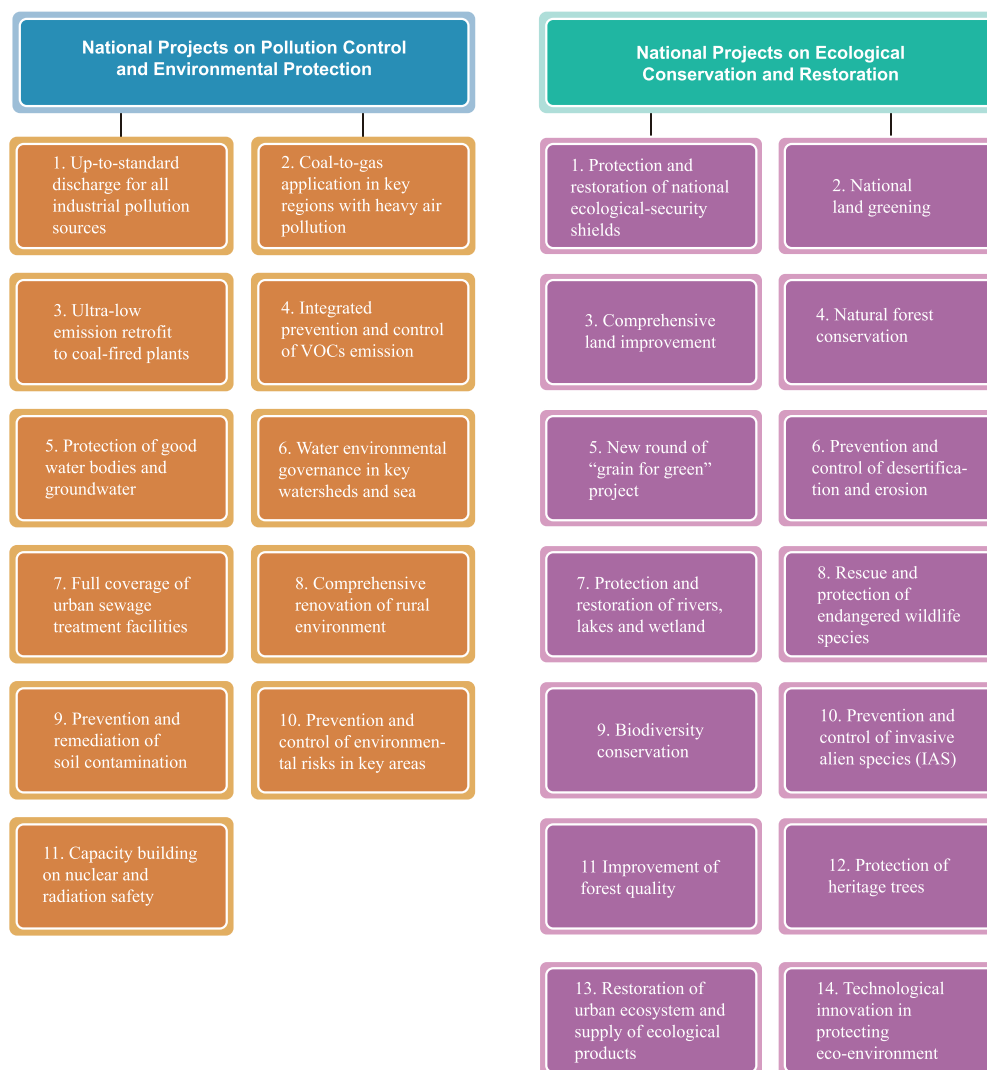


6. NATIONAL ACTION PROJECTS ON PROTECTING THE ECOLOGICAL ENVIRONMENT

During the 13th FYP period, China is expected to roll out up to 25 key projects to bring emissions from all industrial pollution sources in line with the set standards, these projects are mainly funded by enterprises and local governments, and partly supported by the central budget. As The Plan indicated, it will define respective powers and responsibilities of the central and local

governments, in accordance with the principle of matching powers of government authority with its expenditure responsibilities. In an effort to widely promote third party treatment and public-private partnerships (PPPs), it will also actively encourage more investment from market-oriented environmental fund by private capital.

■ Figure 2. 25 National Action Projects on Protecting the Eco-Environment





7. THE IMPLEMENTATION AND DELIVERING OF THE PLAN

(1) Clarify responsibilities and tasks.

Local authorities are the main body responsible for implementing the Plan, who should integrate the objectives, tasks, measures and major projects on protection of ecological environment into regional economic and social development plan. The relevant authorities should perform respective duties, closely cooperate in refining systems and mechanisms, strengthen funding support, and thoroughly implement the Plan. The MEP will report to the State Council on major progress in environmental protection annually.

(2) Increase financial input and channels.

As it planned, the government will accelerate the establishment of financial management system to meet the needs of environmental protection. Funds for ecological conservation and restoration must be further integrated in response to addressing pollution and improving environment in mountains, waters, forests and farmlands in a systematic way. Refine user-pay system to support business projects on environmental protection. Also, it will actively explore appropriate ways to compensate the input in pollution control projects and private investment to attract private investment in quasi-public and public welfare environmental protection projects.

(3) Expand international cooperation.

The government will actively engage in developing global environmental governance rules, and in negotiating environment-related international conventions and trade agreements; assume its international

responsibilities as a large developing country and implement international conventions. China will establish and refine the mechanism of communication and cooperation globally and push forward dialogues and exchanges on advanced environmental protection visions, management systems and policies as well as environmental industries and technologies to upgrade China's internationalisation level in terms of environmental protection.

(4) Push ahead pilot and demonstration projects.

Develop national pilot zones for ecological conservation. Aiming at improving environmental quality and promoting green development, it is planned to establish a number of national pilot zones for ecological conservation, and actively promote "Green Cells" projects.

Demonstration projects play a guiding role. China will develop demonstration zones on ecological civilization, promote normalization and institutionalization level and pay attention to regional balance. There would be follow-up supervision and management, as well as performance evaluation and experience review, to develop a replicable model that could be promoted and applied on a wider scope.

Promote policy demonstration projects.

As the Plan indicated, it will carry out pilot projects on comprehensive reform and innovation for rural environmental protection system in which the attainment and non-attainment areas will be subject to pollution source supervision and discharge permit management; Implement pilot



projects on environmental auditing, damage compensation & services and government procurement of services.

(5) Examine and evaluate progress and performance with strict standards.

The MEP in cooperation with relevant departments will conduct regular investigations on the performance of regions.

Based on all these performance review and evaluation, there will be a mid-term evaluation and final performance review respectively. The results will be reported to the State Council and the public, and taken as an important gauge when evaluating the performances of local leadership as well as relevant officials.





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