

**CHINA'S NATIONAL REPORT ON IMPLEMENTATION OF
THE CONVENTION ON BIOLOGICAL DIVERSITY**

NATIONAL ENVIRONMENT PROTECTION AGENCY OF CHINA

DECEMBER, 1997

Project Leading Agency: National Environmental Protection Agency of China *

Participating Departments and Agencies:

Ministry of Foreign Affairs
State Planning Commission
State Education Commission *
State Science and Technology Commission
Ministry of Public Security
Ministry of Finance
Ministry of Construction *
Ministry of Agriculture *
Ministry of Forestry *
Ministry of Film, Radio and Television Broadcasting
State Administration of Industry and Commerce
General Customs Administration
Xinhua News Agency
Chinese Academy of Sciences *
State Patent Administration
State Oceanic Administration *
State Pharmaceutical Administration *
People's Daily
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Note: The departments or institutions marked with a star have made their contribution to this report.

Foreword

China has actively participated in the drafting, discussion and negotiation of the Convention on Biological Diversity(CBD). From November 1988 to May 1992, China sent delegates to attend 10 important meetings for the drafting, discussing and negotiation among governments for concluding CBD. Together with all the relevant government delegates, China has played an active role in promoting final conclusion of CBD.

From 3 to 14, June, 1992, the United Nations Conference on Environment and Development was convened in Rio, Brazil. Chinese Premier Li Peng and State Councillor Song Jian were invited to attend this conference together with heads of state and, high-level officials from other countries. Premier Li Peng signed the Convention on, Biological Diversity on behalf of the government of China on June 11, 1992, making China the 64th Parties to CBD. In the Earth Summit on June 12, Premier Li Peng delivered an important speech in which five proposals for addressing global environment and development issues were made. He also pointed out that China's environmental issues were a part of global issues and China was aware of his responsibility for and role in protecting global environment and ecology, so from this perspective, China attaches great importance to and actively participates in the discussion on environment and development issues and has signed a number of international convention and agreements. He also said that China was 'willing to shoulder the international responsibility and obligation corresponding to its level of development and strengthen international cooperation in an effort to address global environment and development issues.

On November 7, 1992, the National People's Congress examined and approved the CBD at the 28th meeting of its Standing Committee. On January 5, 1993, China submitted the letter of ratification and became one of the first countries to ratify the CBD.

Since its conclusion, China has done tremendous work in implementing the CBD and made many accomplishments. This report will mainly describe the work China has done in the conservation and sustainable utilization of biodiversity since it ratified CBD, in particular the progress in implementing the Article 6 of CBD.

The formulation of this report was under the guidance of the Coordinating Group for Implementing CBD in China(CG), which is headed by National Environmental Protection Agency of China(NEPA) and composed of 20 government departments under the State Council. The CG examined TOR and drafting outline of this report at its 7th meeting held in May 13, 1997 and approved in principle the content of this report at its 8th meeting held in November 14, 1997.

The formulation of this report follows the guidelines identified in Decision II/17 of

COP 2 and its annex. This report covers all the aspects included in the proposed guideline.

The formulation of this report is organized by NEPA and the report writing organized by Nanjing Institute of Environmental Sciences(NIES) under NEPA. An expert group for report drafting was set up with NEPA as leading agency and involving the officers and experts appointed by the Ministry of Forestry, Ministry of Agriculture, State Education Commission, State Oceanic Administration, Ministry of Construction, Chinese Academy of Sciences, State Pharmaceutical Administration. Other relevant departments and institutions also participated in the discussion, examination and revision of this report.

Two workshops were held in preparing for this report. The second one was a national workshop which was participated by representatives of 20 departments as well as academic institutions. The result of discussion from the two workshops had exercised important influence on the revision and improvement of this report.

This report is the first national report on implementation of CBD. China hopes that the biodiversity conservation can be promoted and the international experience in implementing CBD can be drawn upon through formulation and exchange of national reports.

Content

| | |
|----------------------------|----------|
| Executive Summary.. | 1 |
|----------------------------|----------|

Chapter I. Introduction

| | |
|---|-----|
| 1.1 Biodiversity in China and Its Significance..... | . |
| 1.1.1 Rich Biodiversity in China..... | .8 |
| 1.1.2 Significance of Biodiversity in China..... | .9 |
| 1.2 Background and Objective of Report Formulation..... | .10 |
| 1.2.1 Background.. | .10 |
| 1.2.2 Objective..... | .11 |
| 1.3 Objective and Task of Article 6 of CBD.. | .12 |
| 1.3.1 Objective of Article 6.. | .12 |
| 1.3.2 Task for Implementing Article 6.. | .12 |
| 1.4 Implementation of China's Commitment to CBD .. | .14 |
| 1.4.1 Establishment of National Coordinating Body..... | .14 |
| 1.4.2 Formulation of Action Plan.. | .14 |
| 1.4.3 Country Study.. | .14 |
| 1.4.4 Participation in COP..... | .15 |

Chapter II. National Strategy and Action Plan for Biodiversity Conservation

| | |
|---|-----|
| 2.1 National Strategy of Sustainable Development..... | .16 |
| 2.1.1 China Measures for, Environment and Development..... | .16 |
| 2.1.2 China's Agenda 21..... | .17 |
| 2.1.3 National Ninth Five-year Plan for Economic and Social Development and Long-term Program for 2010.. | .19 |
| 2.1.4 State Council Decision on Several Environmental Issues..... | .21 |
| 2.2 National Strategy for Biodiversity Conservation in Country Study .. | .21 |
| 2.2.1 Legislation..... | .22 |
| 2.2.2 Institutional Building..... | .22 |
| 2.2.3 Human Resources Development..... | .23 |
| 2.2.4 Establishment of Policy Framework..... | .24 |
| 2.2.5 Conservation Measures..... | .24 |
| 2.2.6 Development in Science and Technology.. | .25 |
| 2.2.7 Education, Publicity and Public Participation .. | .25 |
| 2.2.8 Principle for International Cooperation..... | .26 |
| 2.3 China Action Plan for Biodiversity Conservation .. | .26 |
| 2.3.1 Main Objectives & Actions in Action Plan..... | .26 |
| 2.3.2 Priority Protected Eco-systems in Action Plan..... | .28 |
| 2.3.3 Priority Protected Species in Action Plan .. | .29 |

Chapter III. Interdepartmental Action Plan and Policy for Biodiversity
Conservation

| | |
|---|----|
| 3.1 China Action Plan for Environmental Protection(1991-2000)..... | 30 |
| 3.1.1 Conservation and Sustainable Utilization of Forest Resources..... | 30 |
| 3.1.2 Conservation and Sustainable Utilization of Grassland..... | 31 |
| 3.1.3 Eco-farming..... | 31 |
| 3.1.4 Marine Environment Protection and Conservation of Marine Resources,... | 32 |
| 3.1.5 Species Protection..... | 32 |
| 3.1.6 Wetland Conservation..... | 33 |
| 3.1.7 Nature Reserve Construction and Management..... | 33 |
| 3.2 National Ninth Five-year Plan for Environmental Protection and Long-term Program for 2010..... | 34 |
| 3.2.1 National Goal for Environmental Protection..... | 34 |
| 3.2.2 National Environmental Policy..... | 34 |
| 3.2.3 Priority Areas for Nature Conservation in the Ninth Five-year Plan Period. | 35 |
| 3.3 Program of Development of Nature Reserves(1996-2010). | 36 |
| 3.3.1 Current Situation of Nature Reserve Construction and Management..... | 37 |
| 3.3.2 Objective for National Planning Nature Reserves..... | 38 |
| 3.3.3 Scheme for Planning and Development of Nature Reserves..... | 38 |
| 3.4 National Investigation on Enforcement of Environmental Laws..... | 39 |
| 3.4.1 State Council Notice on Strengthening 'Enforcement of Environmental Laws..... | 40 |
| 3.4.2 Investigation on Enforcement of Environmental Laws..... | 40 |
| 3.5 Education and Publicity for Environmental Protection..... | 41 |
| 3.5.1 National Program for Environmental Education and Publicity(1996-2010). | 42 |
| 3.5.2 Multi-departmental Action for Publicity for Biodiversity..... | 45 |
| 3.5.3 Multi-departmental Action for Education for Biodiversity..... | 47 |
| 3.6 Plan for Biodiversity Research and Implementation..... | 47 |
| 3.6.1 National Mid-term and Long-term Program for Science and Technology Development..... | 47 |
| 3.6.2 Plan for Science and Technology for Social Development..... | 48 |
| 3.6.3 Plan for Research on Biodiversity..... | 49 |
| 3.6.4 Implementation of CAS's Plan for Biodiversity Science & Technology., | 51 |
| 3.6.5 Implementation of SEC's Plan for Biodiversity Science & Technology.. | 54 |
| 3.7 Credit and Investment Policy for Strengthening Environmental Protection. | 56 |
| 3.7.1 Policy of EIA Requirement for Projects Funded by Loans..... | 56 |
| 3.7.2 Credit Policy for Strengthening Environmental Protection..... | 57 |
| 3.7.3 National Financial Policy for Strengthening Environmental Protection,.... | 57 |
| 3.8 Policy for Strengthening Environmental Protection in Scenic Spots..... | 58 |

Chapter IV. Departmental Policy, Regulation and Plan for Biodiversity Conservation and Their Implementation

| | |
|--|------------|
| 4.1 Biodiversity-related Policy, Regulation and Plan of the Environment Department and Their Implementation..... | .60 |
| 4.1.1 Policy for Nature Conservation..... | .60 |
| 4.1.2 Legal Construction for Nature Reserves | .62 |
| 4.1.3 Strategy and Action Plan for Nature Conservation..... | .63 |
| 4.1.4 Policy, Regulation and Action Plan and Their Implementation | .66 |
| 4.1.5 Other Measures | .69 |
| 4.2 Biodiversity-related Policy, Regulation and Plan of the Forest Department and Their Implementation..... | .71 |
| 4.2.1 Relevant Policies..... | .71 |
| 4.2.2 Relevant Regulations..... | .73 |
| 4.2.3 Relevant Action Plan and Schemes | .74 |
| 4.2.4 Policy, Regulation and Plan and Their Implementation..... | .77 |
| 4.2.5 Other Measures..... | .80 |
| 4.3 Agriculture Department Policy, Regulation and Plan for Biodiversity Conservation and Their Implementation..... | .81 |
| 4.3.1 Relevant Policy..... | .82 |
| 4.3.2 Relevant Regulations | .82 |
| 4.3.3 Relevant Action Plan or Scheme | .86 |
| 4.3.4 Policy, Regulation and Action Plan and Their Implementation..... | .89 |
| 4.3.5 Other Measures..... | .91 |
| 4.4 Oceanic Department Policy, Regulation and Plan for Biodiversity Conservation and Their Implementation..... | .92 |
| 4.4.1 Relevant Policy | .92 |
| 4.4.2 Relevant Regulations | .93 |
| 4.4.3 Action Plan and Programmes and Their Implementation..... | .94 |
| 4.4.4 Implementation of Policies, Regulations and Action Plans | .98 |
| 4.4.5 Other Measures..... | 100 |
| 4.5 Biodiversity-related Policy, Regulation and Plan of the Construction Department and Their Implementation..... | 101 |
| 4.5.1 Relevant Policy | 101 |
| 4.5.2 Relevant Regulations | 102 |
| 4.5.3 Relevant Action Plan or Scheme..... | 104 |
| 4.5.4 Policy, Regulation and Plan and Their Implementation..... | 105 |
| 4.5.5 Other Measures..... | 107 |
| 4.6 Biodiversity-related Policy, Regulation and Plan of the Pharmaceutical Department and Their Implementation..... | 109 |
| 4.6.1 Relevant Policy..... | .109 |
| 4.6.2 Relevant Regulations | .110 |
| 4.6.3 Relevant Action Plan or Scheme | .111 |
| 4.6.4 Implementation of Policy, Regulation and Action Plan | 113 |

| | |
|----------------------------|-----|
| 4.6.5 Other Measures | 114 |
|----------------------------|-----|

Chapter V. Further Action for Implementing Article 6

| | |
|--|-----|
| 5.1 Assessment of Current Situation of Implementation of Article 6 | 117 |
| 5.1.1 Understanding of Strategic Status of Biodiversity | 117 |
| 5.1.2 Legal Construction for Biodiversity | 118 |
| 5.1.3 Implementation of Action Plans for Biodiversity Conservation..... | 121 |
| 5.1.4 Other Aspects to be Further Strengthened..... | 123 |
| 5.2 Further Action for Implementing the Article 6..... | 126 |
| 5.2.1 Priority Action for Policy Formulation..... | 126 |
| 5.2.2 Priority Action for Legal Construction | 127 |
| 5.2.3 Formulation of Multi-departmental Action Plan and Program | 128 |
| 5.3 Further Implementation of Existing Strategy, Plan or Program | 129 |
| 5.3.1 Further Implementation of Nature Reserve Planning..... | 129 |
| 5.3.2 Further Implementation of Planning for Protection of Endangered Species. | 130 |
| 5.3.3 Further Implementation of Plans for Sustainable Utilization of Biodiversity | 131 |
| 5.3.4 Further Implementation of Biodiversity Research and Education Plan.. | 133 |

Chapter VI. Mechanism of Supervising CBD Implementation and Experience Sharing Among Countries

| | |
|--|-----|
| 6.1 Establishment of National Mechanism for Supervising CBD Implementation. | 135 |
| 6.1.1 Role of Leading Agency in Coordinating CBD Implementation..... | 135 |
| 6.1.2 Role of People's Congress in Supervision..... | 135 |
| 6.1.3 Role of State Council Committee of Environmental Protection in Coordination and Administrative Supervision..... | 136 |
| 6.1.4 Strengthening Mass Media and Public Supervision..... | 136 |
| 6.2 Summary of China's Experience in CBD Implementation. | 137 |
| 6.2.1 Guidance by National Strategy of Sustainable Development..... | 137 |
| 6.2.2 Extensive Implementation of Ecological Construction Projects..... | 138 |
| 6.2.3 Establishment of Administrative Management System..... | 139 |
| 6.2.4 Comprehensive Coordination Between Departments..... | 139 |
| Main Reference Documents | 141 |
| Annex I. List of Reviewers of National Report..... | 143 |
| Annex II. List of Compilers of National Report..... | 144 |

Executive Summary

1. Biodiversity in China

China is one of the countries with richest biodiversity in the world. There are more than 30,000 varieties of higher plants and 6,347 species of vertebrate, accounting for 10% and 14% respectively of the world total. China's biodiversity is rich not only in number but also in level of uniqueness. Some biological species have a long history of origination, complicated composition and a large number of inherited rare species. The vast land area, various climatic conditions and complicated geographical natural conditions have resulted in various types of ecosystems, including forest, grassland, desert, wetland, oceans, seas, coastal ecosystems and various agricultural ecosystems. The various ecosystems lead to biological diversity. As a result of 7000 years of agricultural activities, rich heritage resources of agricultural crops and domesticated animals have remained till now which was a result of long-time adaptation to nature as well as various farming system and natural conditions and human activities. However, biodiversity in China is being threatened due to a large population, economic underdevelopment, contradiction between conservation and exploitation, excessive utilization of biological resources and shrinking of natural habitats. China's biodiversity is an important component of global biodiversity and biodiversity conservation in China will contribute greatly to conservation of natural heritage of all human beings.

2. National Strategy and Action Plan

China signed the Convention on Biological Diversity during the UNCED in June, 1992 and ratified it on January 5, 1993, becoming one of the few earliest countries to ratify CBD. The government of China is serious in implementing CBD which is indicated not only by the fact that China actively participates in various follow-up activities for CBD implementation organized by UNEP and all the meetings of the Conference of Parties to CBD but also by the fact that China is implementing a series of actions and measures for implementing CBD in China in order to fulfill its obligations under CBD.

As early as November, 1992, China has issued "A Ten-point Policy for Environment and Development" which was formulated to materialize the spirit of the UNCED. In this document, a strategy of sustainable development for economic development was proposed. Measures have been put forward for afforestation, promoting eco-agriculture and strengthening biodiversity conservation and employment of economic instruments to protect the environment. In the National Ninth Five-year Plan for Economic and Social Development and Long-term Program for 2010, which were issued in March, 1996, it was reemphasized that the strategy of sustainable development and the policy of environmental protection as one of basic state policies would be implemented. To do this, the State Council

promulgated “ Decision on Strengthening Environmental Protection” in September, 1996. In this document there was a clear statement that active measures will be adopted for biodiversity conservation and development of nature reserves.

To implement the Article 6 of CBD, China began to formulate “China Action Plan for Biodiversity Conservation” in 1992 and officially launched it in June, 1994. This action plan has identified the priority eco-systems and species for conservation as well as the objectives in seven areas and 26 priority actions. Eighteen priority projects have been proposed according to the feasibility and urgency of conservation.

Meanwhile, China also formulated and launched “ China’s Agenda 21”---A White Paper on Population, Environment and Development in the 21” Century”. This document put forward the master strategy, policy and action plan for promoting the integrated development of society, economy, environment and resources and sustainable development from the point of the Chinese reality and the relation between the population, environment and development. In particular, Chapter 15 deals with biodiversity conservation where the policy, goal, priority areas and projects for biodiversity conservation were put forward.

In early 1995, China began to implement the project of China Country Study for Biodiversity. This project outlines and analyses the basic situation of biodiversity in China, evaluates the economic value of biodiversity in China and estimates the total additional expenses and the benefits of biodiversity conservation for implementing CBD in China. In addition, on the basis of summarizing the efforts made in the conservation and sustainable utilization of biodiversity, Chapter 6 of the Country Study elaborates the strategic goal for national capacity building for biodiversity conservation, which includes legal construction, institutional building, human resources strengthening, policy framework construction, conservation facility construction, development of science and technology, education and publicity, information management and international cooperation, etc..

3. Multi-department Action Plan and Policy

In addition to the national strategy and action plan, the relevant departments under the State Council have actively incorporated conservation and sustainable utilization of biodiversity into their own departmental action plan and schemes.

In 1993, NEPA together with the State Planning Commission(SPC) formulated and issued “ China Action Plan for Environmental Protection(1996-2000). This plan put forward the environmental goal for the 1990’s, the multi-department action plan for environmental protection and the key areas of environmental policy and management which require reform and strengthening. The areas related to biodiversity conservation in this plan mainly include: conservation and sustainable

utilization of forest resources and grassland, desertification control, soil erosion prevention, development of eco-farming, protection of marine environment and resources, species conservation, wetland protection and construction and management of nature reserves.

In 1996, NEPA, SPC and State Economic and Trade Commission(SETC) jointly formulated “ National Ninth Five-year Plan for Environmental Protection and Long-term Program for 2010”. It put forward the environmental goal by phases, main tasks, plans and policies for environment for the next 15 years. Biodiversity conservation is listed as key task for the ninth five-year plan period.

