Recommendations to the Chinese Government  
On China’s Great Western Development  
By the 4th Meeting of the 2nd Phase of CCICED  

Nov. 2, 2000, Beijing  

Great Western Development is a strategic trans-century plan by the Chinese Government. It will be of great significance to the sustainable development of the western regions and even all China. Due to natural, social and economic constraints, Great Western Development will be a long-term and arduous historic task, and will be faced with many difficulties and challenges. Its implementation needs to draw upon all kinds of knowledge and experience possessed by mankind.

The China Council for International Cooperation on Environment and Development recommends:

1. **On the basic principles of Great Western Development**

   - The comprehensive development of economy, society and environment should be promoted. Modernization construction should be pushed forward. Guidance needs to be provided for the balanced distribution of population, economic activities, cities and towns. People’s living environment should be protected and improved, and people’s living standard should be raised in general.

   - Sustainable use of biodiversity and careful utilization of non-renewable resources should be adhered to as the prerequisite for development. The required input of energy and other resources should be minimized to the greatest extent possible. Waste discharge shall be reduced and recycling should be encouraged.

   - Development should be based on the characteristics and advantages of the western regions. The western regions should not simply rely on resources exportation, nor should they follow the model of large-scale industrial development of the eastern regions. Rather, they should take advantage of their rich resources, adopt the market mechanism in order to increase the value of the resources, develop their economy, and cultivate local talents.

   - Steps should be taken for achieving speedily the technological and information empowerment of local communities through blending traditional wisdom and technologies with frontier technologies such as information, space and renewable energy technologies, as well as environmentally safe bio-technologies, thereby helping to create more skilled and sustainable livelihoods and jobs.

   - The functioning and carrying capacity of ecology should be taken into account in the formulation of urban and industrial development plans. At the same time, attention needs to be paid to the protection of historical and cultural sites as well
indigenous natural endowment.

- The regulatory role of the government should be combined with the market mechanism. The concentration should be on a few core areas and cities that may trigger or lead the development of other areas.

- The sustainable use of water resources is a key issue for the western development. Integrated water management should be strengthened for key areas such as the upper reaches of the Yangtze River and the Yellow River.

2. On development planning and environmental impact assessment

- Development should be preceded by careful planning and monitoring, in order to make sure that development achievements will not be superseded by environmental degradation. During the planning process, the various departments involved should strengthen their coordination and cooperation. The core of planning should be protection of resources & environment, rational distribution of infrastructure facilities, and development of cities and towns. All development plans and key large-scale construction projects should undertake environmental impact assessment. Scientific estimate should be made on the environmental capacity and natural resources supplying capacity in a timely manner, and focused attention should be paid to the impacts on diversity, so that western development could be based on a benign circle of ecology. Mechanisms for supervising and coordinating the implementation of plans should be established.

- Special Plans for Ecological Restoration and Environmental Protection shall be well formulated. Scientific and rational ecological and environmental targets shall be set. Concrete and practical measures should be formulated to increase government input, standardize environmental management, attract domestic and foreign capital and technology, and provide fiscal and taxation policy support, etc.

- Environmental impact assessment should be undertaken for cities, industrial zones, public infrastructure facilities, large-scale farm construction, and land development activities, etc. The planning, designing and construction of industrial zones should be based on the concept of “environmentally sound resource recycling” and “zero emission”. Importance should be attached to the construction of environmentally important infrastructure facilities, including centralized treatment and disposal facilities for wastewater, hazardous waste and toxic waste. Joint ventures and BOT (build-operate-transfer) practice should be encouraged.

3. On environmentally friendly economic policies

- Integrated investment policies for sustainable development should be established. Incentives (such as tax reduction or exemption) should be created to encourage investment into sustainable utilization of resources, high value-adding industries and cleaner industries. Likewise, disincentives should also be created to prevent pollution intensive industries and industries that have been banned by investor’s
home countries or prohibited by international environmental agreements from transferring into western China. Measures should also be taken to encourage all corporate companies to follow more stringent applicable environmental standards. Investors from the eastern regions should be encouraged to invest in the western regions. Effective management investment by public financial institutions should be established, and low-interest funding support should be made available to environmentally friendly development projects.

