

China Association of Environmental Protection Industry (CAEPI)

Opinions about the development of the environmental protection industry
during the 12th Five-Year Plan period

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I. Development Status and Future Trends of China's Environmental Protection Industry.

A. Development Status of China's Environmental Protection Industry

The environmental protection industry has already reached large proportions. In the 30 years of the development of China's environmental protection industry, vast advances have been made. From its preliminary goals of "Treatment of Three Wastes" (systematic treatment of flue gas, wastewater, and waste residues, with respect to industrial emissions), the environmental protection industry has developed into a production system composed of diverse fields including environmental products, environmental infrastructure construction, environmental services, environmentally-friendly products, and resource cycling. With the ever increasing national capacity for environmental protection and continuous improvements in environmental protection industries policies, the environmental industry has been able to develop rapidly while its encompassed fields continue to broaden. The industry's structure, technologies, and product structure are also constantly upgrading, while the services industry development increases. All these advancements are able to make contributions to environmental protection and emissions reduction. According to estimates, there are currently 35,000 environmental protection industry enterprises in China, employing over 3 million people, and the gross income is close to 1 trillion RMB (153 billion USD).

There have been major technological advancements in the industry. Since the realization of measures in the 10th Five Year Plan (FYP) and the 11th FYP, a new wave of intellectual property rights for domestic-made technologies have been accomplished through adopting and improving existing technologies from abroad. These domestic technologies have also been widely applied in environmental contamination remediation projects. Large-scale coal-fired boiler flue gas desulfurization equipment has been industrialized. water treatment equipment has been integrated, drug production methods are constantly improving, product quality is steadily advancing, membrane technology has improved in its ability to treat difficult

industrial wastewater, municipal waste treatment and reclamation have been equipped with a basis of industrialized technology, and incineration equipment set technologies for municipal waste, medical waste and hazardous waste are becoming more mature. The comprehensive utilization of physical, chemical, biological, electronic, optic advanced technologies are able to promote the multi-functionality and integration of environmental monitoring, as well as process intelligence and network adaptation. Environmental services, environmentally-friendly products, and clean production technologies all experienced rapid development.

A number of key environmental protection enterprises having strong technological innovation capacities made names for themselves through successful competitive within the market. As the effects of economic reform penetrate deeper into society, a diverse host of environmental protection enterprises have been able to develop into strong companies with the support of national environmental protection legislation. Technology research and development, planning and design, engineering construction, and combined operations and maintenance technologies sprang up in fields such as municipal and industrial wastewater treatment, dust removal and desulfurization, municipal and hazardous waste disposal, and noise and vibration control. Large companies that were able to provide systematic services became the leading drivers of development in China's environmental protection industry.

At the same time, we should be conscious that there is still a gap between the current level of the environmental protection industry and the requirements necessitated by the 12th FYP and longer term environmental protection work. The environmental protection industry market supervision has not yet been effectively adopted into environmental management, the system for industry development encouragement and constraints should be improved, enterprise-centered environmental technology innovation system construction is lagging, new technology demonstration and promotion channels are not available, and development of the environmental services industry has been relatively slow. Generally speaking, the state of dispersed, weaker industries has not yet experienced a fundamental turnaround.

B. Future Trends

Currently the Party Central Committee and the State Council are placing much emphasis on the environmental protection industry. On October 10, 2010, the State Council released "Decision on the accelerated fostering and development of strategic emerging industries" (Document Number (2010) No. 32), naming the environmental protection industry as of the strategic emerging industries identified for accelerated nurture and development. Recently, China also released the 12th FYP energy conservation environmental protection industry plan to further promote the environmental protection industry as a new economic growth point.