To strengthen biodiversity conservation, from 1995 to 1997, NEPA and SPC together with departments of forestry, agriculture, oceanic administration, construction and mineral resources formulated “China’s Plan for Development of Nature Reserves”(1996-2010). This plan summarizes the current situation of the construction and management of nature reserves in China and proposes the goal for nature reserve planning for the two phases, i.e. from 1996 to 2000 and from 2001 to 2010 and specific planning schemes.

From 1993 to 1996, the Committee of Environmental Protection under the State Council and the Committee of Environment and Resources Protection of the National People’s Congress bring together the departments of environment, forestry, agriculture, industry and commerce administration, foreign trade, oceanic administration, public security, justice and journalism in the national investigation on enforcement of environmental laws and regulations which lead to the punishment of illegal sales of wildlife and its products, illegal hunting, collection, processing, import and export of wild animals. Thousands of illegal cases have been investigated and given proper penalties.

NEPA, Department of Publicity of Chinese Communist Party and State Education Commission(SEC) jointly formulated and launched “ National Program for Environmental Education and Publicity”(1996-2010). Since 1994, the Committee of Environment and Resources Protection of NPC, Department of Publicity of CPC, Ministry of Water Resources, Ministry of Broadcasting and Television, NEPA, Ministry of Forestry, Ministry of Agriculture, Chinese Communist Youth League and other relevant departments have jointly organized the nationwide publicity activities named “ Tram-century Environmental Trip Around China”. Biodiversity conservation was one of the focuses of this activity.

In its Long and Mid-term Program for Science and Technology Development(1990-2000-2010), the State Science and Technology Commission(SSTC)identified a series of key tasks and technologies to be developed in the area of ecological conservation and biotechnology. In its Plan for Development of Technology for Social Development, which was formulated in 1996, SSTC also incorporated

studies on biodiversity data sharing and other subjects into the action plan for social development and the plan of key science and technology projects for social development in the 9th five-year plan period. Chinese Academy of Sciences(CAS) identified biodiversity conservation as area of priority development in its Action Plan for Agenda 21 and listed biodiversity research as key area of science and technology development in the 21st century in its “ Plan for Development of Science and Technology from 1996 to 2000 and for 2010” and “ Strategy and Policy for Biology Development in the 21st Century”. In its plan for key fundamental research from 1996 to 2000, SEC has identified studies on biodiversity and ecosystem conservation and biotechnology as key area of support. In the past few years, CAS and SEC have organized and carried out many major research projects on biodiversity and achieved accomplishments in training people for studies on biodiversity.

NEPA, SPC, Ministry of Finance and the Chinese People’s Bank issued a joint notice in 1993 which required strengthening the management of EIA for construction projects financed by international organization. In 1995, the Chinese People’s Bank issued a notice requiring the financial departments at all levels to pay attention to conservation of resources in their credit policy and practice. The Ministry of Finance also issued a notice in 1995 requiring the financial institutions to provide preferential loaning and taxation policy for nature reserve construction and forest and wildlife conservation. In 1995, NEPA together with the State Tourism Administration, Ministry of Construction, Ministry of Forestry and the State Relics Protection Bureau issued a joint notice aimed at strengthening the environmental management of tourism attractions or scenic spots.

4. Departmental Policy, Regulations, Action Plans and Schemes

To implement the Article 6 of CBD and make practical conservation of biodiversity, Ministry of Forestry, Ministry of Agriculture, NEPA, State Oceanic Administration, Ministry of Construction, State Pharmaceutical Administration, SEC and CAS have been making positive efforts in conservation and sustainable utilization of biodiversity by formulating and implementing their departmental policy, regulations, action plans and schemes and considerable progress has been made implementing these policies and plans.

NEPA is the leading agency for biodiversity conservation at the national level. It is responsible for formulating national policy for management of nature reserves and relevant economic policy. NEPA has formulated and is enforcing “Regulation Concerning Nature Reserves” and “ Method of Land Management for Nature Reserves”(issued together with the State Land Management Administration) which are aimed to strengthen environmental management of projects for natural resources exploitation and construction and wetland protection. NEPA has also launched “ China’s Agenda 21 for Environmental Protection” and “ China’s Trans-

century Green Projects Plan". NEPA plays a leading role in formulating "National Program for Development of Nature Reserves", "China Action Plan for Biodiversity Conservation" and "China Country Study for Biodiversity". NEPA has completed some projects like biodiversity data management in China. NEPA plays a crucial role in coordinating the implementation of CBD in China and comprehensive management of nature reserves at the national level.

Ministry of Forestry has introduced in recent years a system of management of forest and wild plant and animal resources and practiced the rule of non-gratuitous and limited use of wild biological resources. It launched "Regulation Concerning Protection of Terrestrial Wild Animals". It is implementing "Regulation Concerning Wild Plants". It has formulated "Forestry Action Plan for China's Agenda 21", "Scheme for Implementing the Statement on Forest Principle Issues" and "Engineering Plan for Protection of Giant Panda and Its Habitat". Considerable progress has been made in the construction of nature reserves, protection of wild animals and plants, wetland protection, desertification control and afforestation.

Ministry of Agriculture has formulated the policies for conservation of agricultural biodiversity, development of ecological farming and development and conservation of energy resources in rural areas. It formulated and launched "Regulation Concerning Protection of New Plant Species", "Implementing Rules for Agricultural Crop Seed for Regulation Concerning Seed Management" and "Regulation Concerning Protection of Wild Aquatic Animals". It is enforcing "Regulation Concerning Protection of Wild Plants"., MOA has also formulated "Action Plan for Conservation of Agricultural Biodiversity" and "Ninth Five-year Plan and 2010 Planning for Environmental Protection in Agricultural Sector". With its support and efforts, practical progress has been achieved in protection of genetic resources, construction of eco-farming, protection of wild aquatic animals and monitoring of agricultural environment.

Ministry of Construction has implemented the policy of non-gratuitous use of resources in tourism attractions and places of historical interest. It promulgated "Regulation Concerning Management of Tourism Attractions", "Notice on Strengthening Ex-situ Conservation of Wild Animals in Zoos", "Regulation Concerning Management of Urban Zoos" and "Notice on Strengthening Protection and Management of Ancient Woods and Rare Timber Species". It has formulated "Plan for Ex-situ Conservation of Giant Panda", "Plan for Protection of Nippon Nippia", "Plan for Protection of South China Tiger", "Plan for Conservation of Ecosystems and Biodiversity in Urban Gardens and Zoos" and "Plan for Integrated Protection of Rare Plant Species in Cities". Considerable progress has been accomplished in ex-situ conservation of endangered and rare species.

Department of Oceanic Administration has formulated the policy of integrated

conservation and development of the marine resources. It issued “Method of Management of Marine Nature Reserves”. It also formulated “China Marine Agenda 21”, “China Action Plan for Conservation of Marine Biodiversity”, “China National Program for Marine Reserves” and “China Action Plan for Protection and Management of Mangrove Ecosystem”. Progress has been made in the protection of marine resources, management of oceanic information and monitoring of the marine environment.

Department of Pharmaceutical Administration has implemented the policy of Chinese herbal resources and sticks to the policy of integrated utilization and conservation. It formulated the industrial policy for the pharmaceutical sector from 1991 to 2000. It has implemented “Regulation Concerning Protection and Management of Wild Medicinal Resources” and formulated “Ninth Five-year Plan and 2010 Program for Chinese Medicine Development”. Special progress has been made in the national survey and inventory of Chinese medicinal resources and the artificial breeding and cultivation of herbal resources.

5. Further Action and Measures

The government of China and relevant departments have been devoting to creating conditions and raising the funds to ensure that the above strategies, action plans, policies and schemes are implemented. In reality, almost all the action plans and schemes are being implemented to a varying extent, in particular, the priority projects identified in China Agenda 21 and China action Plan for Biodiversity Conservation are being implemented or being initiated. But from the overall situation, the initiation or implementation of many action plans is slow, mainly due to lack of financial resources at the national, cross-departmental and departmental levels. Therefore the financial and technical assistance from the international community is urgently needed.

It is very important and there is a long way to implement the Article 6 of CBD. Though China has taken action measures of implementation, there is still gap and blankness. At the national level, there is a need to formulate specific programs on the basis of the Country Study and Action Plan. At the cross-departmental level, there is an urgent need to complete “China Strategy and Action Plan for Wetland Protection”, formulate the “Strategy and Action Plan for Conservation of Wild Animals and Plants” and the regulation on management of biosafety. At the departmental level, there is a need to formulate the action plans and programs as well as relevant policies and regulations for protection of genetic resources, sustainable utilization of Chinese medicine, biodiversity research and education and protection of mangrove and coral reefs.

China has made progress in implementing CBD and collected experience in implementing the strategy of sustainable development, strengthening ecological

construction and administrative management and promoting the interdepartmental cooperation. China is also trying to build an effective internal mechanism to supervise the implementation of CBD. It is hoped that through the formulation of this report, international exchange can be expanded so that we can learn more experience from other countries.

Chapter I. Introduction

1.1 Biodiversity in China and its Significance

1.1.1 Rich Biodiversity

(1) Species Diversity

China has more than 30,000 species of higher plants, ranking the third in the world following Brazil and Columbia which have the richest higher plants in the world. Among these, there are 2,200 species of bryophyte, accounting for 9.1% of the world total and 106 genus, accounting for 70% of the global genus, there are 52 genus of pteridophyte, with about 2200 to 2600 species, accounting for 80% and 22% respectively of the global genus and species. In terms of the gymnosperm, the whole world has only 15 genus with about 850 species. China has 10 genus with 34 families and about 250 species, so it is the country with richest gymnosperm in the world. China has about 380 genus, 3123 families and over 30000 species of angiosperm, accounting for 75%, 30% and 10% respectively of the world total. China is also rich in animals, with 6374 species of vertebrate, accounting for 14% of the world total (45417 species). China is one of the countries in the world having the largest number of bird species, with 1244 bird species, accounting for 13.5% of the world total. China has 3862 fish species, accounting for 20.3% of the world total (19056 species). There are too many varieties of invertebrate, lower plants, virus, fungi and actinomycia to be calculated exactly for the time being. (note the above figures do not include those in Taiwan, China)

(2) Ecosystem Diversity

In terms of ecosystems, China has various land ecosystems of various types in the world (forest, shrub, grassland or tree-scarce grassland, meadow, desert, mountain tundra and agricultural ecosystem). In addition, each ecosystem has various climatic conditions and land categories. China has coniferous, mixed and broad-leaf forest. According to a preliminary statistics, there are mainly 212 categories dominated by arbor and 36 categories dominated by bamboo. The shrub forest variety is more complicated with main categories amounting to 113. Among them, 35 categories are mainly distributed in high mountains and sub-high-mountains and suitable for low temperature, big wind, aridity and cold weather with accumulated snow for years, such as ever-green coniferous shrub and deciduous broad-leaf shrub. There are mainly 55 categories of warm temperature deciduous shrub, which is the largest. There are 20 categories of other sub-tropical ever and deciduous shrubs, which are the undergrown shrub after the forest is damaged. The distribution of tropical succulen thorn-scrub is limited in China, with about three categories. The meadow can be divided into typical meadow (27 categories), saline meadow (20 categories), marsh meadow (9 categories) and high-cold meadow (21 categories),.

China has 14 categories of marsh, followed by bush marsh(4 categories) and peat bog(1 category). The mangrove forest in China is the marsh forest in the tropical coastal area, with mainly 18 categories. The grassland can be divided into meadow grassland, typical grassland, desert grassland and high-cold, grassland, totaling 55 categories. The desert can be divided into mini-arbor desert, shrub desert, semi-shrub desert and mat semi-shrub desert, totaling 52 categories. In addition, there are mainly 17 categories of high plateau tundra, high mountain mat vegetation and high mountain stone drifting vegetation. The marine ecosystems mainly include estuary, inter-tidal belt, saline marsh, mangrove forest, coastal ports, sea weed bed, coral reefs, up-flow wave, continental shelf, oceans and islands. For the time being there is no statistics of the freshwater ecosystems.

(3) Genetic Diversity

China is a country with a long history of agricultural activities. The regions vary greatly in natural conditions and farming practice. Extremely rich genetic resources of various crops have come into being as a result of adaptation to various natural conditions and farming practice and needs and with the function of human and natural selection. China is one of the world's centers of crop origination and biodiversity distribution. According to some statistics, China now has planted more than 600 crops, out of which 237 were originated from China. Due to a long history of plantation, China has a very rich resource of species. Up to now, more than 300,000 pieces of genes of various crops have been collected, among which there are 20,000 for rice, 55000 for beans, over 31000 for cotton, sugar, cigar and vegetable oil, over 18000 for vegetable, over 11000 for fruit trees and over 15000 for grass, green fertilizers and others. China has not only many species of each crop but also unique wild species or wild relatives of many crops. For example, China is one of the origins of rice. Now China has about 50000 rice species across the country with 3 wild rice species.

China is one of the countries having the richest species of domesticated animals. During the 1980's, Chinese Academy of Agricultural Sciences organized a national survey in resources of domesticated animals. According to the result of the survey issued in 1996, there are 596 species of domesticated animals. According to the specialized books and reports in the past four years, there are 2222 species now, including unique economic animals and artificially-bred insects, among which there are 66 for horses, 22 for donkeys, 73 for bulls, 20 for buffalos, 5 for yak, 79 for sheep, 48 for goat, 113 for pig, 109 for chicken, 35 for duck, 21 for goose, 3 for turkey, 4 for pigeon, 14 for rabbit, 7 for camel, 9 for dog, 7 for deer, 5 for musk, 5 for black bear, 3 for pheasant, 1 for marten, silver fox, polar fox and nutria. Among home-grown insects, there are 1270 silkworms, 16 bees and more than 280 golden fish.

1.1.2 Significance of Biodiversity in China

China has complicated habitats and extremely rich biodiversity due to its vast land area, ancient geological history, various topographical and climatic conditions. In terms of species, the number of higher plants unique in China has reached 173,000, accounting for 57% of the total in China. The number of vertebrate unique in China has come close to 404, accounting for 10.46% of the total in the country. The percentage of vertebrate, algae and lichen distributed in China generally exceeds 10% of the world total. (see Table 1.1)

Table 1.1 The Comparison of Species in China and the World Total

| Category | Species in China | World Total | Percentage |
|------------------|------------------|-------------|------------|
| Mammals | 581 | 4170 | 13.93 |
| Birds | 1244 | 9198 | 13.52 |
| Reptile | 376 | 6300 | 5.97 |
| Amphibious | 284 | 4148 | 6.79 |
| Fish | 3864 | 19056 | 20.28 |
| Freshwater Algae | 9000 | 26900 | 33.46 |
| Lichen | 2000 | 2000 | 10.00 |
| Moss | 2200 | 23000 | 9.57 |
| Pteridophyta | 2600 | 12000 | 21.67 |
| Gymnosperm | 250 | 850 | 29.41 |
| Angiosperm | 30000 | 26000 | 11.54 |

1.2 Background and Objective of Writing Report

1.2.1 Background to Report Writing

The Article 26 in CBD provides that each Party shall submit its report on measures taken to implement the provisions in the Convention and their function in achieving the objective of the Convention at an interval decided by the meeting of the Conference of Parties. The paragraph 4(a) in the Article 23 also stipulates that the meeting of the Conference of Parties shall examine this report and other reports submitted by its subsidiary bodies according to the forms and intervals required by the Article 26.

At the 1st Meeting of the Conference of Parties held in Nasau, the Bahamas in December, 1994, it was decided that the 2nd Meeting of the COP would consider the form and interval of the national report on implementation of CBD.

At the 2nd Meeting of COP held in Jakarta, Indonesia in November, 1995, the Secretariat of CBD submitted a report concerning the form and interval of submitting the national report (Provisional Agenda Item 9). This report provided

detailed recommendations for the objective, possible form and interval of the national report submitted to COP. As to the possible forms, three options were given as follows:

a a report for assessing implementation activities **with** major themes as framework and key areas outstanding. The themes can be items and priority areas identified in the mid-term programme of work of COP. The first theme is proposed related to the measures taken to implement **the** Article 6 of CBD.

b a report for a comprehensive assessment of implementation of all the Articles, including the current status of biodiversity and general and specific measures to implement CBD(one-by-one assessment)

c a combination of the two above forms, i.e. selection of the first form in the early stage of implementation and then the second form at a later stage.

The 2nd Meeting of COP examined the report presented by the Secretariat and adopted the Decision II/1 7 concerning the form and interval of submitting the national report to COP. The decision says that **the first** national report shall focus on the assessment of the measures taken up to now to implement the Article 6, i.e. “General Measures for Conservation and Sustainable Utilization”, incorporate the information contained in the Country Study and be submitted prior to the 4th Meeting of COP which will make further decisions on the future form and interval of the national report. The implementation of CBD will be considered based on the experience from the first national report. One annex is attached to Decision II/17, i.e. the proposed guideline for the national report on implementation of the Article 6 which provided recommendations for the content to be included in the first national report.

1.2.2 Objective of Writing Report

The general objective of writing this first national report is that **through** summarizing the achievement and experience in implementing **the** Article 6 in the past few years, all the Parties shall **find** out gaps and propose further goals and actions for further implementation of the Article 6 so as to promote the implementation of all the Articles.

In case of China, the main objectives of writing this report are as follows:

a To summarize the progress in formulating the national strategy, plan and schemes for fulfilling the obligations under the Convention, in particular the Article 6 since China signed CBD in 1992 by obtaining as much as relevant information as possible from the existing documents such as China Action Plan for Biodiversity Conservation, China Country Study for Biodiversity, China’s Agenda 21 and China Action Plan for Environmental Protection(1991 -2000).

b . To assess the effectiveness of the strategies, policies, plans and measures already adopted and the current status of biodiversity, identify the difficulty faced in the process of implementing the CBD and propose the **further** actions to be taken in China to achieve the goal of the Convention, in particular the Article 6 and assess various needs for implementing all these actions.

c to draft the national report based up the above summary and assessment, hold a national workshop to discuss and improve this report and submit it to the Secretariat and COP 4 in time.

1.3 Objective and Task of the Article 6 in CBD

1.3.1 Objective

The Article 6 reads as follows:

According to its special status and capability, each Party shall

(a) formulate its national strategy, plan or program for conservation and sustainable utilization of biodiversity, or adjust its existing strategy, plan or program for such purpose which will embody the measures related to this Party in this Convention if provided otherwise,

(b) incorporate, where possible, the conservation and sustainable utilization of biodiversity into the plan, scheme or policy of relevant departments or across departments .

The Article 6 may be the one with most far-reaching significance in this Convention because it contains two most fundamental obligations. To these two obligations requires the Parties to formulate the national strategy, plan and policy for conservation and sustainable **utilization** of biodiversity and incorporate all this into their national plan for social and economic development. It also requires the competent authority of the Parties to take into full consideration the conservation and sustainable utilization of biodiversity in formulating their departmental plan, program and policy.