- Relevant environmental taxation reform should be implemented. Environmental taxation should be adopted as a market instrument, so as to reflect environmental cost and promote the commercialization of sustainable technologies. The pollution fee collection system and other environment related taxes could be unified into a coordinated and efficient environmental taxation management system. This reform could be integrated with market pricing system, so as to replace or improve the existing fee collection system, reduce the consumption of polluting products, and raise funds for environmental or general public purposes. The main measures could include: Levying SO2 emissions tax on coal fuel; levying coal resources tax at higher rate; experimenting on levying additional tax on petrol and diesel consumption for environmental protection purposes; levying household wastewater treatment fees in order to support the construction and operation of centralized wastewater treatment facilities; levying pollution discharge fees on all enterprises; levying water pollution tax on small sized enterprises and tertiary industries according to industry and product categories, standard emission rate and output volume; levying tax on pesticide and fertilizer in key river and lake basins so as to reduce water pollution; and in some urban areas, levying on products like plastic bags so as to reduce their use and promote their recycling. Economic incentives such as pricing of natural resources and pollution taxes should reflect regional variations in environmental costs, which in the western region are influenced by factors such as its relative poverty and low population density.

- Reform should be carried out on the property right system for resources such as land. The property right for resources like land, forest and timber should be clarified, so as to bring farmers’ initiative into full play and effectively protect resources.

- Existing and newly approved national level economic zones in the western regions should draw upon the experience and lessons gained by coastal economic development zones in the eastern regions, and formulate and implement a strategy of sustainable development of trade, investment and environment. In order to coordinate trade, investment and sustainable development policies, it is desirable to establish advisory committees on trade, investment and environmental protection under the competent economic and trade departments of the provinces where the development zones are located. Foreign enterprises in the development zones should be required to adopt applicable environmental standards, and sign voluntary agreements with the relevant departments so as to regulate their own environmental behavior.

- The clean development mechanism (CDM) could be utilized to promote the development of the western regions. CDM, which has been put forward by the
Kyoto Protocol, provides new opportunities for the promotion of foreign investment and transfer of clean coal technologies to the western regions. CDM policies should be researched and formulated. Pilot CDM projects could be established in the western regions. This could promote the participation of the western regions in CDM and help them obtain extra funding and technical assistance under the precondition that developing countries shall undertake no obligations for reducing greenhouse gas emissions for the current stage.

4. **On ecological restoration and the equal importance of ecological protection biodiversity protection**

- Enough attention needs to be paid to the ecological restoration of the western regions. Surveys should be conducted on the environmental restoration ability of the ecologically degraded areas, so as to assess and distinguish between human activity zones and nature protection & restoration zones in a scientific manner. Measures should be taken to ban or restrict logging and grazing activities, restore vegetation, and ensure water supply. Relevant laws and regulations should be established for such purposes. Illegal land use should be strictly banned in nature reserves, scenic and historical sites, water source areas, natural forest areas and grassland areas.

- Ecological environmental construction* should become a long-term policy. Unified plans and long-term & stable ecological environmental construction and economic compensation policies should be formulated as soon as possible. Ecological construction should be combined with the improvement of people’s living standard. The traditional exploitative production patterns should be changed. In light of different local conditions, ecological construction should be implemented on an area-by-area and phase-by-phase basis so as to improve ecological environment.

- In converting steep arable land back to forest and grassland, measures such as “closing hillsides (to livestock grazing and fuel gathering) to facilitate afforestation” should be adopted in order to restore ecological systems. Attention needs to be given to rationalizing the ratio between forest and grassland and the ratio between different types of forest. The species of trees and grass for plantation should be carefully chosen so as to comply with the climatic and ecological characteristics of the various parts of the western regions. Local species should be preferred. Species with stronger adaptability and greater economic & environmental benefits should be selected for popularization and demonstration. Non governmental organizations and volunteers should be encouraged to play their role in forestation, plantation and recycling.

- A rational water distribution mechanism should be established for the various catchments as soon as possible. Water saving should be promoted, and water saving agriculture and ecological agriculture should be developed. The water

* Ecological construction: a direct translation of a Chinese concept that is similar to ecological restoration, but may also be understood as taking ecological protection, restoration and amelioration all together.
resources of Yellow River, Black River (Heihe) and Talim River should be distributed in a scientific and rational way. Greater support should be given to the economic structural transformation of resource-dependent cities and the environmental protection of mines. Environmental treatment and land reclamation should be well implemented for mining areas.