During the 12th FYP period, as China continues to advance emission reduction of

chemical oxygen demand (COD) and sulfur dioxide (SO₂), it will also add ammonia nitrogen (NH₃-N) and nitric oxide (NO_x) reduction indices and control special contaminants such as total nitrogen (TN), total phosphorous (TP), and heavy metals in some specified regions. The promotion of comprehensive prevention and remediation of key water basin contamination will be continued, and work will be continued toward the air quality problems such as regional and urban atmospheric particulate matter and non-standard complying ozone concentrations to advance the improvement of regional, urban and rural ecological environments. Full control of industrial contamination will be actively carried out, nuclear and radiation safety will be actively guaranteed, and efforts will be put forth to resolve the environmental safety problems including hazardous wastes, persistent organic pollutants (POPs), and hazardous chemicals.

During the period of the 12th FYP, it is estimated that an additional 90 million tons/day of wastewater in cities and towns will be treated, and that existing wastewater treatment plants will be retrofitted to add an additional treatment capacity of 50 million tons of water/day. 200,000 kilometers of piping will be added to the network, and water scarce areas will reach wastewater reuse rate of 20%. An estimated additional 47,000 tons/day of sludge will be treated, and the detoxification and disposal rate for sludge will reach 10%. Through restructuring and the raising of emissions standards, industrial wastewater treatment will result in a reduction of over 1.5 million tons of COD and over 20,000 tons of ammonia nitrogen.

Comprehensive strengthening of industrial soot and dust control will further raise the efficiency of dust reduction. An estimated additional 180 million kW of desulfurization units will fully desulfurize emissions from coal-fired power plants, equivalent to over 70% of coal-fired power plants being equipped with desulfurization units. The 700 million kW of coal-fired power plants in the power sector will be put into force with low nitrogen retrofitting, and new, expanded, and retrofitted coal-fired power plants with flue gas denitrification technology will reach 180 million kW. About 100 sets of desulfurization sintering machines will be constructed in the steel industry.

Automobile exhaust pollution prevention and control will completely implement the China IV automobile emissions standard, shaping the automobile emission reduction-centered urban NO_x prevention and treatment system.

The not less than 80% of municipal domestic waste will be safely disposed of and additional landfills will add a capacity of 250,000 tons/day, while the waste incineration capacity will gain 150,000 tons/day. Industrial solid waste comprehensive utilization will reach 70% and hazardous waste standard-compliant disposal will reach 90%. Large and medium-sized cities will implement a basic level of safe disposal of medical waste.

The national environmental quality monitoring network will be improved and the range of environmental monitoring indices will be expanded. Emergency monitoring, and prediction and warning capacities will be improved, in addition to the continued construction of contamination emission reduction and the greenhouse gas emissions monitoring system.

During the 12th FYP period, the national and local governments will further increase environmental protection investment, hastening the fulfillment of the needs of the huge environmental protection market. It is predicted that the environmental protection industry will maintain a development rate of over 15%, and that by 2015, the production output of the environmental protection industry will reach 22 trillion RMB (3.3 trillion USD), of which production output of environmental contamination remediation will be between 800 billion- 1 trillion RMB (123 billion-153 billion USD).

This period of time is an important phase of strategic opportunity of the development of China's environmental protection industry. We must further strengthen our sense of responsibility, our sense of calling and our sense of immediacy, taking the initiative to acclimatize to the demands of China's environmental protection and economic society's development. Through scientific planning, consideration of multiple key issues, comprehensive advancement, we can create new prospects for the development of China's environmental protection industry.

II. Guiding Thoughts and Basic Outline

A. Guiding Thoughts

The shaping of the 12th FYP environmental protection industry development should take Deng Xiaoping Theory and the "Three Represents" ideology (*三个代表 The Three Represents ideology was introduced by former President of China Jiang Zemin in 2000, stating that the Party "must always represent the requirements of China's advanced productive forces, the orientation of the development of China's advanced culture, and the fundamental interests of the overwhelming majority of the people in China.") as important guiding thoughts, to totally carry out the Scientific Outlook on Development (*科学发展观). The work associated with environmental protection in the 12th FYP takes pollution prevention and treatment as its principle aim and designates the promotion of the advancement of environmental protection industry technologies as the major areas for additional improvement efforts. Efforts will be placed on the promotion of research and development, demonstration, and popularization of technologies and equipment in key industries. Support will be given for acceleration of innovation in emerging enterprises, further amplifying these industries' services functionalities. The construction of guiding policies and the market supervision system will be enhanced, eliminating the bottleneck effect that is a restrictive barrier to the industries' healthy development. In this way, the environmental protection industry will be able to continue positive and rapid growth,

providing strong support for sustainable development of an economic society and environmental protection.