1.3.2 Task for Implementing the Article 6

(1) Formulation of National Strategy and Action Plan

National strategy is a program of actions at the national level for conservation and sustainable utilization. In the national strategy, the principle, position and attitude on the issues related to the implementation of CBD will be elaborated through an assessment of national biological resources and national capacity in human resources, institutions, facility and investment. The national fundamental policy, goal and specific indicators will be proposed for conservation and sustainable

utilization at the national level and the principle identified on how to incorporate it into the national plan for social and economic development. The policy and legal framework for this purpose will be established. The strategic measures and actions in every area of conservation and sustainable utilization of biodiversity will be put forward and all priorities for each action, policy and task identified.

“Action Plan” put forwards the priority actions and specific programs for achieving these goals set in the national strategy following the formulation of national strategy. In the action plan, specific activities, tasks and policies will be put forth, identifying what departments and institutions will be involved in every activity, what measure to take, where to carry out these measures, setting the schedule for implementing every task, proposing the budget for every program and indicating the financial need for operation, procurement of the facilities and transportation.

(2) Formulation of Departmental or Multi-departmental Action Plan, Program and Policy

Whether the national strategy and action plan for biodiversity can be implemented or not will depend on whether the relevant departments will incorporate conservation and sustainable utilization of biodiversity into their departmental or multi-departmental plan, program and policy. At the national level, biodiversity conservation is the responsibility of many departments as of conservation, utilization, publicity, education, science and technology research and management. NEPA is the leading agency for biodiversity conservation while the departments of resource management, planning, science and technology, education, finance, commerce, trade, publicity and justice share some responsibilities in this field. They should incorporate conservation and sustainable utilization into their departmental or multi-departmental program and work plan and formulate their relevant policies. To give a few examples, NEPA has adopted biodiversity conservation as national strategic area of environmental protection and accelerated the formulation of regulations, policies and rules for conservation. SPC should incorporate conservation and sustainable utilization of biodiversity into the national long-term and annual program for social and economic development. The Ministry of Finance will include the biodiversity projects in the national budgetary plan. The Ministry of Forestry, Ministry of Agriculture, Ministry of Construction, State Oceanic Administration and State Pharmaceutical Administration and some other resource management departments will incorporate conservation and sustainable utilization of biodiversity into their departmental long-term program and plan. The State Science and Technology Commission(SSTC) and CAS will list biodiversity research as a part of the national plan for development of science and technology. The State Education Commission, Ministry of Broadcasting and Television, Ministry of Culture and Journalism and Publication Administration and major newspapers and news agencies will take into consideration the issues of biodiversity conservation when formulating their plan for education and publicity. The Customs

Administration and Department of Animal and Plant Quarantine for Exported and Imported Commodities will strengthen the management of import and export of species resources and LMOs resulting from biotechnology. The State Patent Administration will give biotechnology patent protection. The State Administration of Industry and Commerce and Ministry of Public Security and other departments of law enforcement will consider punishing illegal hunting of wild animals as an important part of their work.

1.4 The Activities of China in Implementing the Convention on Biological Diversity

1.4.1 Establishment of National Coordinating Body

Immediately after the UNCED was closed, China began to take actions to follow the spirit of the conference, including the implementation of CBD in China. At the 23rd Meeting of the Committee of Environmental Protection under the State Council held on July 2, 1992, it was decided that NEPA would be the leading agency for implementing CBD in China. Early in 1993, a Coordinating Group for CBD Implementation was established with the approval of the State Council and through consultation with relevant departments. This Group was headed by NEPA and composed of the Ministry of Foreign Affairs, SPC, SSTC, Ministry of Finance, Ministry of Construction, Ministry of Agriculture, Ministry of Forestry, General Customs Administration, CAS, State Patent Administration, State Oceanic Administration and State Pharmaceutical Administration. An office under this Group was established in the Department of Nature Conservation, NEPA. In June, 1996, this Group was expanded by seven more departments and institutions, including the State Education Commission, Ministry of Broadcasting and Television, Ministry of Public Security, State Administration of Industry and Commerce, Xinhua News Agency, People's Daily and Guangming Daily.

1.4.2 Formulation of Action Plan

To fulfill the commitment to CBD, China formulated its national action plan for biodiversity conservation before the negotiation on the Convention was concluded. With the support of UNDP and the World Bank, ten departments headed by NEPA worked together to formulate "China Action Plan for Biodiversity Conservation". This action plan was initiated in 1992 and completed at the end of 1993. On June 13, 1994, a launching ceremony was held for this Action Plan, which was chaired by Mr. Song Jian, State Councilor on the behalf of the State Council.

1.4.3 Undertaking Country Study

From 1995 to 1997, with the assistance of [MEP, NEPA brought together 14 departments to conduct and formulate "China Country Study Report for

Biodiversity”. This report was adopted in principle at the meeting of the CEP under the State Council held in November, 1996 and issued by the State Council in December, 1997.

1.4.4 Participation in the Meeting of COP

From 1994 to 1996, the Chinese delegation has actively participated in all the meetings of COP and of its subsidiary bodies and made active contribution to the success of these meetings. At the 1st Meeting of COP, China was elected as Vice Chairman Of the Bureau of COP. The government of China also sent delegates to attend various meetings and relevant international activities organized by the Secretariat of CBD and other international organizations.

Chapter II. National Strategy and Action Plan for Biodiversity Conservation

2.1 National Strategy of Sustainable Development

Approved by the Central Committee of CPC and the State Council, Administrative Offices under the Central Committee of CPC and the State Council issued in November, 1992 a report jointly written by the Ministry of Foreign Affairs and NEPA on the participation of the Chinese delegation in the UNCED and relevant recommendations, which became later on Ten-point Strategy for Environment and Development". This report said that the Chinese delegation worked together with other delegates during the conference for adoption of some documents discussed at the conference and signed the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change (UNFCCC). The report also said that China would bear some international obligations and responsibilities and this would promote environmental protection and sustainable development in China. In this report, a ten-point strategy was recommended for environment and development according to the actual situation of China in order to fulfill the obligations under the Conventions to which China is a Party and materialize the spirit of the UNCED. Relevant to biodiversity in this strategy was as follows.

(1) adoption of sustainable development strategy

The report said that at present Chinese economy growth is characterized by too much consumption of resources and coarse growth. This mode of growth would not only cause great damage to the environment but also make development itself unsustainable, so to adjust the development strategy and follow the road of sustainable development is the right choice for accelerating the economic growth and solving the environmental problems arising from this process. For this purpose, the guiding principle must be reemphasized for simultaneous planning, development and operation of economic, urban and rural and environmental construction activities.

(2) promotion of eco-agriculture, persisting in afforestation and strengthening biodiversity conservation

The report further pointed out that more afforestation and strengthening conservation of land and forest resources was an urgent as well as long-term task. China is rich in biological resources which embody tremendous economic and scientific value and immediate efforts should be made to survey and know the real situation of biological resources and the current status of endangered species in China. Conservation and reasonable utilization of biodiversity should be strengthened. The area of nature reserves should be expanded and their construction and management be strengthened. China will establish in a planned way the centers for protecting and breeding endangered wild species and fine species of

domesticated animals, crops and herbs. Practical efforts will be made in protection and utilization of species and inherited genes and the export of such species and genes will be better managed. Research on biodiversity will be undertaken for reasonable development and utilization. Penalties will be given to those illegal behavior of rampant hunting and exploitation of endangered plants and animals according to relevant laws and regulations.

(3) employment of economic instruments to protect the environment

The report required that the governments at all levels should employ more economic instruments for environmental protection. According to the principle of non-gratuitous utilization of resources, the compensation fee for development and exploitation of resources will be gradually increased and studies on environment tax undertaken. Studies and pilot work will be undertaken to integrate environment and resources accounting with the national economic accounting so that the market price genuinely reflects the environmental cost brought by the economic activities.

2.1.2 China's Agenda 21

At the 23rd Meeting of the Committee of Environmental Protection under the State Council held on July 2, 1992, it was decided that SPC and SSTC would bring together NEPA, SETC and other departments, institutions and organizations in an effort to formulate "China's Agenda 21---A White Paper on Population, Environment and Development in the 21st Century". The 16th Working Meeting of the State Council held in March 25, 1994 adopted China's Agenda 21 and in July, 1994 the State Council officially issued this document.

(1) China's Agenda 21 identifies biodiversity conservation as key area.

China's Agenda 21 put forward the master strategy, policy and action plan for promoting the coordination of economy, society, resources and environment and sustainable development taking into consideration the national reality and the overall relationship between the population, environment and development. Chapter 15 in China's Agenda 21 touches particularly on biodiversity conservation where the policy, goal and priority projects in this field have been identified.

a. **Principles** for biodiversity conservation identified in Chapter 15 of China's Agenda 21 are as follows:

- The general policy for nature conservation is comprehensive planning, active conservation, scientific management and sustainable utilization
- The principle for conservation of wild animals is strengthening resource conservation, active artificial breeding and reproduction and reasonable exploitation and utilization,

- The policy for conservation and utilization of natural resources is that equal importance is attached to exploitation and conservation and breeding, whoever exploits will protect, whoever utilizes will compensate and whoever damages will recover;
- b. The main goal for biodiversity conservation set in China's Agenda 21 is as follows :
- To establish and improve the national network of nature conservation. By 2000, a network of nature reserves with various types, different levels, reasonable distribution and a considerable area will be established nationwide;
 - To protect unique habitats and ecosystems, such as wetland, coral reef ecosystem, mangrove ecosystem, estuary ecosystem and highland ecosystem,
 - To protect other habitats and ecosystems uncovered by nature reserves,
 - To establish and improve the national network of ex-situ conservation of endangered animals and plants and protect genetic resources,
 - To conserve aquatic biodiversity in freshwater and marine areas.
- c Priority areas for biodiversity conservation. Plan of Priority Projects for China's Agenda was formulated to implement China's Agenda 21 In this plan the priority projects related to biodiversity conservation are listed in the following:
- Conservation and utilization of natural resources which mainly includes studies on incorporating the method of environment and resource accounting into the national economic accounting, protection and reasonable use of wetland, construction of a monitoring network for environmental and ecological trends, conservation and management of mangrove and coral reef ecosystems, management of eco-tourism, demonstration projects for forest reclamation and integrated forestry and agriculture, etc.;
 - Global change and biodiversity conservation, which mainly covers construction of a network of biodiversity monitoring and conservation of endangered and rare species, conservation, recovery and sustainable utilization of tropical rain forest, desertification combating and demonstration projects and demonstration projects for panda protection, etc.

(2) Incorporation of China's **Agenda 21** into National Plan for Social and Economic Development

In July, 1994, the State Council issued a notice on implementing China's Agenda 21. In this notice, it was pointed out that considering China is a developing country, the national reality as well as the goal already set for the development between the end of this century and the middle of the next century, attention should not be paid to the quantitative growth of economy by 'ignoring the studies on the mode of sustainable development and life and China should formulate its proper strategy and action plan

by following the sustainable development thinking and explore a road of development with the Chinese characteristics. It was also pointed out in this notice that China's Agenda 21 was not only a guiding document for social and economic development in China but also a practical action taken by China to seriously fulfill its international commitment and follow the principles identified by the UNCED. As to the implementation of China's Agenda 21, this notice required the governments at all levels to use this agenda as guidance for formulating their long-term and mid-term plan for economic and social development and incorporate the basic concept and content in this agenda into the ninth five-year plan and the long-term program for 2010.

(3) Implementation of China's Agenda 21

In June, 1996, the State Council issued a proposal jointly formulated by SPC and SSTC concerning further promoting the implementation of China's Agenda 21. The main points in this proposal are:

1. Requiring the governments at all levels and relevant departments to adopt sustainable development as a major strategy and policy and give first priority to population control, environmental protection and economical use of resources and harmonization of economic and social development with population, environment and resources.
- Requiring the governments at all levels to implement China's Agenda 21, seriously enforce the laws and regulations concerning environmental protection and resource management and promote the fundamental change in the economic system and growth mode.
1. Requiring that the basic concept and content of China's Agenda 21 be incorporated into the regional and departmental plans for social and economic development and this agenda implemented in phases.
1. Requiring the education departments at all levels to incorporate the strategy of sustainable development into the primary and higher education and the content related to the population control, sustainable utilization and environmental protection be included into the relevant curriculum or reading materials for primary and high school students.

2.1. 3 China National Ninth Five-year Plan for Economic and Social Development and Long-term Program for 2010

Since 1994, China has begun to prepare for formulating the national ninth five-year plan for economic and social development and trans-century planning. After many discussions and revisions, this plan and program was adopted by the National People's Congress at its fourth meeting held in March, 1996. This program fully embodied the strategy of sustainable development and the policy of strengthening

environmental protection and ecological conservation.

(1) Basic policy in the program

Having recalled the economic and social development in the past five years, this program put forward the goal for development in the next 15 years and nine guiding principles. The essence of these nine principles is to implement the strategies of sustainable development and revitalizing the nation with education, science and technology and promote the sustained, rapid and sound development of economy. For practically implementing the sustainable development strategy and promoting social development on a comprehensive basis, this program emphasized in its chapter on conservation and exploitation of land resources that relevant laws would be enforced in order to protect and utilize on a reasonable basis land, water, forest, grassland, mineral and marine resources, the price system and rule of non-gratuitous use of natural resources be improved, the mechanism of economic compensation for resource reproduction gradually established, land management and survey of marine resources strengthened and the marine industry developed while the marine environment protected.

(2) Environmental goal in the program

The program gives special 'stress to strengthening environmental protection and ecological conservation. It points out that the rule of simultaneous planning, construction and operation of economic, urban and rural and environmental constructions must be followed and all the construction projects must meet the environmental requirements. Environmental education must be provided so as to increase the public environmental awareness. The legal and management systems for environmental protection must be improved. By 2000, the trend of environmental pollution and ecological damage will be basically controlled and the environmental quality in some regions and cities be relatively improved. Great efforts will be made to protect the ecology, develop the ecological agriculture, accelerate the comprehensive management of soil erosion and forest vegetation recovery, control the pollution from agricultural runoffs and achieve the forest coverage of 15.5% by the year 2000.

(3) Report on the program

Premier Li Peng delivered a report on this plan and program at the fourth meeting of the Eighth National People's Congress which finally adopted this report. This report gave stress to strengthening environmental protection, ecological conservation and reasonable exploitation of resources by pointing out that serious environmental problems and resources over-consumption are caused by the coarse production pattern in the stage of rapid industrialization in addition to the quantity of land, water, forest and mineral resources per capita lower than the world average and

these problems will become more outstanding as the population and economy grow, so great efforts will be made to protect and exploit reasonably such natural resources as land, water, forest, grassland, minerals and biological resources and all means employed to reduce over-consumption or waste.

2.1.4 The State Council Decision on Several Environmental Issues

To implement the national policy of environmental protection, the strategy of sustainable development, the national ninth five-year plan for social and economic development and the long-term program for 2100 and achieve the environmental goal for 2000, the State council promulgated in 1996 the Decision on Several Environmental Issues. Considering China has ratified CBD, this Decision has provisions particularly on biodiversity conservation which can be summarized as follows :

- To strengthen the conservation of resources and ecology. In item 6 entitled “maintaining ecological balance and protecting and exploiting reasonably natural resources, it requires that the governments at all levels shall take practical measures to strengthen the conservation of such natural resources as fresh water, land, forest, grassland, minerals, marine resources, plants, animals and climate and environmental protection and ecological conservation. Reasonable exploitation of natural resources can be undertaken with the prerequisite of maintaining ecological balance by increasing afforestation, preventing rampant deforestation, increasing forest coverage, accelerating comprehensive control of soil erosion, reclaiming grassland habitat, preventing over-grazing, preventing exploitation of bush, herbs and other sand-fixing plants in grassland and desertified areas and adopting sand prevention and fixation techniques to combat desertification.
- To conserve biodiversity. The decision gives special stress to active conservation of biodiversity, development of nature reserves, scenic spots and urban green areas and strengthening their construction, management and conservation and cancellation of all illegal construction and exploitation’ activities in nature reserves and scenic spots which will cause damage to natural resources and the environment there.
- To give priority to research on environment and biodiversity. The decision requires that the central and local governments and relevant departments give priority to research and development of environmental science and technology when they formulate their long and mid-term as well as annual plan for development of science and technology and research will be focused on major subjects such as energy-efficient technologies or those practical technologies for cleaner production, pollution prevention and control, biodiversity and ecological conservation.

2.2 Strategy for Biodiversity Conservation in China Country Study

From 1995 to 1997, with the assistance of UNEP and GEF, NEPA brought together fourteen departments in a common effort to formulate China Country Study for Biodiversity. These departments include Ministry of Foreign Affairs, SPC, SEC, SSTC, Ministry of Finance, Ministry of Construction, MOA, Ministry of Forestry, the General Customs Administration, CAS, State Patent Administration, State Oceanic Administration and State Pharmaceutical Administration. In November, 1996, the Committee of Environmental Protection under the State Council adopted in principle this report. At the end of 1997 the State Council approved this report. Chapter 6 in this report has identified the strategic goal for national capacity building for conservation and sustainable utilization of biodiversity in the next 15 years, which include legal system construction, institutional building, human resources building, policy framework building, conservation facility, science and technology, publicity and education and public participation and international cooperation for biodiversity conservation. The main points in these areas are abstracted in the following.

2.2.1 Legal System Construction

On the basis of a summary of current situation of biodiversity-related legislation and law enforcement, this report proposes a goal for legal construction for now and a considerable period in the future.

- To improve the biodiversity-related legal system. On the basis of the existing legal system, relevant laws and regulations will be made up for to form a multi-level legal system composed of national laws and regulations, departmental rules, local regulations and international conventions.
- To establish corresponding national regulations for implementing the international conventions. In terms of fulfilling the obligations under CBD, the most urgent work for legislation in this field is to formulate the national regulation for acquisition of genetic resources and biosafety management and improve the rule of intellectual property rights, in particular respect and maintenance of traditional knowledge, inventions and heritage of local communities.
- To strengthen the team of law enforcement. There is a need to make clear the nature, tasks and power of various teams of law enforcement from the perspective of law enforcement. More professionals with the knowledge of biodiversity will be added into the enforcement team while more training will be provided to the enforcement staff in the meanwhile, the mechanism will be improved of supervising, rewarding or punishing the enforcement staff

2.2.2 Institutional Building

- To improve the national biodiversity unit(NBU). Even the number of member

departments in the Coordinating Group for CBD Implementation has increased from 13 to 20, more departments and institutions should be involved in this group. NBU should be a body involving government departments, industry sectors, non-governmental groups and research institutions. In addition, there is a need to establish an operational body for CBD implementation.