- Development of energy and mineral resources in the Loess Plateau must be closely linked with ecological construction. Part of the revenue from development activities should be used as ecology compensation fee in favor of environmental improvement. Local residents should be allowed to participate in various kinds of energy development activities so as to facilitate the process of industrialization and urbanization.

- Water conservation functions should be restored for the upper reaches of China’s major rivers. This is important for the protection of endemic biodiversity. Permanent funding sources should be established in order to ensure the sustainability of such plans. The construction of ecological forests should be emphasized. Ecologists should be involved in the planning and implementation of ecological engineering projects.

- Domestic legislation should be strengthened to control the invasion of alien species. Large amount of imported alien grass species will definitely cause irreversible destruction to and impact on China’s unique biodiversity. For water and soil erosion control projects and plantation projects, the use of local species rather than alien species must be emphasized.

5. On sustainable use of energy

- It is important to make a rational choice of energy supply bases and energy transportation channels. Precautionary measures should be taken against acid rain and fluorine pollution caused by the burning of coal with high sulfur content and high fluorine content. Areas that use wood fuel should shift to new energy sources such as methanol, dimethylether (DME) so as to prevent increased logging as a result of population growth. Biomass energy resources are rich in some western regions, therefore modern methods (such as low tar gasification) should be adopted to utilize biomass. Large-scale experimental solar energy system should be set up. Efforts to couple the use of renewable energy sources with the manufacturing of related equipment in the western region should be encouraged, given the contribution they would make to the development of domestic technology and the generation of employment.

- Xinjiang and Inner Mongolia have rich wind resources (accounting for more than 50% of the national total), and should become an important component of “West to East Electricity Delivery Plan”. Renewable portfolio system (RPS) should be put forward at the national level to require that power supply departments must have a certain percentage of “green electricity” (i.e. electricity generated by renewable energy) in their power supply. The concession approach, which has been successfully used by China Marine Petroleum and Natural Gas Company, should be adopted, and the market mechanism should be introduced, so that the monopoly of power departments could be broken, and that wind power
generation could enter into the “fast lane” of development.

- Energy development strategies for Western China should maximize local benefits. Natural gas development strategies should target application of the LPG byproduct to displacing coal and biomass in the rural areas. High value-added products should be emphasized when exporting fossil energy to Eastern China. Poly-generation strategies should be adopted to get clean liquid fuels, chemicals and electricity.

6. On pollution control and cleaner production

- The advantages of scientific and technological progress should be made best use of. High-tech industries should be developed. Extensive industrial growth pattern, which is characterized by high input, high consumption and low output, should be transformed. The old practice of “taking treatment measures only after pollution has already occurred” and “end-of-pipe treatment” should be avoided. In other words, the traditional industrial stage characterized by heavy environmental pollution should be leapfrogged. Efforts need to be strengthened on the prevention and control of pollution caused by industrial wastewater, urban household wastewater and agricultural non-point source pollution, in order to tackle water shortage problems of the western regions as a result of water pollution, and to realize innocuous treatment, utilization and recycling of wastewater to the greatest extent possible. Strong measures should be continued to control acid rain and SO2 emissions in the southwestern regions.

In order to protect the water quality of the Three Gorges Reservoir, construction of urban wastewater treatment plants and urban garbage disposal plants in the upper reaches of the Yangtze River should be sped up. In order to promote the prevention and control of water pollution in the northwestern provinces and improve the water quality of the Yellow River and its tributaries, *Planning on the Prevention and Control of Water Pollution in the Yellow River Basin* should be formulated as soon as possible.

- The program on cleaner production demonstration cities and industries has achieved preliminary results. State Economic and Trade Commission (SETC) and State Environmental Protection Administration (SEPA) should conduct surveys and research to summarize the experience of the 10 cities (such as Taiyuan) and the 5 industries (such as chemical industry) which have participated in this program, and disseminate it to other areas. While the Cleaner Production Law is being formulated, the relevant departments should carry out assessment and make adjustment on the existing policies, and adopt cleaner production as soon as possible as a core requirement for policies related to industrial structure transformation, technological retrofitting and renovation, total amount control of pollutant discharge, and environmental quality management, etc. A national cleaner production database, cleaner production indicator system and cleaner production network should be established and updated.