B. Basic Outline

1. Maintain the key tasks for national environmental protection and the policies guiding market demands. Center on work associated with energy conservation and emissions reduction. Taking pollution prevention and treatment technologies and equipment and the environmental service sector as the core goals, comprehensively improve the capacity for the environmental service sector and environmental protection work.
2. Make efforts to promote the advancement of contamination prevention and remediation technologies. Close incorporation of energy conservation, emission reduction, green manufacturing, and circular economy development demands should be considered to address the strategy of systemic engineered technologies and key technical equipment promotion. The conventional environmental protection industry should be retrofitted with the latest and most advanced technologies.
3. Emphasized support for enterprise innovation. Enterprises are the main players for innovation in the market-driven economy. Encouragement of enterprises to take initiative in innovation will promote the establishment of an innovation system for the integration of research, development, and application. The goal is to encourage competition in key industries leading to domestic technology patents, increasing competitiveness of all enterprises.
4. Support key environmental protection enterprises. Key enterprises are the stabilizing force of the development of the industry. Enterprises exhibiting integrity, expertise and strong, effective technological innovation are able to center the industry and drive ordered competition. Support will be given to engineering construction and the service sector enterprises through concordant resources, encouraging expansion and then strengthening (做大做强)。Enterprises will be encouraged to develop with specialization, detail, professionalism and precision to nurture excellence within their fields.
5. Work hard to organize the demonstration and promotion of advanced technologies. Demonstration and promotion are important means of accelerated environmental protection technology transfer. For sectors with a large number of high-polluting enterprises sharing similar technologies, a strategy of systemization of contamination control technology, coupled with demonstration and popularization should be organized. Systemization will accelerate the transfer of new techniques, allowing the entire sector to control contaminant emissions.

III. Key Tasks

In accordance with the 12th FYP's environmental protection goals and main objectives, and specifically addressing the challenge of the existing pollution prevention and

remediation technology bottleneck, importance is placed on selection, assessment, demonstration, and promotion of applicable technologies and products during the 12th FYP period. The key related tasks are outlined below.

A. Water Pollution Prevention and Treatment

During the 12th FYP period, China will continue in the spirit of past reduction of COD emissions to strengthen the control and reduction of ammonia, total nitrogen and total phosphorous emissions.

Emphasis is placed on water pollution prevention and remediation, cities' and towns' domestic wastewater and industrial wastewater. In addition, rural areas' domestic wastewater treatment and regional lakes' contamination prevention and remediation will also be strengthened.

1. City and Town domestic wastewater treatment

(1) Promote upgrades and modifications to cities' and towns' municipal wastewater treatment plants.

1) Optimize conventional municipal wastewater treatment plant techniques and processes to improve removal of phosphorous and nitrogen.

2) Reduce energy consumption of wastewater treatment plant energy consumption. This can be done through development and extension of sewer networks, with integrated front-end consideration of the networks' capacities and the quality of the wastewater techniques, high functionality blowers and aerators to control the overall processes, and optimized control over wastewater transfer, aeration and sludge return.

3) Advanced technologies, such as membrane bioreactor (MBR) technology should be used to enhance urban municipal wastewater, accelerating the promotion of highly-treated wastewater resource reutilization.

4) Adjust measures to meet local conditions, demonstrating and promoting integration of centralized and dispersed pattern municipal wastewater treatment options to aid in the functionality of reclaimed wastewater.