- To strengthen the department of biodiversity management and clarify their responsibilities and power. For the time being, many departments such as that of resource management, planning, science and technology and publicity have the responsibilities for biodiversity conservation in addition to NEPA as leading agency. There is a need to further clarify the function and responsibility of each department and for interdepartmental coordination.
- To strengthen construction of local bodies of biodiversity management. It is required that a coordinating body for biodiversity be established at the provincial level, in particular in those provinces rich in biodiversity. In the meantime, the provincial departments of environmental protection, forestry, agriculture and marine administration which have responsibility for nature conservation will be strengthened.
- To strengthen construction of non-governmental academic and research institutions. There are more than 20 national professional societies, associations and foundations in the field of biodiversity conservation. There is a need to build up academic links between societies and associations and bring to a full play the roles of academic institutions in decision making related to biodiversity conservation. There is also a need to strengthen the construction of research institutions and establish joint research groups or labs for biodiversity studies between departments and institutions.

2.2.3 Human resources development

- Education of professionals. To meet the need of research on biodiversity, it is estimated that from 1996 to 2000 additional professionals on biological sciences are needed every year.
- Training of technical people. There is a need to provide training for a large number of technical people working in the departments of agriculture, husbandry, fishery, marine management, environment and pharmaceutical administration with knowledge of conservation and sustainable utilization of biodiversity. Training will be also provided to the technical people assisting the biodiversity education and research and those working in the local conservation facilities and ecological monitoring stations.
- Training of management. Biodiversity management requires a group of high-quality management well-grounded in basic biodiversity knowledge and trained with knowledge of politics, economics, law and administrative science. It is required that the relevant competent authorities at the central and local levels will recruit more managers with master and doctorate degrees. More professionals will be sent to work in local monitoring and conservation

facilities.

2.2.4 Policy Framework Construction

- To implement the strategy of sustainable development, which is adopted by the national plan for social and economic, the long-term program and China's Agenda 21 . The core of this strategy is development but requires protection of environment and ecology and conservation and sustainable utilization of biodiversity and natural resources while developing economy.
- To establish a system of biodiversity management. Based upon the existing EIA practice, the rule of assessing the impact on biodiversity will be developed. A responsibility system for nature conservation targets will be established for an examination of political performance of the administrative heads at local levels. A licensing system for use of biological resources will be established and improved and a system of recovering ecological damages within given time will be established.
- To formulate the economic policy for conservation and sustainable utilization of biological resources. To meet the requirement of market economy, the central government needs to adjust its strategy for exploitation and utilization of biological resources. For this, a system of biological resources accounting needs to be established and will be incorporated into the national economic accounting system. The policy of non-gratuitous use of biological resources will be carried out and the rule of compensation for utilization of biological resources or the resource tax will be promoted.

2.2.5 Construction of Conservation Facilities

- To strengthen construction of in-situ conservation facilities. It is planned that by the total area of national nature reserves, scenic spots and forest parks will come up to 105 million hectares, accounting for 10% of the total land area of the country. The percentage is planned to rise to 13% by 2010.
- To strengthen the construction of ex-situ conservation facilities and implement the plan of ex-situ protection of giant panda, to improve and establish a group of ex-situ breeding centers for endangered animals, to improve zoological facilities at provincial capitals and to build a group of additional zoos in medium-sized and small cities, to establish data bank for storing species, pollens and cells and to carry out some projects of returning to nature some animals and plants.
- To strengthen the management of biodiversity off nature reserves. The main strategic measure is to establish a national multiple species conservation system, i.e. to establish a small nature reserve in areas with important biodiversity, to give proper guidance to resource exploitation, to establish areas of various resources management, to set up various ecological demonstration zones in

ecologically vulnerable areas and to develop eco-farming, etc.

2.2.6 Development in Science and Technology

- To further develop surveys and cataloguing. The priority in this field for the next fifteen years is to complete the formulation and publication of “China Plant Record”, “China Animal Record” and “China Sporo-producing Plant Record”. Focus will be put on the survey of endangered species for publishing “Red Book of Endangered Species”. The survey, collection and cataloguing of crop resources and domesticated animals need to be improved.
- To strengthen the capacity building for biodiversity monitoring. In the next 15 years, bodies of biodiversity monitoring and management and technical support will be established nationwide. A national network of biodiversity monitoring will be gradually established through restructuring and integrating the monitoring systems developed by different departments and regions. The monitoring of import and export of wild animals and plants and genetic resources will be strengthened. The monitoring of the environmental security of products resulting from biotechnology will be undertaken.
- To strengthen the capacity building for biosafety management. China will pay much attention to biosafety issues and establish as soon as possible the national mechanism of safety management and formulate the technical guidelines and risk management regulation for risk assessment in relation to transportation, use and release of various LMOs resulting from biotechnology. At present China sets about national legislation for biosafety management in relation to biotechnology.

2.2.7 Education, Publicity and Public Participation

- To strengthen the construction of educational and publicity facilities. There is a need to add the content of biodiversity on the existing facilities for environmental education and publicity. There should be more radio and television programs and items in newspaper and journals on biodiversity. Various books, drawings, periodicals and magazines on biodiversity will be published. In big and medium-sized cities, natural museums for popularizing biodiversity knowledge will be established. Education will be provided to farmers.
- To increase the public participation in biodiversity conservation. There is a need to formulate a plan for public education on biodiversity and set up a mechanism of public participation. There is also a need to clarify the roles of government departments, non-governmental academic institutions, higher education and research institutions, enterprises and non-governmental institutions and the general public in conservation and sustainable utilization of biodiversity, in particular, the participation of ethnic groups, local communities,

women, youth, science community and religious community.

2.2.8 Principle for International Cooperation

- To stick to the principle position, on biodiversity issues, i.e. to stick to the principles of one country's sovereignty over its biodiversity, coordinated exploitation and conservation by taking into full consideration the real situation of the country, the principle of provision of new and additional financing for biodiversity from developed to developing countries according to the relevant Articles in CBD and technology transfer on a fair and most preferential basis.
- To expand areas of international cooperation, including technology transfer, exchanges of personnel and information and transboundary joint action, in addition to multilateral and bilateral cooperation and non-governmental cooperation.
- To strengthen the capacity building for managing international cooperative projects. A package plan of cooperative projects on biodiversity will be formulated based upon the overall needs of the whole country with priority projects identified. With this, applications for assistance will be sent to GEF and other international organizations. To those approved projects, the capacity for project implementation and management will be strengthened by deploying proper human, financial and material resources

2.3 China Action Plan for Biodiversity Conservation

The government of China has always adopted an active attitude towards formulating the national strategy and action plan for biodiversity conservation. As early as in 1987, the Committee of Environmental Protection under the State Council issued "China Program for Nature Conservation". This program mainly touched upon issues of conservation of ecosystems and species. In 1991 when the negotiation on CBD was undergoing, NEPA applied to GEF for assistance with the formulation of "China Action Plan for Biodiversity Conservation, which was also supported by UNDP and the World Bank. This project was initiated in 1992. Its implementation was headed by NEPA and participated by SPC, SSTC, Ministry of Finance, Ministry of Construction, Ministry of Public Security, Ministry of Agriculture, Ministry of Forestry, CAS and State Oceanic Administration. After two years of work, this project was completed in 1993 China officially launched this action plan in June, 1994.

2.3.1 Main Objectives and Priority Actions Identified by Action Plan

According to its obligations under CBD and the present and future needs for conservation and sustainable utilization of biodiversity, this plan proposed the objectives for seven areas and 26 action options. According to the importance, urgency and practical operability of conservation, eighteen priority projects for

immediate implementation have been identified.

(1) Objective I To Strengthen Fundamental Studies on Biodiversity

Action 1 To conduct a comprehensive assessment of the current situation and economic value of biodiversity in China

Action 2 To establish a biological geographical zoning system for biodiversity conservation

(2) Objective II To improve the network of national nature reserves and other protected areas

Action 3 To examine comprehensively the distribution and current status of nature reserves so as to assess the representation and effectiveness of national system of nature reserves.

Action 4 To adopt measures to strengthen conservation capacity of existing nature reserves.

Action 5 To establish new nature reserves in areas in urgent need of biodiversity conservation, to select locations for nature reserves for forest, grassland, wetland, fresh water, marine ecosystems and crop and domesticated animal wild relatives.

(3) Objective III To protect wild species significant to biodiversity

Action 6 To assess the current status of species in nature reserves, including hunting and other threatening factors

Action 7 To identify the priority for conservation of wild species according to the importance of biodiversity and their degree of being threatened

Action 8 To conduct a survey on trade of wild animals and plants

Action 9 To examine the facilities for ex-situ conservation of animals and plants and the effectiveness of protection of priority species

Action 10 To formulate the plan for conservation of various species according to the comprehensive analysis of ex-situ and in-situ conservation measures and taking into consideration various limits for returning to nature those species bred in ex-situ conservation facilities

Action 11 To improve the ex-situ management of protected species

Action 12 To conduct science and technology research to support the implementation of action recommended in Objective III.

(4) Objective IV To protect the genetic resources of crops and domesticated animals

Action 13 To protect the genetic resources of crops, grass for grazing and vegetables

Action 14 To protect the genetic resources of domesticated animals

Action 15 To protect the genetic resources of timber

(5) Objective V In-situ Conservation Outside Nature Reserves

Action 16 To incorporate biodiversity conservation into the national economic Plan

Action 17 To adopt timber business measures favorable to biodiversity conservation

Action 18 To promote eco-fanning measures

Action 19 To protect main vegetation or habitats outside nature reserves and prohibit or control strictly the exploitation of meadows and wetland

Action 20 To protect the coast and marine environment

(6) Objective VI To establish the national network of biodiversity information and monitoring

Action 21 To unify the information standard and monitoring techniques

Action 22 To improve and establish departmental networks of information and monitoring

Action 23 To establish the national system of information and monitoring by involving departmental relevant networks for biodiversity conservation in China

(7) Objective VII To coordinate biodiversity conservation with sustainable development

Action 24 To establish areas for both exploitation and conservation of biodiversity

Action 25 To set up regional economic models for coordinating the conservation and sustainable utilization of biodiversity

Action 26 To undertake the demonstration for construction and management of nature reserves

2.3.2 Priority Protected Ecosystems Identified in Action Plan

- Priority protected areas in the forest ecosystem: 80 nature reserves in 27 important regions, among which there are 11 in tropical region, 55 in subtropical region and 14 in temperate region,
- Important protected areas in the grassland and desert ecosystems 24 nature reserves, among which there are 6 with international significance and 18 with domestic significance,
- Important protected areas in the wetland and water ecosystems: 29 nature reserves, among which there are 16 with international significance and 13 with domestic significance,
- Important protected areas in the marine and coastal ecosystems 23 nature reserves, among which there are 7 for the marine ecosystem, 4 for coral reef ecosystem, 7 for estuary ecosystem and 5 for mangrove ecosystem.

2.3.3 Priority Protected Species in Action Plan

- 79 species of mammals, among which there are 60 with international significance and 19 with domestic significance;
- 287 species of birds, among which there are 58 for priority protection and 229 unique species only living in China;
- 12 reptiles, among which there are 4 for first-class protection and 8 for second-class protection;
- 5 amphibians, among which there 3 for first-class protection and 2 for second-class protection;
- 28 fishes, among which there are 10 for first-class protection, 11 for second-class protection and 7 for third-class protection;
- 38 insects, among which there are 2 for first-class protection, 11 for second-class protection and 22 key protected butterflies;
- 16 marine invertebrates, out of which 2 for first-class protection, 12 for second-class protection and 2 for third-class protection;
- 151 plants, out of which 6 pteridophyte, 17 sporo-producing plants and 128 angiosperm;
- 9 domesticated animals including 19 adapted species;
- 18 places for remaining wild relatives to agricultural plants, including 15 wild relatives to germ plasma.

Chapter III. Multi-departmental Action Plan and Policy for Biodiversity Conservation

3.1 China Action Plan for Environmental Protection(1991-2000)

From 1992 to 1993, NEPA and SPC worked together in formulating “China Action Plan for Environmental Protection(1991-2000), which was approved by the State Council in September, 1993. This plan set the environmental goal for the 1990’s and elaborated the priority areas for strengthening and reform in the environmental policy and management. It also proposed the action plan involving different departments for the 1990’s. This plan was formulated when the negotiation about CBD was undergoing and the preparation for the UNCED was being made, so this plan covered the multi-departmental action plan for biodiversity conservation, which has the following specific areas.

3 1.1 Conservation and Sustainable Utilization of Forest

(1) Objective

According to the plan, China will have additional afforestation area of 35.9 million hectares and closure of 8.98 million hectares from 1991 to 2000. During the ninth five-year plan period(1996-2000), 14.87 million hectares for afforestation and 3.72 million hectares for closure will be added, with additional area of forest reaching 13.73 million hectares. According to the plan, the total area of afforestation will be increased to 57.61 million hectares, which will result in an increase in the national timber growth from 275 million meters in the mid-1980’s to 345 million cubic meters at the end of this century. At the same time, the total timber consumption on the annual average will be controlled within 300 million cubic meters with the forest coverage reaching 15% to 16% of the total land area of the country.

(2) Priority Projects

- Construction of forest belt in north, northeast and northwest China. This project will cover thirteen provinces, with the total land area coming up to 4.06 million km², accounting for 42.4% of the total land area of the country. According to the plan, an area of 10.75 million hectares will be afforested from 1989 to 2000.
- Construction of forest belt in the upper and middle reaches of the Yangtze River. In 1989, the central government approved the Master Plan for Phase I of Construction of Forest Belt in the Upper and Middle Reaches of the Yangtze River. An additional afforestation area of 6.66 million hectares will be increased by 2000 during the first phase.
- Construction of coastal forest belt. A forest belt composed of various trees and functions will be built in 195 counties or municipalities in 11 provinces

along the coast with an additional afforestation area of 3.55 million hectares by 2010.

- 1 Plain Greening Project. This project will be implemented mainly in agricultural fields in plains. According to the plan, during the ninth five-year plan period 915 counties in plains will meet the afforestation standard formulated by the relevant ministry.
- 1 Construction of bases for production of rapid-growth timbers. To reduce the pressure of deforestation and timber production, the government of China decided that bases with a production area of 20 million hectares of rapid-growth timbers will be built nationwide.

3.1.2 Conservation and Sustainable Utilization of Grassland

(1) Objective

According to the plan, an additional area of 13.3 million hectares of artificial and recovered grassland and that of 8 million of closed grassland will be constructed based upon the achievement made during the eighth five-year plan period, with the total area of artificial and recovered grassland of the whole country being accumulated to 33.3 million hectares and that of closed grassland to 20 million hectares. The area of artificial and recovered grassland will account for 10% of usable grassland and 25% of degraded grassland be recovered.

(2) Priority Projects

- Priority will be given to recovery of degraded grassland in northern and southern parts of Xinjiang, Qinghai Lake rim, Nanzhou in Gansu, Hexi Corridor, Taihangshan and Luliangshan in Shanxi, southern tip of Daxing'anling and southern part of Inner Mongolia Highland.
- Construction of grass nature reserves in bush grassland at the bottom and in the middle of Mt. Huang in Anhui, basin meadow in Mt. Animaqing in Qinghai, cold marsh meadow in Ruo'ergai in Sichuan, meadow in Dajiuhu, Shennongjia, Hubei, coastal salinized meadow in the delta of the Yangtze River, meadow in Hulunbei'er, Inner Mongolia, typical grassland in Xilingele, Inner Mongolia and forest grassland in Tianshan Mountain, Xinjiang.

3.1.3 Construction of Ecological Agriculture

(1) Objective

To conserve and utilize sustainably natural and agricultural resources, to prevent and control the pollution from township enterprises and agricultural chemicals, to utilize the traditional and suitable farming techniques, to improve the rural and agricultural environment and conserve the agricultural biodiversity through

construction of ecological projects.

(2) Priority projects

To improve and upgrade the existing demonstration projects on eco-farming and undertake the demonstration and popularization of ecological farming at the county level in 50 typical counties in Three-river Plain, Inner Mongolia Grassland, North China Plain, Huang-Huai-Hai River Basins, Yellow Earth Highland, Hetao Region, Sichuan Basin, the middle and lower reaches of the Yangtze River, Jiang-han Plan, Hilly Region in South China and Yun-Gui Highland.

3.1.4 Protection of Marine Environment and Resources

(1) Objective

To control the flow of pollutants from land sources into the sea, mainly the petroleum and COD; to protect and improve the ecosystems in Zhoushan Islands, Hangzhou Bay, Jiaozhou Bay, Jinzhou Bay, Taiwan offshore area, Daya Bay and South China islands; to establish 60 to 80 marine and coastal nature reserves.

(2) Priority Projects

- To conduct studies on the means to control red tide in marine areas in China;
- To develop the technology for breeding in marine areas and environmental monitoring and improvement in breeding areas of aquatic products;
- To build marine nature reserves and ecological monitoring stations;
- To conduct demonstration projects for reasonable development and utilization of beaches.
- To plan the large-legend marine zoning of key marine areas and the coastal environment planning and development demonstration projects;
- To make a big-legend zoning of the marine areas of China and planning of key marine areas and coastal environmental protection and conduct some demonstration projects.

3.1.5 Species Conservation

(1) Objective

To establish or improve 22 breeding centers for ex-situ conservation of national endangered animals and plants, among which there are 9 centers for ex-situ stores of plants, 12 centers for breeding of endangered animals and 1 comprehensive breeding center; to add more protected animals and plants onto the national and local lists by 2000 and to return to nature an additional number of animals based upon the work in the past **five** years.

(2) Priority Projects

To establish or improve 13 breeding and reproduction centers for endangered animals: Xinjiang(wild horse), Wuwei in Gansu(hoof animals), Zhangye in Gansu(pheasant animals), Xining(endangered animals and plants in Qing-zang Plateau), Hailin in Helongjiang, Honghu in Hubei(river dolphin), Anhui(river dolphin), Dafeng in Jiangsu(David's deer), Daxing in Beijing(David's deer), Chongming Island in Shanghai(Chinese sturgeon, white sturgeon), Xuancheng in Anhui(Yangtze Crocodile), Guangzhou(Primates) and Chengdu in Sichuan(giant panda).

3 1.6 Wetland Protection

(1) Objective

To increase the awareness of wetland protection through publicity and to establish 180 wetland ecosystem reserves by the year 2000.

(2) Priority Projects

To establish a group of mobile monitoring centers for wetland resources in all provinces and autonomous regions; to undertake demonstration projects for conservation and sustainable utilization of wetland in Three-river Plain in northeast China and select a group of lakes and marsh under development for wetland renovation and pollution control.

3.1.7 Construction and Management of Nature Reserves

(1) Objective

To establish a national network of nature reserves of various types, reasonable distribution, multi-level management and proper area by 2000 with the total number of nature reserves of various types exceeding 1000 and the total area reaching 70 million hectares, accounting for 7% of the total land area of the country equal to the world average level, as well as a reasonable structure of nature reserves.

(2) Priority Projects

To focus the construction of nature reserves in the tropical, subtropical, coastal and other areas with high population density, give priority to conservation activities in biodiversity-rich regions and for national key protected animals and plants and strengthen the construction of nature reserves such as marine, wetland, meadow,

desert and natural heritage.