7. On transportation infrastructure construction

- The development of transportation in the western regions should focus on road
transportation, and the importance of rail transportation should be emphasized, while sufficient attention should also be paid to other transportation modes. Importance should be attached to the design and optimization of multi-modal transportation system. Key cities and mining areas should serve as centers, from which road transportation could radiate outward and gradually form a network that connects cities, mining areas and other areas.

- Existing transportation facilities should be made full use of, and should be upgraded and improved on a gradual basis. In constructing new roads, the transportation load should be taken into full account. Expressways should not be constructed too quickly and in too large numbers. In accordance with the principle of “stressing on prevention and giving priority to protection”, environmental impact assessment should be conducted in a serious manner for road construction. In southwestern regions, land use for road and rail construction should be planned carefully so as to prevent new water and soil erosion. In northwestern regions, ecological protection should be given enough attention during road construction and repair so as to prevent desertification and stabilize sand.

- Protection of ecological functions needs to be strengthened during transport construction. Special economic policies should be adopted for water and soil eroded areas. Local governments could be made responsible for planting green belt along the roadsides. Active participation of local residents in this process should be encouraged according to the principle of “whoever takes treatment measures should benefit”. Road construction departments should strive to save land resources.

- Balanced urban and traffic planning should be made, taking into account the projected needs for mobility. State of the art technologies should be utilized for public transportation systems.

- The western regions should develop tourism, and attract domestic and foreign tourists.

8. On development of sustainable agriculture in the western regions

- The implementation of projects that have both ecological and economic benefits should be given priority. Emphasis should be put on fruit industries, animal husbandry, production of economy crops with distinctive local characteristics, and ecological agriculture, etc. Certain incentives are needed to reduce risks inherent in adoption of new minimum and zero-till land management.

- Input into grassland protection and restoration should be increased. Development of animal husbandry should be sped up. Careful assessment needs to be conducted for grassland resources, so that the production system could be improved and adjusted according to regional natural characteristics. The percentage of artificial grassland should be increased, and the carrying capacity of grassland should be promoted. Demonstration bases for grassland management and applied research projects should be established. Relevant policies regarding grassland use and contract system should be reformed.
Conversion of steep arable land back to forest and grassland and restoration of grassland in the Loess Plateau should be incorporated into the 10th Five-Year Plan. Extension of plantation should be restricted so as to reduce farming pressure and increase vegetation coverage. Land property rights should be clarified. Farmers should be encouraged to invest more in land. Credit services in the rural areas should be improved in a proactive way. Development of non-agricultural industries should be promoted.

9. On the development of science, technology and education in the western regions

Governments at all levels should increase their scientific and technological input into ecological environmental construction and protection, should proactively support domestic and foreign enterprises, the society and experts to research and develop advanced and applicable technologies in the western regions, and should promote the dissemination and application of such technologies. The development of human resources should be promoted for the western regions. Input into education should be increased. Education and training of the population should be increased.

Special efforts should be made to upgrade and extend the higher education and the vocational training systems in key cities and areas of western China. Only by cultivating human capital can economic growth be accelerated in ways consistent with the objectives of sustainable development. Efforts to promote dissemination of information and communication technologies in western China should be encouraged, with an aim to enable an increasing number of people to use the internet. Demonstration projects in distant learning using the internet should be strongly supported.

Satellite monitoring on the state of natural degradation should be carried out. Analysis on the cause and impact of “sand storms” and quantitative analysis on the environment of watersheds in Yangtze and Yellow river basins should be conducted, so as to provide support for policy-making and planning. Monitoring and forecasting should be strengthened for natural disasters such as sand storms.

A monitoring system for ecological environment should be established as soon as possible. Monitoring experts and equipment should be in place to promote the quality of monitoring on resources, and ecological & environmental change in the western regions. As an important basis for the formulation of environmental quality standards, scientific assessment and precautionary control measures should be carried out on the health hazards caused by environmental pollution.