(2) Improve domestic wastewater treatment in villages and towns. Accelerate the demonstration of applied technologies including MBR technology, biomembrane reactors, and biological-ecological integrated processes in economically developed towns and villages and in key water basins, regions and towns and villages of economically developed areas, demonstrate integrate MBR technology

(3) Promote high-efficiency energy saving equipment for wastewater treatment. Promote newest high-efficiency technologies such as aeration equipment, screens, non-clogging wastewater pumps, sludge removers, sludge dehydrators, variable frequency motors, biomembrane fill.

(4) Increase development and application of wastewater treatment sludge disposal technology. Demonstrate and promote high-efficiency techniques for sludge dehydration, sludge drying, granulation, and incineration. Techniques including sludge methane power generation, and odor and bacteria removal and heavy metal

stabilization in sludge, can increase the proper disposal of sludge and its use as a resource.

2. Industrial wastewater treatment

(1) Use new advanced technologies to treat difficult industrial effluent.

An integrated strategy of “Clean production+ end treatment+ reuse” will be promoted in key industries (the printing, metal plating, paper making, alcohol, leather, coking, pharmaceutical, and food industries), which have high concentrations of biodegradation-resistant organic contaminants, ammonia and total nitrogen contaminants, sulfides, and salts. Emphasis will be placed on the development, demonstration, and promotion of highly efficient integrated membrane technology, electrocoagulation, advanced oxidation/reduction technologies, highly efficient decoloring flocculants and bioflocculants, new biological nitrogen and phosphorous removal techniques, and various kinds of optimized combinatory processes. By building different industries’, different processes, and different scales of wastewater demonstration projects, improved treatment methods and technologies and reutilization of treated water will be promoted.

(2) Improve heavy metal wastewater treatment technology. Strictly control environmental contamination from mercury (Hg), chromium (Cr), cadmium (Cd), lead (Pb), and arsenic (As). Develop, demonstrate and promote technologies that reliably enable effluent to meet standards and for reuse of resources to occur. The safe detoxification and disposal of heavy metal-containing sludge will also be promoted.

(3) Promote “Zero Emissions” technology for industrial wastewater. The reutilization of water that has passed through advanced treatment will be promoted. Demonstrations should be carried out for clean production techniques, membrane technology, and resource recycling techniques in industries including printing wiring boards and nitrogenous fertilizers. These will serve as example treatment processes for “zero emissions” for industrial wastewater.

3. River and Lake Ecosystem Remediation

Water quality improvement techniques for water bodies used in urban landscapes will be demonstrated and promoted. Improvements should be made for techniques and materials used in sediment ecological dredging equipment and the sediment matrix.

B. Air Pollution Prevention and Treatment

In the 12th FYP period, emphasis will be placed on regional air pollution prevention and treatment, urban air pollution, and key industrial contamination control. Comprehensive control of diverse contaminants will be advanced, strengthening prevention and remediation technologies and demonstration programs for sulfur dioxide, NO_x, particulate matter and volatile organic contaminants.

1. Desulfurization

(1) Perfect the limestone-gypsum method for desulfurization.

Develop associated technologies including 600 MW+ capacity limestone-gypsum

units for large-scale, medium speed wet mills, nozzles, adsorption tower interior sprays, cyclical pumps, large scale oxidation fans, heat transformer systems, high-efficiency demisters, and online supervision and automated control systems. These technologies should be produced in China. Desulfurization gypsum and the reclamation of desulfurization wastewater should be researched and developed.

(2) Accelerate development of productivity flue gas desulfurization technology

Accelerate the selection and evaluation of productivity flue gas desulfurization technology and optimize the related techniques to desulfurization processes. Technologies for the comprehensive utilization of desulfurization by-products should be researched and developed, and project demonstration applications should be launched.

(3) Promote development of diverse desulfurization techniques. In areas that are able, the ammonia method and biological methods for desulfurization techniques should be promoted. Sulfur dioxide in conjunction with other contaminant control techniques, and resource recycling and desulfurization techniques in regions with high sulfur content coal power plants should be developed.

2. Denitrification

(1) Demonstrate and promote denitrification technologies for the thermal power industry. Promote denitrification project technology and application. Build Selective Catalytic Reduction (SCR) demonstration projects which utilize domestically produced catalysts, support domestic titanium dioxide (TiO₂) carrier production to realize the Chinese production of nanometer-level titanium needed for SCR technology.