3.2 National Ninth Five-year Plan for Environmental Protection and Long-term Program for 2010

In September, 1996, the State Council promulgated the National Ninth Five-year Plan for Environmental Protection and Long-term Program for 2010 jointly formulated by NEPA, SPC and SETC. This plan and program put forward the environmental plan for the ninth five-year plan period and the phase-by-phase environmental goal and policy for the period 1996-2010 as well as the main environmental tasks and plan for the period 1996-2000 which have identified biodiversity conservation as key area of environmental protection for 1996-2000. Main indications of such priority are as follows.

3.2.1 National Goal for Environmental Protection

The goal this plan and program proposed for environmental protection and nature conservation for 1996-2010 is:

- To establish an effective system of environmental management and an environmental legal system suitable to the socialist market economy, to control the trend of environmental pollution and ecological damage and improve the environmental quality in some cities and regions by the year 2000.
- The goal for nature conservation for 2010 is to increase the forest coverage to 17.5%, to improve the forest resources structure apparently, control nearly one fourth of land loss due to soil erosion and land desertification, to control and recover one half of degraded, desertified and salinized grassland, to the conditions for ecological agriculture, to increase the capability of combating natural disasters and to develop further nature reserves and biodiversity conservation.

3.2.2 National Environmental Policy

Environmental protection is China's basic national policy. To implement it, this plan and program has reiterated the following environmental policies.

- (1) To stick to the precautionary principle and policy of integrated prevention and control. Environmental protection will be closely connected with the transition in the mode of economic growth. The role of environment in adjusting the economic activities will be brought to a full play by requiring all the construction projects to meet the environmental standards and adopting a life-cycle control approach to the environmental prevention and control and ecological conservation. The prioritization of resource deployment will be

promoted and the quality and efficiency of economic growth enhanced.

- (2) To stick to the policy of the polluters pay. Legal, economic and administrative instruments will be combined to increase the management level and efficiency and strengthen the environmental management. Enforcement of environmental and relevant laws will be strengthened by reversing the situation of development at the expense of environment and avoiding pursuing regional or short-term interests. Serious penalties will be given to those illegal behavior or crimes.

3.2 3 Key Areas of Nature Conservation During 1996-2000

While proposing the main objective and tasks for nature conservation during 1996-2010, the following key areas have been identified.

(1) Priority Area of Biodiversity Conservation

- To establish the nature reserves aiming to protect giant pandas, river dolphins and some endangered animals and plants, the wetland reserves of international significance and the nature reserves with undamaged ecosystems in Qiangtang in Xizang, Kekexili in Qinghai, Ke'erqin in Inner Mongolia and coral reefs in South China Islands.
- To accelerate the construction of nature reserves in tropical and subtropical regions rich in biodiversity and with high population density from the point of view of rescuing and conserving biodiversity and to strengthen the construction of nature reserves such as meadow and grassland ecosystems, marine and coastal ecosystems, geological heritage and ancient biological heritage.
- To establish and improve the national breeding and domestication centers for endangered and rare animals, the gene bank for national endangered plants and animals and the database for various species, habitats and genetic resources and to protect and develop the genetic resources of crops, domesticated animals and wild relatives.
- To establish the national labs for studies on biodiversity and endangered animals and plants.

(2) Key areas of ecological conservation

- To undertake the activities of afforestation, grass planting, sand control, grassland recovery and soil conservation, to protect and recover effectively the ecological environment, to attach importance to the protection of unique ecosystems in tropical forest, natural forest, wetland and ecologically vulnerable biodiversity-rich areas.
- To establish the legal system of nature conservation and natural resources management, to strengthen the environmental management of resource

exploitation activities, to pay attention to protection of tourism resources and scenic spots and accelerate the implementation of such effective environmental rules as EIA.

- To take water and soil conservation and combating desertification as basis for ecological improvement and poverty reduction, to continue the water and soil conservation projects in seven river basins during the ninth five-year plan period, to accelerate the pace of soil erosion control in the middle reach of the Yellow River and the upper and middle reaches of the Yangtze River, to make great efforts in 20 desertification control projects in 20 key counties and 9 demonstration areas.
- To formulate the regulations and standards for management of agricultural environment, to accelerate the construction of agricultural environmental monitoring, to control the pollution from agricultural chemicals, to promote comprehensive pest management, to develop vigorously the ecological agriculture and to conserve agricultural biodiversity.

(3) Key areas of marine environment and resources protection

- To protect coral reefs and their ecosystem, to establish 3 coral reef reserves of international significance in Xisha Islands, Dongshan Island, Nansha Yongshu Reef, to research the technology for coral reef recovery and promote the recovery of damaged coral reefs.
- To protect the coastal mangrove and its ecosystem, to establish 5 to 10 new mangrove reserves in Guangxi, Guangdong and Hainan which will increase the total area of mangrove reserves to 90% of the total mangrove area, to increase the mangrove area from 150 thousand hectares to 300 thousand hectares through species introduction and develop mangrove aquatic products breeding techniques.
- To strengthen the monitoring of marine environment, establish the national network of marine environmental monitoring, to improve the central monitoring station and 3 regional monitoring centers, to build 15 to 20 grassroots stations, to establish and improve 3 national fishery monitoring stations in marine areas, to establish 30 important fishery monitoring states and the national monitoring and warning stations for red tide.

3.3 National Program for Nature Reserve Development(1996-2010)

To strengthen the in-situ conservation of biodiversity, NEPA worked together with SPC, Ministry of Finance, Ministry of Forestry, MOA, State Oceanic Administration and other relevant departments in a common effort to formulate "China National Program for Nature Reserve Development"(1996-2010) from 1994 to, 1996. This program was adopted by the Committee of Environmental Protection of the State Council in 1995 and promulgated by the State Council at the end of 1997. This program outlined the current situation of nature reserve construction and

management, elaborated the guiding principles for formulating the program of nature reserve development, proposed the two-phase objectives for 1996-2000 and 2001-2010 and formulated specific planning schemes.

3.3.1 Current Situation of Nature Reserve Construction and Management

(1) Current Situation of Nature Reserve Construction

The number and area of nature reserves is growing fast, resulting in formation of a national network of nature reserves. By the end of 1995, 799 nature reserves of different levels and types have been set up in China; covering the total area of 71.85 million hectares, accounting for 7.19% of the total land area of the country. Among them, there are 99 national nature reserves with an area of 17.18 million hectares, 344 provincial ones with an area of 51.38 million hectares, 82 municipal ones with an area of 390 thousand hectares and 274 county-level ones covering an area of 2.9 million hectares. Ten nature reserves in Changbai Mount, Dinghu Mount, Wuyi Mount, Fanjing Mount, Xilinkuole, Bogeda Mount, Shennongjia, Yancheng and Xishuangbanna have been included in "MAB Network".

In addition to nature reserves, by the end of 1995, China has also set up 512 scenic spots(119 national scenic spots), covering a total land area of 9.6 million hectares, accounting for about 1% of the total land area of the country and 710 forest parks(248 national forest parks).

(2) Current Situation of Nature Reserve Management

- a. A legal system for nature reserve has taken primary shape. In the past ten years, China has promulgated a series of laws and regulations concerning nature conservation. In 1985, the Method of Management of Forest and Wild Life Reserves were issued. In October, 1994, the State Council promulgated the "Regulation Concerning Nature Reserves" , which provides a legal basis for nature reserve construction and management.
- b. A system of nature reserve management has been preliminarily established involving departments of environment, forestry, marine administration, minerals management and water conservation. The environment department is responsible for overall planning and policy making with the assignment of individual department in a common effort for better nature reserve management.
- c. The management bodies and personnel has been gradually strengthened. In the existing nature reserves, 62.1% of them has set up the management bodies and 68.5% of them has been equipped with management personnel.

(3) Main Problems

- a. The rapid population and economic growth has led to over-exploitation of natural resources and biodiversity reduction. The number and area of existing nature reserves **cannot** meet the, needs of biodiversity conservation.
- b. Adequate attention is not given to the construction of nature reserves and the pace of development is not balanced with the area of nature reserves in 9 provinces lower than 1% of the land area.
- c. The management level cannot catch up with the pace of construction. No management bodies have been established for 40% of the nature reserves and no management personnel provided to 32% of the nature reserves of the whole country with a low percentage of scientists and technicians in the management.
- d. Inadequate investment which has constrained the development of nature reserves.

3.3.2 Goal of Nature Reserve Planning

- General Goal: to establish a national network of nature reserves of complete types, reasonable distribution, proper area , sound construction and management and good benefits.
- Short-term Goal: by 2000, the total number of nature reserves will amount to 1000(140-150 national ones), the area of nature reserves account for 9% or so of the total land area of the country. In addition to the area of scenic spots and forest parks, the total percentage will come up to 10% and over, 80% of nature reserves will be equipped with specialized management bodies and personnel.
- Mid-term and long-term Goals: from 2001 to 2010, the total number of nature reserves will grow to 1200(160-170 national ones) with the percentage of nature reserves exceeding 10% of the land area. In addition to forest parks and scenic spots, the total area will amount to over 12% of the total area , 90% or so of the nature reserves will be equipped with the management bodies and personnel.

3.3.3 Planning of Nature Reserve Development

- Regional Planning. The whole country will be divided into 9 natural regions according to their natural conditions, social and economic conditions and distribution of natural resources, which is shown in Table I.

Table I. Regional Planning of Nature Reserves in China

| Nature Reserve | Number and Area of Planned Nature Reserves | | | |
|----------------|--|-------------------------|----------------|------------------------|
| | No. | Area (10,000 has) | Land Area % | Land Area % by 2010 |
| | | | | |

| | | | | |
|----------------------------------|-----------|-----------|-----------|-------|
| Northeast China Hilly Plain | 160-170 | 640-665 | 5.4-5.6 | ➤ 7 |
| Inner Mongolia-Xinjiang Desert | 75-85 | 2255-2385 | 8.4-8.9 | >12 |
| North China Yellow Earth Plateau | 100-110 | 95-110 | 1.4-1.6 | >2 |
| Qingzang High Cold Desert | 32-37 | 4290-4310 | 24.8-24.9 | > 26 |
| Southwest China High Mt. Valley | 65-75 | 330-370 | 5.1-5.7 | > 7 |
| Central South China Hilly Areas | 175-185 | 200-295 | 3.0-3.2 | > 4 |
| East China Hilly Plain | 215-235 | 200-235 | 2.6-2.8 | >3.5 |
| South China Hilly Areas | 100-110 | 105-110 | 3.8-4.1 | 5 |
| Marine Area within China's rule | 85-95 | 450-480 | | 9mhas |
| Country Total | 1000-1100 | 8665-8960 | 8.7-9.0 | > 10 |

1 Type Planning. The nature reserves will be divided into three categories and nine types according to the national standard. Different types of nature reserves will have different priorities for conservation. Considering the current situation and distribution of protected targets and their conservation, priority from the period 1996-2000 will be given to the construction of nature reserves to protect the grassland, meadow, marine and coastal, wild plant, geological heritage, ancient biological heritage ecosystems for coordinated development of various types of nature reserves.

1 Departmental Planning. The environment department will strengthen the comprehensive management and demonstration of nature reserves. Besides, the departments of forestry, agriculture, marine management and minerals management will be responsible for construction of nature reserves within their own responsibilities assigned to them by the Regulation Concerning Nature Reserves and actively make the departmental planning for nature reserves.

3.4 National Investigation on Environmental Law Enforcement

3.4.1 the State Council Notice on Strengthening Investigation on Enforcement of Environmental Laws

To strengthen the protection of environment and wild life, the State Council promulgated in 1993 a Notice on Strengthening Investigation on Enforcement of Environmental Laws and Punishing Illegal Activities, which decided on action objective, key areas of investigation and assignments, of individual departments.

- Objective. This notice requires the governments at all levels and the relevant central departments to strengthen the monitoring of the environmental law enforcement and adopt strong measures to launch large-scale publicity and investigation of implementation of environmental laws and regulations and give severe penalties to those illegal behavior of causing serious pollution and damages to the environment and ecology.
- Key areas of investigation. This notice requires the governments at all levels to

focus investigation on illegal pollutant discharge and illegal business of rare and endangered wild animals and reverse the situation within two to three years of not following the law, loose enforcement of laws and no punishment for violation.

This notice specifies key targets of investigation. It requires that serious punishments be given to unlicensed domestication and breeding of wild life and utilization of their products, illegal hunting, collection, processing and trade of wild life, illegal manufacturing, purchase and use of hunting rifles and bullets and refusing investigation by the supervisory bodies or making frauds to avoid investigation; serious punishment given to those individuals or groups who abuse their power or neglect their duties resulting in rampant killing of animals and illegal business in wild life with serious cases sent to the judiciary bodies for further investigation and punishment. No labels against the Law of Wild Life Protection are allowed and the sales of protected wild animals prohibited.

- Multi-departmental cooperation. This notice requires the relevant departments, in particular of environment, forestry, agriculture, water conservation, construction, industry and commerce, foreign trade, customs, public security, justice and publicity, to undertake active collaboration for better investigation on enforcement of environmental laws.

3.4.2 Implementation of Investigation on Enforcement of Environmental Laws

- Investigation scheme. To implement the above notice, the Committee of Environmental Protection under NPC and the Committee of Environmental Protection under the State Council issued a joint notice in July, 1993 on the scheme for such investigation, which specified the guiding principle, objective, schedule and specific measures for investigation, in particular, the range and targets, main content and method of investigation, publicity, organization and schedule in relation to investigation. A telephone meeting was held at the same time to make sure all arrangements have been made.
- Content of investigation. The joint notice required that investigation cover enforcement of forest law, grassland law, water and soil conservation law in addition to environmental protection law and wild life protection law.
- Implementation of investigation. The areas under investigation were increased from 7 in 1993 to 10 in 1994 with the scale greater than in 1993. According to incomplete statistics, altogether more than one hundred thousand illegal cases violating the laws concerning wild animals, forest, grassland and mineral resources were found out in ten provinces under investigation. In 1996 this investigation was expanded to 29 provinces or autonomous regions.

3.5 Environmental Education and Publicity

3.5.1 China National Program for Environmental Education and Publicity(1996-2010)

In 1996, NEPA, Department of Publicity of CPC and SEC jointly formulated and issued “China National Program for Environmental Education and Publicity” which put forward the specific objectives and actions for environmental education and publicity around the country.

(1) Overall Objective and Implementing Principle in Program

The overall objective of this program is that by 2000 a national network of environmental education and publicity and a mechanism for public participation in the environmental protection will be gradually established. A trend of abiding by environmental laws and voluntary participation in environmental protection will be formed in the whole society. The capability will be upgraded for decision-making at all levels related to environment and development. A group of environmental professionals for the next century will be trained. By 2010, the national network will come into being and the environmental awareness of the whole nation will be considerably increased.

The implementing principle for program is that NEPA is responsible for the organization, coordination and implementation at the national level, the local EPB for the same work at the local level and the departments of education and publicity at all levels will provide great support and active assistance in this process by relying on the close cooperation of departments of journalism, publication, science and technology, culture and art and the extensive participation of the public.

(2) Action Plan for Environmental Publicity

This program proposed that by 2000 the knowledge of environmental sciences and laws will be popularized nationwide and the awareness of environment and protection by laws be increased considerably with the capability of comprehensive decision-making of decision makers at all levels upgraded considerably. By 2010, there will be an apparent increase in the awareness of environment and sustainable development.

For this goal, the following actions will be taken.

- To educate the decision makers at all levels. They will be informed through SOE, videos and internal materials on a regular basis about the national or local latest situation of environment and ecology and their changing trend or invited to participate in workshops or seminars on environment and development.
- To educate the public through mass media. Good examples of protecting the

environment will be reported in time while the illegal behavior of damaging the environment and ecology disclosed and criticized publicly. Typical cases out of enforcement investigation will be reported so that the role of media supervision can be fully played. In addition, a group of high-quality and influential publications will be edited and published.

- To use big occasions and involve as many individuals and groups for educational and publicity activities. The environment department will organize or coordinate the extensive participation of departments of journalism, publication, science and technology, culture and arts as well as NGOs. Such important occasions as World Environment Day and International Biodiversity Day will be used to undertake educational activities to the public. Attention will be given to the education of farmers on ecological conservation. The youth and children will be guided to participate in the environmental educational activities. Advertising on environmental protection will be promoted.

(3) Environmental Education Action Plan

This program put forth that by 2000 the youth and children will be provided with knowledge of environmental protection and a group of environmental professionals trained; by 2010 the national system of environmental education will be close to rationality and perfection and the environmental education will be more regulated and standardized. For this, the following actions are proposed.

- Fundamental and professional environmental education. More environmental content will be included in textbooks for high and primary school students while they will receive colorful environmental education through summer and winter camps, contests and compositions. Training courses will be provided to school masters, curriculum directors and teachers on a regular basis. Environment will be adopted as compulsory course for students in normal colleges and schools, even in institutions of higher education and non-environmental majors.
- Environmental education of non-environmental majors. With the support of the national environment department and relevant publication administration, a complete set of non-environmental major textbooks suitable for Party schools, administrative institutions, management institutions, universities, technical schools and occupational schools and science popularization textbooks or optional course textbooks for high ad primary school students.

3 5 2 Multi-departmental Action in Environmental Publicity

In the past ten years and over, NEPA, SEC, MOF, MOA, MOC,CAS, SOA have jointly organized publicity activities for biodiversity conservation in close collaboration with the Ministry of Broadcasting and Television, Journalism and Publication Administration, Xinhua News Agency, People's Daily and Guangming

Daily, which have played a very important role in promoting the awareness of biodiversity conservation among the decision makers at all levels of government and the general public.

(1) Regular Education and Publicity to the Public

Relevant departments and local governments adopted various forms of education and publicity which can be summarized as follows.

- News reporting. This is mainly done by newspaper, radio and television. China Environment News is dedicated to reports on environmental protection in China. Since its creation in 1984, its scope of reporting is gradually expanded by adding items on ecological conservation and focusing on biodiversity conservation in recent years. China Forest News is a window on reporting on forest resources and biodiversity conservation since it was created in 1987. China Oceanic News has been devoted to reporting on protection of marine environment and resources since its founding in 1989. The People's Daily, Xinhua News Agency and Guangming, as member of the Committee of Environmental Protection under the State Council, also strengthen their reporting on biodiversity conservation.
- Film and television products. To publicize for biodiversity conservation, China Central Television Station has showed its program entitled "Wild Life" for many years and created a new program named "Man and Nature", both of which are very popular with the public. In the past 20 years and over, China has produced dozens of science films and TV series aimed to publicize biodiversity conservation, such as "Wild Animals in China", "Rare Aquatic Animals in China", "For Life in Nature", "Home to Red-headed Cranes", "Shennongjia", "Xishuangbanla Nature Reserve", "Giant Panda Today", "Golden Coast in Changli, etc..
- Celebration of special occasions. On the occasion of the World Environment Day, Earth Day, Tree-planting Day and International Biodiversity Day every year and Bird-loving week and Month for Wild Life, the Ministry of Broadcasting and Television, Xinhua News Agency, People's Daily and Guangming Daily organized large-scale celebration and educational activities in close collaboration with NEPA, MOF and SOA. Features on biodiversity will be produced on newspapers, magazines, radios and televisions or composition and knowledge contest held. Experts or officials will be invited to give reports, lectures, talk on television or radio.