(2) Develop other industrial denitrification technologies, including in the industrial boilers and cement industries.

3. Dust

During the 12th FYP period, emphasis will be placed on high efficiency dust removal equipment and reducing energy consumption.

(1) Electric precipitators

Continue to strengthen high specific resistance, high temperature, high dust concentration, effective particle aggregation technologies development. Through appropriate selection of existing technologies combined with new technology development, existing precipitators will be retrofitted to meet national soot discharge standards and reduce energy consumption.

Mechanical: Develop and promote mobile electrode electric precipitators, flue gas conditioning systems and electrocoagulation technologies.

Power supply: Develop and promote high-frequency and mid-frequency power supplies, and three-phase supply high-efficiency power supply technology and auto-control systems. Further improve the stability and reliability of the power supply system.

System Optimization: Optimize the combination of mechanics and power supply of the electric precipitators. Strengthen process operation of electric precipitators and

accelerate its stable operation and comprehensive techniques.

Launch high-efficiency electric-bag composite dust collector demonstration projects.

(2) Bag-type Dust Collectors

Further development and expansion of the bag-type dust collector industry will advance this technology's application in various fields and its level of operational and maintenance techniques.

Main unit: will utilize computer modeling design to develop low-resistance, high-efficiency, appropriate air flow distribution, safe functionality and quick loading large-scale units. Dust collectors for the removal of particle smaller than PM 10 will be developed and research for PM 2.5 removal will commence.

Fibers and filter material: Emphasis will be placed on domestic production of strong, heat-resistant, wet-resistant, non-corroding fibers and support will be given for the industrial manufacture and application of Chinese-produced PTFE, P84, PPS and aramid fiber. The production and application of domestically-produced high-efficiency, low resistance long-lived filter materials will be promoted. Proficiency in fiber modification and compound filter materials technology should be increased, in addition to the improvement of bag-type dust collector techniques. Research will be carried out for the recycling and comprehensive reutilization of failed filter bags .

Accessories: Research and develop high-efficiency dust cleaning technology, heavy caliber pulse valves, diaphragm-less, high pressure, low-energy pulse valves, and promote the automated control of bag-type dust collector systems.

4. Automobile tailpipe emissions contamination prevention and remediation

During the 12th FYP period, gasoline and diesel vehicles will all meet China IV emissions standards and motorcycles will meet the requirements of the China III standard. Emphasis will be placed on developing and promoting high efficiency catalytic converters for tailpipe emissions. Emphasis will also be placed on adjusting and advancing drive-by-wire refinement for gasoline vehicles during the China IV phase. Diesel vehicles during the China IV phase will undergo refinement of drive-by-wire technology and will improve functionality of catalytic converters. Diesel vehicles during the China IV phase will also continue to be fitted with after-treatment equipment. Motorcycles in the China III phase will gradually achieve electronic control and catalytic converter fitting.

5. Organic exhaust gas remediation

During the 12th FYP period, emphasis will be placed on industries with high emissions of volatile organic contaminants, including the petroleum, leather, lacquering, printing, electronics, furniture and textile dry cleaning industries. Technology will be developed for screening VOCs and foul-smells to improve the manufacture and design of unit cleaning equipment, process optimization and system integration. High-efficiency adsorption materials, catalytic materials, filter materials, and biological purification bacteria strains will be developed. Simultaneously, gasoline station contamination remediation and recycling will be promoted.

C. Solid Waste Treatment and Disposal

During the 12th FYP period, the country will improve waste treatment, further strengthening the percentage of urban waste treatment and safe disposal, and operation and management of domestic waste landfills and leachate emissions control. Rural solid waste treatment and disposal will be promoted and the centralized detoxification and safe disposal of hazardous waste and medical waste will be promoted, improving the level of solid waste disposal and treatment.