(2) An Environmental Journey Across China for the Next Century

To publicize extensively the environmental laws and regulations, to use the legal and media instruments to reward those good examples and criticize the illegal behavior of environmental pollution and ecological damage and to conserve

biodiversity, the Committee of Environmental Protection under NPC, the Department of Publicity of CPC, Ministry of Broadcasting and Television and NEPA jointly issued a notice on undertaking environmental educational and publicity activities. It required all the local governments to undertake environmental education and publicity activities from October to November, 1993 and to formulate the action plan for future activities. Participating in these activities from the press are the People's Daily, Xinhua News Agency, CCTV, China Central Radio Station, Economic Daily, Guangming Daily, Science and Technology Daily, Legal Daily, China Youth News, China Environment News, etc..

Based on the activities in 1993, the Committee of Environmental and Resources Protection under NPC, the Department of Publicity of CPC, the Ministry of Broadcasting and Television, NEPA, MOF, MOA, Ministry of Water Resources and Chinese Youth League initiated collectively the publicity activity called "An Environmental Journey Across China for the Next Century" from April to December, 1994. The eight departments also issued a joint notice on further development of this program which is well received nationwide and strongly promotes biodiversity. This activity mainly includes:

- Theme: Maintaining Ecological Balance---Leaving More Green to Our Children
- Laws for Publicity: Environmental Protection Law, Forest Law, Grassland Law, Water Law, Water and Soil Conservation Law, Wild Life Conservation Law, Marine Environment Protection Law, Air Pollution Prevention and Control Law and Water Pollution Prevention and Control Law, etc.
- Main Reporting Coverage: situation and causes of forest and grassland damages, their impacts on local society and economy and solutions; water and soil erosion in some river basins, level of damage and experience in control soil erosion; land desertification and experience in combating it in China; current status, causes and conservation measures of endangered species; environmental protection in rural areas, in particular the environmental pollution and ecological damages caused by the township enterprises.
- Participants: China Environmental Protection Foundation, People's Daily, Xinhua News Agency, CCTV, CCRS, Guangming Daily, Economic Daily, Worker's Daily, Science and Technology News, Legal Daily, China Youth Daily, Economic Reference, International Radio, China Daily, China News Daily, CEN, CFN, China Water Resources Daily and Farmer's Daily, etc..
- Main Forms: news reporting, photo shows, hot line for the program, receiving public complaints, concerts, Youth Forum on Environment, Good News Selection and Reward, posters and newsletter publication.

(3) Reporting on investigation on law enforcement

In 1993, the State Council issued the notice for investigation on environmental law

enforcement. To carry out what this notice required, the Committee of Environmental Protection of both NPC and the State Council decided to take three years to undertake national investigation which would focus on the enforcement of Environmental Protection Law, Marine Environmental Protection Law, Wild Life Protection Law and other environmental and resource-related laws. For collaboration with such investigations, the role of mass media must be brought to a full play so as to increase the public environmental awareness. For this, the Department of Publicity of CPC and the Committee of Environmental Protection under the State Council jointly issued in June, 1993 a notice on strengthening environmental education and publicity.

This notice emphasized that the mass media must publicize those groups and individuals with excellent performance in following and enforcing environmental laws and disclose and criticize the behavior of polluting the environment, which is considered a key part of investigation and of great help to achieve effective investigation. This notice required that the local environmental authorities and departments of forestry and agriculture formulate practical publicity plan, provide examples and clues to the press and mass media and coordinate the publicity activities conducted during the investigation according to the overall arrangement for the investigation by the Committees of Environmental Protection of both NPC and the State Council. The local mass media will formulate reporting plan for local self-investigation in collaboration with the investigation nationwide. The major press or mass media at the national level will make excellent arrangement for reporting on investigation, analyzing typical cases and issuing influential editorials. The newspapers of each sector will organize special reporting in relation to the main problems in these sectors.

3.5.3 Multi-departmental Action for Environmental Education

(1) Biodiversity educational activities for youth and children

SEC has done a lot of work in providing biodiversity education to youth and children.

- To organize one hundred contests nationwide at primary and high schools. This work is organized by the biodiversity societies at different levels and carried out mainly by the schools. These contests have a wide range of knowledge coverage, yield important influence and last for long, which have played an important role in helping primary and high school students love biodiversity.
- To establish educational bases for patriotism. One of such bases provides biodiversity education to the public and school students by using some museums with plant and animal specimens, for example, one in Wuhan University.
- To organize summer camps. For example, Fudan University organized

ecological summer camps for youth and children. Beijing University and Sichuan United University held summer camps for biology, which is common in educational institutions.

- To organize special activities in collaboration with international and domestic groups and local governments. For example, Sichuan United University organized in collaboration with Japanese organizations the activities aimed to protect wild animals as well as human beings themselves.

Additionally, Chinese Society of Environmental Sciences, Institute of Human Ecology, Chinese Society of Forestry Sciences and some other NGOs usually organize national summer camps on environment, ecology and forestry for youth and children and field trips to nature reserves, zoos and botanical gardens. NEPA, China Association of Wild Life Protection, Chinese Association of Science and Technology have organized many national contests of environmental and wild life knowledge and painting competitions oriented in environment for youth and children. For years, millions of young people and children have participated in such activities.

(2) Disciplinary Building and Training

To reform the existing education model, SSTC revised the catalogue of environmental sciences at the meeting of the Steering Committee for Environmental Sciences held in October, 1997 which will strengthen the majors of environmental sciences, ecology and biology in institutions of higher education and the major of environmental planning and management in the existing catalogue. With the implementation of two-one-one projects (one hundred key universities for the 21st century), a group of key disciplines related to biodiversity will be strengthened.

Various institutions of higher education take advantage of their strength to give more training which is specifically indicated by the following:

- Postgraduate studies. There are several points giving doctorate degree for ecology, botany, zoology, microbiology, genetics and laws with a large number of supervisors of Ph.D. candidates and graduates with doctor degree, which become professionals in the field of biodiversity every year.
- Construction of bases for fostering specialized talents. SEC has set up more than ten bases for biology teaching and research and strengthened greatly some fundamental disciplines with increased investment and improved conditions, which will result in expansion of students' knowledge.

(3) Popularization and Training of Biodiversity Knowledge

- CAS is active in popularizing biodiversity knowledge and introducing in time

the latest development in biodiversity research by having published four translations by the end of 1997, including “Enhancing Global Biodiversity”, “Biodiversity---Related Science Issues”, “Global Biodiversity Strategy”, “Fundamental to Molecular Evolution”, “Molecular Transformation and Ecological Issues”, “Ecological Statistics 2000” and “Guidelines for CBD”. They have also published 8 specialized series on biodiversity research, including “Theory and Method of Biodiversity Research” and “Forest Biodiversity in China and Their Geographical Distribution”. CAS translated and published “Biodiversity in China---Status Quo and Conservation Measures” as well as three copies of English version out of 19 magazines named “Biodiversity” and edited ten issues of “Newsletter of Biodiversity” and “IUCN Newsletter”(in Chinese). In addition, CAS drafted screenplay and acted as advisor for development of CCTV series entitled “Biodiversity and Sustainable Development”.

- Twenty-three specimen museums and 12 botanical gardens under CAS have done a lot of work for popularizing biodiversity knowledge for primary and high school students. They receive thousands of students every year and provide them education on richness of biological resources and the importance and necessity of biodiversity conservation through practical examples.
- To deepen the research in the field of biodiversity. Since 1992, CAS has used the loan of the World Bank to conduct 28 domestic training courses in which 600 trainees participated. In the meanwhile, various financial resources were used to send nearly one hundred researchers abroad, in particular those countries which are advanced in biodiversity research, which provide a basis for further studies in the field of biodiversity.

36 Biodiversity Research Plan and Action

361 National Program for Mid-term and Long-term Development of Science Technology

In 1991, SSTC launched “National Program for Mid-term and Long-term Development of Science and Technology(1990-2000-2020). This program has identified a series of key tasks for development of science and technology in the field of agriculture, forestry, biotechnology, marine and ecological environmental protection, which are very closely related to biodiversity conservation.

(1) Key tasks and technologies for agriculture

To strengthen studies on collection, identification, storage and use of seed resources, to improve and establish data banks and plantations for species, to employ modern science and technology to expand comprehensive exploitation of natural resources, further increase rate of utilization and enhance the rural environment and ecology to a sound cycle.

(2) Key tasks and technologies for forestry

To establish a comprehensive information and monitoring system of forest resources, to apply remote-sensing technology for establishing a system of forest resources survey, to develop forest resources survey and monitoring technologies which will provide data on forest areas and accumulation, to develop forest conservation technologies and study how to protect, breed and utilize rare and endangered plants and animals.

(3) Key tasks and technologies for biotechnology

To strengthen studies and development of plant and animal gene engineering and seed nurturing technologies, to establish gene banks for important plant and animal species, to separate and identify genes with important economic value, to study and establish a new and effective carrier of plants and animals, study how to transfer important genes into agricultural and forest crops and domesticated animals and fish without any impact on these carriers of genes.

(4) Key tasks and technologies for marine science and technology

To survey the state of marine environment and resources within the jurisdiction of China, to study marine satellite remote-sensing technologies, to establish preliminarily the tri-dimensional marine monitoring networks, to improve the warning system for the marine environment and disasters and the marine information and data service system.

(5) Key tasks and technologies for ecological environment protection

To strengthen studies on eco-environmental planning and standards, to upgrade the decision-making and management level of eco-environment protection, to study the method to integrate the environment and resources with the national economic accounting, to study the issues of rule of natural resources utilization and resource pricing and to conduct land resources survey and establish to data bank for land resources.

3 6 2 Plan of Science and Technology for Social Development

To implement China's Agenda 21 and the national strategies of sustainable development, revitalizing the nation with science, technology and education, SSTC formulated in 1996 "Plan of Science and Technology for Social Development"(1996-2010) taking into consideration the national reality and needs. This plan consists of three parts, i.e. program for science and technology for social development, specialized action plan for social development and major projects for

science and technology for social development(1996-2000). In specialized action on environmental science and technology and key research projects plan for 1996-2000, biodiversity research is an important part.

(1) Program for science and technology for social development

This program identifies 10 main areas for science and technology for social development for 1996-2010. The areas related to biodiversity are conservation and reasonable use of natural resources, ecological environment protection and improvement, development and conservation of marine resources and prevention of natural disasters, etc..

(2) Specialized action plan for science and technology for social development

This plan is one specialized for science and technology for social development and promoting relevant industries. Environmental and marine science and technology are included in six areas in this plan. The global environment strategy identified in the specialized action plan for environmental science and technology is to study the strategy and policy for global environment, including climate change, biodiversity conservation, environment and trade. In the specialized action plan for marine S&T, priority is given to technologies for development and utilization of marine biological resources, monitoring of environmental elements in the marine environment and sustainable development of environment and resources in coastal areas.

(3) National Project Plan for Science and Technology for Social Development for 1996-2000

This is a national plan for research projects for social development. There are 23 research projects in this plan and those related to biodiversity are: data sharing for planetary science and biodiversity. The purpose of this project is to research and establish the standard and regulation for data sharing of planetary science and biodiversity, to study and formulate the standard or guideline for data classification and sharing, to establish the support system for data sharing, service system for data sharing, index system of data bank, data distribution and acquisition system. Through this project, many existing data banks in China related to planetary science and biodiversity will be connected and eventually with international networks so that the rate of utilization of biodiversity data can be increased to provide basis for sound decision making.

3.6.3 Biodiversity Research Plan

(1) CAS Action Plan for China's Agenda 21

CAS formulated in 1995 “Action Plan for Agenda 21” which identifies as Priority Areas 7 conservation and sustainable utilization of biodiversity. In this area the following priority projects have been identified.

- Mechanism of biodiversity conservation and adaptation in China;
- Construction of a national biodiversity monitoring network and protection of rare and endangered species;
- Establishment of biodiversity information system;
- Formulation of three records (fauna, flora and sporo-producing flora and inventory of biodiversity in China);
- Construction of national biodiversity museum and ex-situ conservation bases;
- Studies on important genetic biodiversity and storage of genetic resources;
- Establishment of Southeast Asian Research Center for Biodiversity;
- Conservation and recovery of tropical rain forest ecosystem in China;
- Theory and technology research for sustainable utilization of biodiversity.

(2) CAS Plan for Development of Science and Technology for 1996-2000 and 2001-2010

CAS formulated this plan in 1996 which identified biodiversity as a very important area and priority projects proposed as follows:

- System of biodiversity data bank,
- Studies on mechanism of biodiversity conservation and adaptation;
- Studies on behavior of rare and endangered invertebrate reproduction unique in China;
- Studies on zoology in a unique habitat in Qingzang Plateau;
- Studies on territorial ecosystems and global change belt.

(3) CAS Strategy and Policy for Development in Biology

CAS formulated this strategy in 1994 which identified biodiversity research as priority area 6 for science and technology development in the 21st century and strategic priority which can be summarized in the following:

- To strengthen studies on genetic diversity;
- Studies on the status quo of key protected invertebrate and protection measures;
- To strengthen studies on the status quo and level and causes of being endangered of higher plant species in key areas;
- To deepen studies on regional ecosystem diversity of key types;
- To establish the network of monitoring mobile trends of biodiversity and conservation bases;
- To improve and establish the biodiversity information system.

(4) SEC planning for biodiversity research in its plan for fundamental studies

As early as the eighth five-year plan period, SEC incorporated biodiversity research into its plan for fundamental studies. On this basis, SEC identified again biodiversity, biology and ecology as its key area of support in its ninth five-year plan for fundamental studies in which a number of priority actions have been included:

- Survey on ecosystems of plants and animals in some parts of the country;
- Studies on inventory of biodiversity and cataloguing of biological specimens;
- Studies on biological and ecological features of some rare and endangered species;
- Studies on theory of genetics, development of biotechnology and studies on the molecular mechanics of plant reproduction and growth and inheritance control;
- Studies on development of biodiversity data bank and information networking within the university system;
- Sustainable utilization of important biological resources;
- Trend of biodiversity evolution and development;
- Studies on genetic diversity and evolutionary potential of unique species;
- Impact of urbanization on species diversity and theory for construction of ecological cities.

3 . 6 4 Progress in implementation of CAS plan for biodiversity science and technology

(1) Institutional building

CAS is a member of Coordinating Group for CBD Implementation. Under its umbrella, there are “Chinese Science Committee for Endangered Species” and “Chinese National Committee for Man and Biosphere”. Soon after conclusion of CBD in 1992, CAS Committee for Biodiversity and CAS Biodiversity Panel Committee were established, which is the first kind in China.

As a national research center for natural sciences, CAS has established dozens of research institutions in recent years closely related to biodiversity and for implementing CBD. For example, CAS set up in Yunnan Province “Southeast Asian Center for Biodiversity Studies”. CAS Institute of Plant Sciences has established a lab for biodiversity research involving the winners of National Natural Sciences Fund and the leading experts in the field of biodiversity research. South China Institute of Plant Sciences has founded the “Center for Conservation and Breeding of Endangered Plants”. Kunming Institute of Animals has established a Center for Biological Conservation Science with studies focused on primate and Kunming Institute of Plants located a research station for biodiversity in

Shennongjia Nature Reserve.

(2) Implementation of major biodiversity research projects within CAS

CAS has implemented many projects related to biodiversity. To name a few, during 1990-2000, CAS conducted a study on biological basis for conservation and sustainable utilization of biodiversity, a SSTC-funded study on ecological basis for biodiversity conservation, a national research project for studies on technologies for conserving biodiversity, a major biological study on protection of endangered plants and formulation of Fauna of China, Flora of China and Sporo-producing Flora of China, both of which were funded by China Natural Sciences Foundation, a project entitled “biodiversity research and information management” funded by the World Bank and CAS key study on the impact of human activities in Langcang River Basin on biodiversity. In addition, CAS also participated in formulation of some plans, such as China’s Agenda 21, China Action Plan for Biodiversity Conservation and China Country Study for Biodiversity.

(3) Main Achievements in Biodiversity Research

CAS has achieved major progress in the following areas:

- Inventory of biodiversity. After PRC was founded, CAS brought together relevant departments and played a leading role in organizing a large-scale survey on biological resources and acquired a large number of specimens and species data which laid basis for biodiversity research in China. During the 1960’s and 1970’s, CAS conducted a large-scale survey on vegetation and various ecosystems in China, which led to the publication of “Vegetation of China”. Since the 1980’s, CAS has collected and published one after another record of different kinds. In particular after the UNCED in 1992, the government paid attention to the inventory of biodiversity which facilitated the formulation and publication of inventory. Published under the edition of CAS are mainly “Flora of China”, “Fauna of China”, “Sporo-producing Plant of China”, “Economic Crops of China”, “Bird Catalogue of China”, “Economic Insects of China”, “Mammal Animals of China”, “Plant Red Book of China” and “Flora in Yunan, Guangdong and Hubei Provinces” In the meanwhile, a large number of plant and animal specimens have been collect and stored, totaling nearly 20 million biological specimens according to incomplete statistics.
- Fundamental studies on conservation and sustainable utilization of species. Through the implementation of national research projects and major projected funded by China Natural Sciences Foundation and CAS, a relatively systematic research has been done to some rare and endangered animals and plants or those with economic value, such as distribution, habitat selection, species group mobilization, utilization and impact on economy and society of some

animals like *Manis pentadactyla*, green peacock, white-headed long-tailed tetraophasis *obscurus*, long-tailed butterfly, golden-striped butterfly, Chinese butterfly, leopard cat, horse deer and *Lams relictus*. Detailed analysis was also made to the species elements being endangered and maximum capture. Assessment was made of the scientific significance and economic value of artificial breeding of some species.

In studies on artificial breeding techniques for rare and endangered animals, such as giant panda, golden monkey, *Macaca mulatte*, and on domestication of a deer living in Hainan Island, some projects in this field have won CAS prize for progress in science and technology. Some botanical gardens have done ex-situ conservation of some national protected plants, succeeded in breeding *Camellia chrysantha* and *Cathaya argyrophylla* and other endangered plants and achieved breakthrough success in artificial breeding of some rare herbal plant. A deep study and a series of breeding technologies have been developed for seed storage, germination and growth of *Ginkgo biloba*, *Diplopanax stachyanthus*, *Parashorea chinensis*, *Pellacalyx yunnanensis* and *sycasin*.

The technique for storing seeds, pollens, sperms and cells using low temperature has been widely used in recent years. CAS has established a animal cell bank of a considerable scale which has stored 250 wild animal cells, including mammals, 26 out of which are rare and endangered animals unique in China, such as golden monkey in Yunan, giant panda.