1. Domestic Waste Treatment and Disposal

(1) Promote domestic waste incineration and electricity generation technology

Waste separation and pre-treatment techniques and equipment will be promoted. Development of large-scale waste incineration facilities and conversion to electricity production systems will improve the level of waste incineration power generation and residual heat utilization. Key technologies for the purification of acidic gases produced by waste incineration, dioxin control and removal technologies and fly ash treatment and solidification equipment will be researched. Standardization, programming, and serialization of large-scale waste incineration power generation systems will be promoted.

(2) Develop garbage leachate treatment techniques and equipment

Economical and reliable leachate treatment processes will be developed, and advanced technologies, including membrane technology, will be promoted to treat leachate.

2. Hazardous waste and medical waste treatment and disposal

(1) According to the requirements of the State Council's dissemination of the "National Hazardous Waste and Medical Waste Treatment and Disposal Facilities Construction Plan", hazardous waste and medical waste treatment and disposal techniques will be promoted. This will be accomplished through promotion of hazardous and medical waste comprehensive planning construction in a unified, centralized mode. For a treatment volume of over 10 tons/day of hazardous and medical waste, it is suggested that rotary kiln incineration disposal technology be utilized. For a treatment volume of less than 10 tons/day, microwave and high temperature steam sterilization techniques are recommended. Incineration disposal emissions gases will be strictly regulated according to code requirements to ensure that all emissions gases meet standards.

(2) Demonstrate and promote adoption of standardized disposal techniques for electronic waste, discarded household appliances, used batteries and bulbs

Techniques for the reuse and recycling of electronic, household appliance, battery and bulb waste will be promoted along with the reuse and recycling of printed circuit boards, undamaged circuit board negative pressure treatment systems, automated

disassembly and reuse of household appliances and recycling of waste nickel-cadmium, nickel-hydrogen, plumbic acid and lithium ion batteries.

3. Industrial solid waste treatment and disposal

Comprehensive, advanced reutilization of slag, red mud, heavy metal tailings, gangue, and fly ash will be promoted. Valued heavy metals will be reclaimed, and industrial slag should be utilized to produce high value-added, pollution-free green building materials. Waste tires should either be refurbished, or make use of rubber powder production technology. Waste plastic will make use of pollution-free recycling technology.

4. Rural Solid Waste Treatment and Disposal

Biofermentation technology and zero-discharge pig husbandry techniques will be promoted.

D. Noise and Vibration Control

1. General noise control equipment and engineering services

The serialization and standardization of general noise control equipment will be developed. Products relating to the improved automation and integration of vibration control, including mufflers and vibration isolators for automobiles, mechanical equipment, and elevators, will be improved. Ultra-fine acoustic materials and associated products will be demonstrated and promoted.

2. Traffic Noise Pollution

New and improved technology sound barrier design, manufacture and installation for highway, railroad, high-speed rail will be standardized, serialized and scaled. Focus will be placed on technologies for street side buildings, including noise reduction ventilation windows and engineering services for noise reduction.

3. Urban rail transport noise and vibration control

The high-efficiency vibration barrier and traffic noise pollution control in sensitive areas of the urban sound environment will be strengthened. Efforts will be made to promote domestic production of damping slab track vibration isolation technology. Research and development for adaptation in various types of rail vibration isolators will be optimized, especially the applications of reliable technologies able to reduce corrugation and vibration of the rail.

E. Environmental Monitoring

Focus will be placed on strengthening the research and development of core technologies, improving the technology of products and increasing China's capacity to produce these products. Functionality should be diversified and the indices and scope of environmental monitoring should be expanded, continuing to increase

China's environmental monitoring requirements to include more greenhouse gases, soil, solid waste, biological, and ecological areas

1. Contamination source online automatic monitoring

Develop online automatic monitoring equipment for atmospheric NO_x, mercury, and VOCs and for wastewater ammonia and heavy metals.

2. Environmental quality online automatic monitoring

Develop automatic monitoring equipment for organic contaminants and heavy metals in wastewater, and ozone, PM 2.5, persistent organic pollutants (POPs), and greenhouse gases in the atmosphere.