In terms of sustainable utilization, natural herbs are reproduced chiefly through such modern biological high-tech as artificial breeding, semi-synthesis or complete synthesis, cell engineering, gene engineering, fermenting and biological reactors. Studies have been conducted on the elements of herbal animals like snakes. Preliminary exploration has been made on the substitute of traditional tiger bone, which will help find effective ways to protect the endangered animals.

- 1 Studies on conservation of diverse ecosystems. Focus was put on the impact of human activities on ecosystem diversity. Studies were conducted on group composition and evolution law in five ecosystems selected according to the different climate zones, such as broad-leaf mixed forest in temperate zone, ~~deblade~~ broad-leaf forest in warm temperate zone, ever-green broad-leaf forest in tropical zone, grassland ecosystem in north China and lake ecosystem. The conclusions from this study are that biodiversity was richest prior to the ecosystem evolution; low density intervention is most favourable to maintaining the richest diversity; mid-level or low-level grazing is most proper to maintaining the biodiversity of grassland ecosystem; and river damming is the main cause for fish species reduction in rivers and lakes. Strips of rain forest was used to study the effect of island and the law of species growth and extinction, where a new concept of "intrinsic effect" for biodiversity in rain

- forest strips.
- Studies on biodiversity information system. During 1990-1995, CAS established a biodiversity information system, including a general center, five sub-centers and 25 data source points, which is mainly composed of data bank, model bank and expert information. Up to now, various institutions under CAS has set up more than 50 data banks related to biodiversity, which mainly include species data bank, rare and endangered species data bank, specimen data bank, ecosystem data bank and classification code bank.
 - Studies on biotechnology and genetic diversity. CAS pays high attention to biotechnology. Among national key labs, CAS has set up national key labs for plant biotechnology, plant molecular inheritance, molecular biology, freshwater ecology and biotechnology. All the national research projects during 1985-1995 were undertaken by CAS. The technology for using raw biotic organism for fostering and chromosomal engineering technology have been successfully used to develop new species of wheat and maize. As to studies on fish genes, animal genes can be transferred to fish. The studies and analysis of 40 enzymes and blood protein points in 14 giant pandas, which was conducted by Kunming Institute of Zoology, shows that the genetic diversity of giant pandas is poorly reflected at the level of protein and indicates the important causes for possible extinction of giant pandas. The dissertation from this study was accepted by "Nature" and PNAS(a periodical of US American Academy of Sciences). Studies on how to clone fish has been completed in the early 1980's, i.e. using the kidney cell core of a fish transferred to the egg cell of a fish of the same kind until a fish grows up. This cloned fish can live for two years with artificial breeding.
 - To organize workshops on biodiversity. CAS organized two national workshops on conservation and sustainable utilization of biodiversity, whose outcome was edition and publication of two workshop proceedings named respectively "Progress in Studies on Biodiversity" and "Biodiversity and Human Future".

3.6.5 Progress in Implementing Biodiversity Research Plan within the System of SEC

(1) Institutional building

SEC is a member of Coordinating Group for CBD Implementation. Under the guidance of Department of S&T of SEC, National University Coordinating Committee for Biodiversity was established in 1994, which was second to CAS similar committee. It plays a big role in organizing higher educational institutions to undertake major research projects, planning and organizing public education programs and academic exchange and chairing the formulation of textbooks and science popularization readings. For example, this Committee organized in 1995 the first University Workshop on Biodiversity and other small workshops.

Some institutions of higher education also set up specialized research institutes or centers. Beijing University established Research Center for Giant Panda and Wild Life Protection and Center for Ecological Studies. Fudan University set up Institute of Biodiversity Studies. Nanjing University set up East China Center for Environment and Resources. Wuhan University set up an open biological lab for conservation of endangered species. Sichuan United University founded Southwest China Research Center for Resources, Population and Environment. Lanzhou University participated in setting up a national-level West China Research Center for Environment and Resources. According to a preliminary statistics, about fifty institutions of higher education set up research institutions closely related to biodiversity.

(2) A strong research team in institutions of higher education

Institutions of higher education are a major research base for fundamental studies, which has a strong research team. First, they have a large number of researchers and educators engaged in research and education on biodiversity; Secondly, SEC system has a complete set of disciplines, which is indicated by the fact that they not only have various disciplinary branches of biology but also have other disciplines like geology, environmental sciences, economics and philosophy; Thirdly, their distribution is wide across the country and covers a vast land area. Since conclusion of CBD in 1992, SEC has attached greater importance to biodiversity research and conservation. 'With S&T department leading and other relevant departments cooperating, institutions of higher education are organized in an effort to promote biodiversity research within the system of SEC.

(3) Implementation of many research projects and achievements

Several hundred biological taxonomists from dozens of universities participated in the cataloguing of "Flora of China", "Fauna of China" and "Sporo-producing Flora of China" in addition to the edition of "Flora of China". To give a few examples, Nanjing University has contributed highly valuable researches to cataloguing of sporo-producing plants; Zhongshan University to origination of plant system in China; Beijing Normal University to bird cataloguing, Nankai University to insect cataloguing; Inner Mongolia University to cataloguing of grassland plant system. Sichuan United University, Fudan University, Wuhan University, Zhongshan University, Yunnan University, Hangzhou University and some normal universities have played an important role in formulating some local records. For example, Inner Mongolia University, Hangzhou University and Fudan University edited "Flora of Inner Mongolia", "Flora of Zhejiang" and "Flora of Shanghai" respectively. Fudan University also led the establishment of biodiversity data bank and the conservation policy in Shanghai. In addition, SEC was also active in participating in formulation of some national reports on biodiversity, such as China

Country Study for Biodiversity and China Action Plan for Biodiversity Conservation.

Various institutions of education have their own unique strength with a large number of research fellows having achieved many research results. For example, Beijing University and Sichuan United University in studies reproduction theory and genetics of giant pandas, Wuhan University in biological studies for conservation of endangered aquatic plants, genetics of endangered fish and rare aquatic animals, Lanzhou University in the studies of biological function of high-cold meadow and the regenerative niche of desert flora, Xiamen University in mangrove forest ecology and the marine biodiversity, Northeast Normal University in marsh land and wetland ecology.

3.7 Strengthening Investment and Credit Policy for Environmental Protection

3.7.1 Strengthening EIA for Loaned Projects

To strengthen EIA for the projects funded by international financial organizations and promote better use of international loans for coordinated development of economy and environment in China, the Ministry of Finance, NEPA, SPC and the People's Bank issued in June, 1993 a notice on strengthening EIA for the construction projects funded by international financial organizations. It required the departments of environment at all levels to have close collaboration with those of planning, finance and banking for implementing the following regulations.

- Environmental laws, regulations, standards and rule of EIA must be applied to the construction projects funded by international loans. The technical requirements will be taken into consideration while implementing EIA.
- The project proposal approval must follow the Chinese procedure of environmental management for all construction projects. The EIA report of the internationally-funded project must be first examined by the sector authorities and then submitted to the relevant department of environment for examination and approval. If it is approved by the local environment department, this report must be submitted to NEPA for review and tile.
- The classification of EIA for construction shall be determined by the level and range of possible impact on the environment and the level of environmental sensitivity of the location of the project. The requirement for EIA will be also decided by the category of project. The decision on category will be made in the preparatory stage of the project and by the environment department to approve the EIA after consulting with relevant international financial organizations.
- Public participation is an important part of EIA. There should be a special chapter in EIA report addressed to the possible affected groups or public taking into consideration the compensation for them. The public will be involved in

the examination of TOR and report of EIA.

3.7.2 Strengthening Credit Policy for Environmental Protection

In February, 1995, the People's Bank issued a notice on strengthening the credit policy for environmental protection which required the banks and financial departments to take practical measure in the credit policy for environment and give support to the environment in the following aspects.

- While giving credit, the financial department will give much attention to nature conservation and environmental protection and integrate economic development with considerations of environment and ecology. Financial support to ecological conservation and pollution prevention and control will be a factor for giving credit in order to promote the coordinated development of economy and environment.
- When examining loans, the financial department must check whether the project has done EIA or the environment department has approved its EIA report. To those not, loans will not be given.
- To those sectors or products friendly to the environment, the financial institution will give them active loaning support if they meet the credit standard and have the repayment capability, such as projects in developing applied technology for agriculture and forestry, breeding fine seeds, new technology popularization and protection of rural environment.
- The financial departments at all levels will manage well the given loans and continue to do well the new loan issuance. The specialized loan will continue to be given to forestry and desertification control to promote ecological conservation. When giving loans for agricultural comprehensive development, they shall be considered together with soil renovation, river and lake control, afforestation, desertification control and improvement of rural working conditions. Environmental considerations will be promoted in giving loans to science and technology development and technical renovation projects. In project selection and loan arrangement, priority will be given to those having good environmental benefits. When introducing new facilities and new projects, they shall meet higher environmental standards or purposes of ecological conservation.

3.7.3 Strengthening national financial policy for environmental protection

In July, 1995, the Ministry of Finance issued a notice for strengthening environmental protection by financial means. It pointed out that environmental protection is one of the two national policies and all the, financial departments should work together with the environment department at all levels for better environment and resource conservation considering outstanding problems of environmental pollution, resource over-consumption and damage. This notice had

the following points.

- To increase the awareness of environmental protection and natural resources conservation. The strategy of sustainable development identified by China's Agenda 21 should be followed and the environmental protection as one of the national policies implemented. The principle of the polluters pay and control should be maintained. Equal importance should be attached to environmental pollution control and ecological and natural resources conservation. While employing the market mechanism to promote pollution control and effective utilization of resources, the financial instruments shall be fully used to promote the environment and resource protection and coordinated development of economy and environment.
- To promote ecological construction for nature conservation. In case of adjusted tax, zero tax should be given to the investment projects in irrigation of agricultural fields, soil conservation, abandoned land exploitation, desertified land recovery, afforestation, nature reserve construction, forest protection, rapid-harvesting forest production, wild life protection and breeding bases construction, reforestation and recovery and water resources protection.

The land use tax and real estate tax will be exempted for the land and house used by parks and scenic places. And the land use tax will be exempted for some public facilities like green belts in streets and squares.

- To use actively international loans for pollution control and ecological conservation. The financial departments will work together with some international financial organizations in preparing for some projects on pollution control and ecological conservation. When examining the project arrangement and budget, they will work together with relevant departments to find the domestic investment and implement the loan repayment plan.
- To increase the investment into the environment and resource protection, In recent years there has been some increase in the investment from the central and local governments. In the future the finance departments at all levels will continue to increase the investment in the environment as required by the economic development and social development.

3.8 Policy for Strengthening Environmental Management in Tourism Attractions

As tourism grows, the environment in tourism attractions is being seriously threatened. Because scenic spots have a beautiful environment, the environmental damage in these places will have direct impact on biodiversity there. To protect the environment and biodiversity in tourism attractions and use sustainably tourism resources, NEPA, State Tourism Administration, MOC, MOF and State Administration for Cultural Relics issued in August, 1995 a notice on strengthening environmental protection in tourism sector, which provided a policy framework for

environmental management in scenic places. The main points in this notice are:

- To strengthen environmental management and law enforcement. According to the existing management system and the principle of the managers taking the responsibility, practical measures will be adopted to strengthen the environmental management of various tourism attractions. The following laws or regulations will be enforced: Environmental Protection Law, Urban Planning Law, Regulation Concerning Nature Reserves, Regulation Concerning Urban Afforestation, Temporary Regulation Concerning Management of Tourism Attractions, Regulation Concerning Urban Health and Environment. Some relevant rules and regulations will be improved in order to avoid environmental pollution and ecological damage to scenic places.
- To adopt the policy of coordination of exploitation and conservation. When formulating the overall plan for development, the tourism management bodies will include environment and identify environmental goal. Studies on environmental capacity of the scenic places should be undertaken so that the development activities and tourism will not exceed the environmental capacity of these places and the tourism attraction planning and construction should consider their concordance with the neighboring environment.
- To follow strictly the rule of EIA. All the development activities in scenic places must fulfill the requirement of EIA for construction projects. For a new spot or new facilities in these places, EIA must be done. The facilities for waste water, effluent gas and solid waste disposal and the measures to prevent soil erosion, habitat damage and landscape damage must be simultaneously carried out with the main part of project. The industrial facilities to pollute the environment or the projects to damage the environment will be prohibited in scenic places.
- To strengthen nature conservation in tourism attractions; to intensify ecological construction, afforestation and fire and pest prevention in scenic places; to prohibit the deforestation and other vegetation damaging behavior in scenic spots; to protect biological resources in scenic resorts, to prohibit hunting of wild life and damage to their habitat, to protect the landscape and topography; to prohibit stone, sand and soil mining and field making and other activities likely to change the landscape or topography of the scenic places and take active measures within a given time to amend the ecological damage already done.

Chapter IV. Departmental Policy, Regulation and Plan for Biodiversity Conservation and Their Implementation

4.1 Biodiversity-related Policy, Regulation and Plan of the Environment Department and Their Implementation

4.1.1 Policy for Nature Conservation

In the past 20 years, NEPA has been innovative in creating many environmental policies with the Chinese characteristics, in particular in pollution prevention and control, such as the precautionary principle, the polluters pay and strengthening environmental management, and implemented eight mles such as the responsibility system for achieving the environmental goal, having achieved tremendous accomplishments in this field. Since the 1990's, NEPA has put forward the strategic policy of attaching equal importance to pollution control and ecological conservation taking into consideration the requirement of biodiversity conservation and formulated a series of policies for nature conservation based upon the past experience in pollution prevention and control.

(1) Policy for Nature Conservation Management

- The precautionary principle. Preventive measures are adopted in order to avoid or reduce to a possible extent the pollution or damage to the environment. For this, nature conservation will be a part of the annual plan for economic and social development. The governments at all levels and relevant departments will adopt the responsibility system for nature conservation goal. To those projects related to the natural resources exploitation, environmental impact assessment must be undertaken.
- The policy of whoever exploits will protect, whoever damages will recover and whoever utilizes will compensate. To those construction projects, the rule of three-at-the-same-time will be implemented, i.e. measures should be adopted to protect the environment while undertaking economic activities. The ecological damages resulting from natural resources exploitation will be amended within a given time and the levy system adopted for exploitation and utilization of biological resources.
- The policy of strengthening supervision and management. Nature conservation is the responsibility of several resource management departments. Environment department exercises overall management and supervision over nature conservation, including the comprehensive management and supervision over natural resources exploitation activities, construction and management of nature reserves, use and trade of wild animals and plants, etc..

(2) Policy for Strengthening Nature Reserve Management

In August, 1997, NEPA issued “Notice on Strengthening Management of Nature Reserves” which requires the environmental departments at all levels to take practical measures to implement the “Regulation Concerning Nature Reserves” by formulating relevant rules, improving nature reserve planning, undertaking assessment and regular examination and supervision.

This notice requires the environment departments at all levels to give financial and material support to the nature reserves under the management of the environment departments within the next two or three years for the capacity building of these nature reserves. Some issues like the management bodies, staff, land management and security management will be addressed and solved according to relevant national and local policies and regulations. Technical guidance will be accorded to these nature reserves, investment in biodiversity research increased and education and publicity strengthened in order to upgrade the quality of nature reserve management.

This notice also requires the environmental departments at all levels to strengthen the management of the nature reserves under their own management under the leadership of the local governments by not allowing the change in the nature and range of these nature reserves or setting up forest parks or scenic spots in these places.

(3) Policy for Strengthening Ecological Management Regarding Natural Resources Exploitation Activities

NEPA issued in 1994 “Notice on Strengthening Ecological Management of Natural Resources Exploitation Activities” which requires the environment departments at all levels to undertake actively the ecological conservation. Considering the poor management of ecological environment and ecological worsening damages, efforts will be focused on strengthening EIA and environmental management in relation to comprehensive development of agriculture, deforestation, exploitation of tourism and forest resources, construction of nature reserves, exploitation of plant and animal resources and development activities in desertified land, grassland and wetland. In the meanwhile, EIA will be strengthened for water conservation and hydropower projects and exploitation of mineral resources.

(4) Policy for Strengthening Wetland Conservation

In March, 1994, NEPA issued “Notice on Strengthening Wetland Conservation”, which requires the environment departments at all levels to strengthen the environmental management regarding the wetland exploitation by formulating the relevant regulations. For those economic activities targeted at wetland or ongoing projects aimed to lose or change the function of wetland, EIA should be made up if they did not prior to the project. To those projects which have been proven as

unsound exploitation by the assessment or scientific proofing, the relevant department or local government will be requested to reconsider their approval of these projects. For future exploitation projects in wetland, the requirement for wetland protection and utilization will be met. Exploitation activities will be forbidden in some wetland very important to regional ecology and climate such as river origin, upper reach, flood relaxation area, areas with serious soil erosion, arid areas and habitats for rare animals and plants.

4.1.2 Legal Construction for Nature Reserves

(1) Regulation Concerning Nature Reserves

In September, 1994, the State council promulgated “Regulation Concerning Nature Reserves”. This regulation provides a nature reserve management system where the comprehensive management and departmental management is combined. NEPA will be responsible for comprehensive management of nature reserves and departments of forestry, agriculture, minerals, water resources and oceanic administration shall be responsible for the nature reserves under their own management.

This regulation also specifies in a clear way the conditions for setting up nature reserves. To those mainly to protect biodiversity, they will be categorized into two levels: national and local, according to the importance of biodiversity. The establishment of national nature reserves will be examined by NEPA and approved by the State Council. The local ones shall be examined by the local environment department and approved by the local government.

This regulation also specifies the management of nature reserves. NEPA will be responsible for formulating the technical guidelines, standards as well as development planning for nature reserves at the national level. The environment department above the county level will be empowered to exercise supervision over the management of various nature reserves within their administration.

This regulation also provides that a specialized management body will be established for every nature reserve, activities in nature reserves will be prohibited such as deforestation, grazing, fishing, herb picking, land clearing, grass burning, mining, sand or stone collection, entrance into the core part of the reserves prohibited and no production facility established between core and buffer parts of the reserves.

(2) Land Management Method for Nature Reserves

In 1995, NEPA and the State Land Administration jointly issued “Method of Land Management for Nature Reserves”, which has the following regulations:

- The land in nature reserves will be managed by the department of land management while the environment department exercise the comprehensive management over the nature reserves. The land ownership will belong to the State or collective.
- The planning of land use outside the protected area will be jointly formulated by the departments of land management and environment together with other departments.
- The disputes arising from unclear boundary setting will be addressed by the environment department by consulting with other relevant departments.
- When the land in nature reserves is changed to other use, the approval of environment department and other competent authorities must be obtained prior to it.
- While undertaking the construction projects within and outside the nature reserves, EIA must be done according to the relevant regulation and the report submitted to the environment department for approval.
- The environment department above the county level shall be empowered to exercise supervision over the land use in nature reserves under their administration.