3. Emergency Monitoring

Develop mobile onsite monitoring instruments and monitoring cars for all contaminants for emergency use.

F. Environmental Services Industry

During the 12th FYP period, improvement of specialization of contamination remediation and community-based operation have been designated as key areas; emphasis will be placed on the development of the environmental services sector.

1. Promote the establishment and business of contamination remediation specialists. Adopt centralized, local, contamination remediation methods in every industrial area, development area, and emissions enterprise, promoting community-based, specialized operations. For monitored fields including wastewater and solid waste treatment, flue gas desulfurization and denitrification, hazardous material disposal and key contamination sources, a wave of specialized operations should be demonstrated.

2. The marketization of service fields including development of environmental technology, environmental engineering design, construction and operation, environmental consulting, environmental management system certification, environmental testing, and trainings, will be promoted.

3. Research on the environmental services industry will be greatly developed and the industry's healthy development will be promoted.

IV. Main Measures

1. Research the environmental industry's developmental constraints, and make policy suggestions to relevant governmental agencies on the acceleration of the environmental industry's development. Starting from environmental management, which includes environmental policy, laws and regulations, planning, standards,

environmental assessment and the “three simultaneous check and acceptance report”, research specific measures to accelerate the development of the environmental industry, and report to environmental protection agencies.

2. Suggest the construction of a specialized fund for environmental industry technological accomplishments transfer. Through the specialized fund, accelerate the promotion of technical transfer of advanced technologies and the marketization of new technology.

3. Accelerate the China’s capacity in the environmental industry, its standardization, and modernization of the industry’s systemic construction. Encourage enterprises’ innovation through absorbing and adapting international techniques to the Chinese national situation. Grasp core and key technologies, improving China’s capacity to produce the important environmental equipment. Encourage enterprises to actively participate in the formulation of standards for environmental products and criteria for project technique, improving the quality of environmental products and the level of standards.

4. Organize and support the environmental industry’s technological innovation alliance, accelerating the development and domestic production of new technologies. With environmental protection enterprises as the main players, the market demands for contamination remediation as the directive, and demonstrative projects as the links, promote the effective integration of research and application, taking the production chain and industrial factors, organize engineering companies, research institutes, equipment manufacture and instrument production enterprises together to form an environmental industry technological innovation alliance. This alliance will also serve as a multichannel means for policy and funding support that will be able to open common key technologies and research and development for new equipment, promoting complete and integrated development of environmental technology.

5. Strengthen the selection and promotion of demonstration projects for new advanced technology application. Raise the standards for selection, demonstrate and promote technologies that will be able to set the industry in motion toward advancement to create key independent patents and technological accomplishments, promoting the practical application of contamination prevention and control technologies.

6. Expand the scope of certification of environmental products and raise the quality of the certification. Increase support of certification, and further strengthen the work for the creation of the green star certification, promoting the development of environmentally friendly products.

7. Seriously regulate the market for environmental products. Strengthen self-discipline, guide enterprises to abide by the law, encourage honesty and fair

competition and create a favorable market environment.

8. Focus on the backbone enterprises of the environmental protection industry's support and services. Encourage enterprises to implement brand strategies and support business partnerships, amplifying the key enterprises' leadership ability within the development of the industry to drive core competitiveness of the environmental business cluster.

9. Strengthen international exchange and cooperation. Introduce advanced international technology and environmental protection industry equipment. Support domestic environmental protection enterprises to enter the international market, encouraging and assisting qualified companies to participate in international competition

10. Further improve the capacity and level of the association. Adhere to the motto "Serving the enterprises, the industry, and the government" by enhancing member services, industry statistics, development studies and other foundational work. Report changes in environmental protection industry policy and development in a timely and accurate manner and reflect the aspirations and demands of the industry to the government. Extensively integrate social resources, building an investment and financing platform, a technology demonstration platform and an information services platform for enterprises. Strengthen the coordination work and management for affiliated groups, to strengthen communication and cooperation in the joint promotion of the environmental protection industry.