(3) Method of Application and Approval of National Nature Reserves

In 1991, the Administrative Office of the State Council reissued NEPA's proposed method for application and approval of establishing national nature reserves which is summarized as follows:

- Procedure of application. Prior to application, the governments of provinces, autonomous regions and the municipalities under the central leadership and the relevant central departments shall be required to organize experts in field trips to the proposed sites for new nature reserves and preparing for proof for approval.
- Procedure of approval. NEPA is required to form the National Nature Reserve Expert Assessment Committee involving the experts in various fields and the representatives of relevant departments for assessing the application. After the agreement of this Committee, NEPA will present its proposed comment for approval to the State Council for final approval.

4.1.3 Strategy and Action Plan for Nature Conservation

(1) China's Agenda 21 for Environmental Protection

To implement the strategy of sustainable development in the field of environment, CBD, the Ten-point Policy for Environment and Development and China's Agenda

21, NEPA formulated in 1994 “China’s Agenda 21 for Environmental Protection”. This document recalled the past development, analyzed the current problems and proposed the goal and action plan for the 1990’s and early the next century from the aspects of policy directives, legal construction, institutional building, environmental education and publicity, nature conservation, urban and rural environment protection, industrial pollution prevention and control, environmental monitoring, environmental science and technology and international cooperation and exchange in the field of environment. It will be used as guide for future environmental protection in China.

A. Action Program for Biodiversity Conservation

In Chapter 15, China’s Agenda 21 for Environmental Protection, the strategic goal and action program for biodiversity conservation has been put forward on the basis of relevant information.

- 1 Strategic Goal: to conserve biodiversity, to ensure the sustainable utilization of biological resources, to ensure the sustainable development of national economy and society and to achieve the integration of economic, social and environmental benefits.
- Main Action: to promote actively and improve various management systems, strengthen the supervision over biodiversity conservation, strengthen law enforcement and investigation, to establish and improve the national network of biodiversity monitoring, to establish the national information system and data banks for biodiversity, to set up demonstration projects for nature reserves of various sizes, to set up the national biodiversity museum, including animal, plant and microorganism centers.

B. Action Program for Undertaking Ecological Impact Assessment for Natural Resources Exploitation

In Chapter 16 of China’s Agenda 21 for Environmental Protection, the background part says that for the time being the rule of EIA is applied only to the construction projects in the field of water resources, hydrological facilities and exploitation of mineral resources, but not to construction or exploitation activities in regard to forest, land and tourism resources. For this, the method, policy and action has been proposed for improvement.

- Method and policy for improvement. In terms of legal construction, it is imperative to establish the rule of environmental management for exploitation of natural resources and the’ method of ecological compensation for resource exploitation activities. The responsibilities of environment department and resource exploitation department shall be clarified through legislation. EIA shall be undertaken for the activities of development of agricultural, forest,

mineral and water resources and the rule of ecological compensation for resource exploitation adopted.

- Action goal: The environment department will achieve the following goal for the end of this century and early the next century with the assistance and support of other resource management departments taking into consideration the current situation of ecology, natural resources and environmental management.
 - a. To incorporate the ecological impact assessment for resource exploitation activities into the work agenda of the environment department and resource management departments in order to achieve 90% of the implementation of such a rule.
 - b. To establish and improve the rule, procedure and measure of environmental management for natural resources exploitation, including the system of EIA approval for these activities, three-at-the-same rule for resource exploitation and the rule of ecological compensation for resource exploitation. The rate of implementation will reach 90%.

- Action Program: To strengthen the enforcement of relevant laws and regulations and the management of natural resources, to improve the rule of EIA for approval of resource exploitation activities, to formulate the management measures and method of supervision corresponding with the system of three-at-the-same-time, to identify the financial resources for resource exploitation and utilization and ecological recovery through legal instruments, including compensation for ecology, rule of guarantee fund, penalty for ecological damage, etc..

(2) China Trans-century Green Projects Plan

To implement “National Ninth Five-year Plan for Environmental Protection and Long-term Program for 2010”, NEPA in collaboration with SPC and SETC formulated “China Trans-century Green Projects Plan”(Phase I 1996-2000) from 1994 to 1996. The State Council approved this plan in September, 1996. In this plan, there are nearly 1600 projects for the first phase which are designed to tackle the key environmental problems in key regions and facilitate the implementation of some international environmental agreements. Many of them are related to biodiversity conservation.

- Ecological protection project planning. In general these projects are divided into three categories: a. 37 projects for rural ecological protection focusing on construction of demonstration regions or counties in rural areas; b. 27 projects for construction of nature reserves concentrating on protection of rare and endangered plants and animals and their habitats; b. 54 projects for ecological construction and conservation targeting at afforestation, desertification control

and recovery of damaged vegetation.

- 1 Project planning for addressing global environmental issues. Three issues are addressed in this project plan: biodiversity conservation, ozone layer protection and greenhouse gas emission control.

According to the ninth five-year plan, 15 nature reserves for biodiversity and 14 research and breeding centers for endangered and rare species will be established. More than 40 rare animals and over 50 rare plants will be protected according to incomplete statistics.

In addition to projects for ozone layer protection and greenhouse gas emission control, there are 27 projects for biodiversity conservation which will focus on construction of nature reserves, species breeding bases and research centers.

(3) National Program for Environmental Protection

In 1994 NEPA issued “National Program for Environmental Protection(1993-1998)“. The chapter on “tasks and measures” in this program proposed:

- strengthening the overall supervision and management of nature reserves, planning the development of nature reserves, upgrading the management of nature reserves, improving the rule of assessment of national nature reserves and establishing a group of nature reserves in coastal regions or those with high population density and rich biodiversity.
- organizing the implementation of Biodiversity Action Plan, strengthening the supervision over import and export of endangered and rare species, improving and establishing storage centers for endangered and rare plants and breeding centers for introduced animal species, promoting ex-situ conservation and breeding of introduced species and formulating red books for endangered and rare animals and plants.
- establishing a rule of recovering ecological damages within given time and standards for ecological recovery, undertaking EIA for ecological construction and natural resources exploitation activities and surveying and reporting on the impact of major national resource exploitation activities on the environment.
- undertaking bilateral and regional exchange ‘and cooperation with neighboring countries in the field of nature reserve and marine environment protection.

4.1.4 Policy, Regulation and Action Plan and Their Implementation

(1) Management of Nature Reserves

- 1 Stable progress in construction and management of nature reserves. Since the 1990’s, stable progress has been made in the development of nature reserves. By the end of 1995, the number of nature reserves in China has reached 799,

covering an area of about 720 thousand square kilometers which accounts for 7.2% of the land area of the whole country. There is a wide distribution and a comprehensive set of types of nature reserves. In addition to those for forest and wild life, some nature reserves have been set up for grassland, deserts, wetland, marine ecosystems, geological and ancient biological heritage. In the past five years, the environment departments of the whole country have established 50 new nature reserves. By the end of 1995, the number of nature reserves of various types under the management of environment departments at all levels has exceeded 160, which provides experience for exercising the comprehensive management and demonstration of nature reserves.

- Assessment of upgrading of nature reserves. In 1992, NEPA established the National Committee for Assessing Nature Reserves involving department management and experts from research institutions twice upon approval by the Committee of Environmental Protection of the State Council. For five years, assessment has been made to 65 applications from relevant provinces and departments for establishing national nature reserves and finally 40 national reserves have been established upon approval by the State Council.
- Organizing national surveys and investigation on nature reserves. In 1997, NEPA brought together departments of planning, finance, forestry, agriculture, minerals, marine administration and land management in the national survey on nature reserves. The number of nature reserves under survey was 20 and they are located in 7 provinces or municipalities. Through this survey, they had a better knowledge of the current situation of nature reserve construction and management. Proposals for tackling the problems found through this survey have been submitted to the State council, which will promote the further development of nature reserves.

(2) CBD Implementation

- Based upon formulation of China Action Plan for Biodiversity Conservation in 1994, NEPA reorganized from 1995 to 1997 over ten departments and nearly 100 experts in an effort to formulate China Country Study for Biodiversity. This report describes in detail the status quo of biodiversity in China and the state and causes of being endangered, evaluates the economic value of biodiversity in China, including direct use value, indirect use value due to its ecological functions and potential use value, estimates the investment needs and new and additional financing for the implementation of CBD in China, summarizes the efforts China has made in conservation and sustainable utilization of biodiversity and proposes the strategic goal and measures for conservation and sustainable utilization in the next fifteen years.
- China has completed the project of biodiversity data management and information network capacity building. With the support of UNEP, NEPA brought together dozens of experts from 9 departments to conduct a survey towards national target institutions for biodiversity, the status quo of

biodiversity data banks and the needs for human resources, facilities and investment. Based upon this survey, the plan for management of biodiversity data has been formulated, covering institutional building, management mechanism, information networking, technical standard formulation, capacity building and financial needs. In the meanwhile, the guidelines and standards for biodiversity data management have been formulated. An inventory of biodiversity information sources has been worked out. A GIS multi-media information acquisition system has been set up for nature reserves across the country. Established are the data bank for endangered species and the bio-data information sources.

- Coordination and organization of various departments and localities for biodiversity conservation. NEPA, as leading agency for CBD implementation, coordinates 20 departments and many non-governmental institutions and groups in an effort to conserve biodiversity, provides guidance for establishing provincial coordinating bodies for biodiversity conservation and undertaking biodiversity conservation projects. For example, Hebei Province has established a Provincial Committee for Nature Conservation headed by one vice governor and involving relevant provincial departments which will study and coordinate nature conservation within the province. Yunnan Province is the first in the country to establish a Committee for Biodiversity Conservation and Heilongjiang Province followed suit by establishing the same committee at the provincial level, which is headed by one vice governor.

(3) Ecological Conservation

- Since 1992, the environmental management has been intensified over the activities of natural resources exploitation. In 1993, the Committee of Environmental Protection of the State Council held a on-the-site meeting in Yulin, Shaanxi Province for examining energy development and the enforcement of environmental laws in border areas of Shanxi, Shaanxi and Inner Mongolia.
- In 1995, NEPA organized some relevant departments in a survey of the damages to the wetland ecosystem caused by the agricultural activities in Three River Plain and promoted the protection of the wetland there by using the chance to approve the EIA report for the project of comprehensive agricultural exploitation through use of Japanese loan. NEPA was also actively involved in solution to the ecological issues in Alashan region.
- Since 1994, some provinces like Guizhou, Shaanxi, Fujian, Yunnan, Liaoning, Anhui, Sichuan, Henan, Hebei, Heilongjiang and Hunan have strengthened the environmental management for the activities of agricultural exploitation; deforestation, natural resources exploitation in scenic spots and forest parks, exploitation of animal and plant resources and grassland and wetland utilization. In addition to EIA for water resources, transportation and mineral resources exploitation activities, Guangxi also applies EIA to

construction activities in the forest parks, scenic resorts, economic development zones, biological resources exploitation, lake enclosure, aquatic breeding and golf field construction.

(4) Strengthening local legislation for nature reserves

- Since the 1990's, the environment departments in many provinces and autonomous regions have formulated some local regulations for nature reserves taking into consideration the local reality and with the guidance of the national environmental laws, totaling 41. These regulations cover nature reserve management, marine environment management and natural resources exploitation. To give a few examples, Heilongjiang Province issued "Regulations for Implementing Regulation Concerning Nature Reserve"; Xinjiang revised its provincial regulation concerning nature reserve according to the national relevant regulation; Inner Mongolia issued "Regulation for Xilinkuole Nature Reserve" and Jilin Province issued the provisional regulations for management of national nature reserves in Changbaishan, Xianghai and Yitong Volcano, etc..
- Coastal provinces and municipalities have also formulated some local regulation concerning the management of marine environment, such as Hebei Province Provisional Regulation Concerning the Environment Protection of Coastal Region, Qingdao Municipal Regulation on Coastal Environment Protection, Xiamen Municipal Regulation on Coastal Environment Management and Weihai Municipal Provisional Regulation Concerning Marine Environment Protection.
- In terms of ecological conservation, Fujian and Shaanxi Provinces have formulated their provisional regulations concerning the levy of compensation for ecology against mineral resource exploitation and expanded new areas of nature conservation. Jilin Province has issued its provincial standards for setting up ecological villages, towns and counties or cities and Liaoning Province has issued the Standards for Setting Up Rural Ecological Construction in Fushun City".

4.1.5 Other General Measures

(1) Institutional Building

NEPA has a Department of Nature Conservation where there are divisions for nature reserves and species management, ecological environment management, marine environment management and township environment management. In provincial and municipal EPBs, there are divisions for nature conservation, taking responsibility for comprehensive management and supervision over nature conservation and natural resources management in the region within their jurisdiction.

To implement CBD, NEPA not only heads a Coordinating Group for CBD Implementation involving 20 departments but also sets up a leading group within its own system for CBD implementation consisting of heads of departments of nature conservation, international cooperation, science and technology and environmental education and publicity, with one of NEPA Deputy Administrators as group leader, whose responsibility is to coordinate the implementation of CBD within NEPA. An office of CBD implementation has been set up in NEPA to deal with the routine work of CBD implementation.

(2) Education and publicity

NEPA and local EPBs conduct various forms of educational and publicity activities for nature conservation regulations, biodiversity knowledge and public participation in biodiversity conservation on the occasions like the World Environment Day and the Earth Day. CCTV and CCRS organized panel discussions, news reports on nature conservation and leaders' address on these issues on such occasions. China Environment News is a frontier where there are reports on biodiversity conservation on almost every issue of this newspaper. Since 1992, NEPA has launched the Report on the State of Environment where there is some content related to nature conservation and the state of the natural environmental quality.

Since 1995, NEPA has been organizing celebration activities on the International Day for Biodiversity. The forms of celebration can be press conference and gatherings by inviting the high-level or department leaders to give addresses, dissemination of educational materials and special news reports on major newspapers, television and radio stations.

To publicize the implementation of CBD and relevant activities, Office of CBD Implementation published its newsletter on biodiversity action on a regular basis where you can find reports on international progress and follow-up actions in CBD implementation and domestic progress and major activities in the field of biodiversity conservation and CBD implementation. These newsletters will be disseminated to relevant authorities, research institutions, news agencies, experts, local environment departments, etc.. Currently the English edition of this periodical is being prepared for publication.

(3) Research

Since conclusion of CBD in 1992, NEPA has arranged several research projects for CBD implementation, which mainly include:

- Studies on national strategy for CBD implementation. Based on analysis of the obligations under various articles, this study analyzes the potential impact of

CBD implementation on the economic growth and the additional cost for it taking into consideration the national reality and background. To the focal issues addressed by CBD, the strategy for implementation and the long or mid-term strategy for biodiversity conservation and action plan have been proposed.

- Studies on conservation of agricultural biodiversity and impacts of alien species. This study surveyed the current situation of growth and reduction of agricultural and domesticated animals species resources, explored the impact of agricultural production pattern and new technologies on the genetic diversity of agricultural crops and domesticated animals and proposed measures for avoiding or reducing loss of genetic diversity. This study also explored the impact of alien species on the biodiversity in China and the impact of intrusion of alien grass species, insects and viruses on the environment and biodiversity in China, and proposed the strategy and measures for preventing and controlling such impacts.
- Studies on management of biosafety. Based on the analysis of domestic progress in biotechnology and current situation of biosafety management, this study explored the national mechanism of biosafety management and proposed the technical guidelines and standard for risk assessment and management in relation to the transportation, storage and release of LMOs resulting from biotechnology.
- Studies on management of nature reserves. This study has completed the surveys in several nature reserves and their development planning, formulated the national standard for classifying the nature reserves and a system of indicators for effective assessment of nature reserve management and established a data bank and electronic distribution map of nature reserves across the country.

4.2 Biodiversity-related Policy, Regulation and Plan of the Forestry Department and Their Implementation

4.2.1 Relevant policies

Since the 1990's, in particular after the UNCED and the conclusion of CBD, the forestry department has formulated a series of departmental policies by following the guiding principle of coordinated exploitation and conservation, the national strategy of sustainable development and attaching importance to integration of ecological, social and economic benefits.

- (1) To establish and improve the rule of management of forest and wild life resources

In the past 10 years, the forestry department has devoted efforts to establishing: the rule of forest and wild life resources monitoring, the rule of EIA for development and utilization of forest and wild plant and animal resources, the licenses for

hunting, transportation, trade and breeding of wild animals and plants, the licensed production, sales and use of hunting rifles and bullets. To implement the above rules, the Ministry of Forestry has established the monitoring centers for forest and wild life resources and wetland which enforce the licenses for wild life resources.

(2) To establish and implement comprehensively the rule of non-gratuitous and limited use of wild biological resources

In 1992, the Ministry of Forestry, together with Ministry of Finance and the State Price Administration, issued the “Method of Charging Fees to the Management and Protection of Territorial Wild Animals” and the “Method of Charging Fees to Management of Hunting of National Protected Wild Biological Resources”. National Office for Management of Trade of Endangered Species, together with the State Price Administration and Ministry of Finance, issued “Notice on Charging Management Fees of Trade of Wild Animals and Plants”. Enforcement of these regulations will control strictly the consumption of wild biological resources.

(3) Policy for Promoting Sustainable Utilization of Forest Resources

To change the long-standing practice of gratuitous deforestation by the state-owned enterprises, the Ministry of Forestry has adopted comprehensive commercialization of timber production since 1993 in northeast China and Inner Mongolia. The main content of this reform is: (a). to change the fund for timber production into the loan; (b). to adopt the rule of internal timber pricing; (c). to establish a new system of forest management and fostering ‘according to the principle of separation of the ownership of and the right to use the forest resources. The implementation of this policy is useful for upgrading the rate of utilization of forest resources, limiting the over-consumption of forest resources and strengthening the national macro-management of forest resources.

(4) More international cooperation and exchange in the field of biodiversity conservation

The forestry department pays much attention to strengthening the bilateral or multilateral cooperation in the field of forest resources and environment protection and getting more international funds for projects to be implemented in China, in particular for implementation of international conventions, such as Convention on Protection of Important Wetland as Habitat for Aquatic Species, Convention on International Trade of Endangered Wild Plants and Animals and UN Convention to Combat Desertification, of which the implementation in China is led by the forestry department. They pay attention to gearing the existing practice in China to international standards by improving some rules as of export supervision and changing or reducing the use of licensed export of timber products and replacing it with the certificate of export required by the Convention on International Trade of

Endangered Wild Plants and Animals.

4.2.2 Relevant Regulations

In the past few years, the forestry department has strengthened the legal construction by developing additional laws and administrative regulations in addition to improving the existing ones and promoting some of them to a more operable and practical enforcement.

(1) Issuance of “Regulation Concerning Protection of Territorial Wild Animals”

In 1992, the Ministry of Forestry issued with the approval of the State Council the above regulation which was formulated according to the Law of Protection of Wild Animals of PRC. This regulation has seven chapters and 46 Articles which provide specific regulations on protection of wild animals, management of wild animal hunting, wild animal domestication and reproduction and sales and utilization of wild animals. For five years after its entry into force, this regulation has played a very important and effective role in regulating the protection, management and reasonable utilization of territorial wild animals and become the most effective guideline and most authoritative regulation for the above work. To enforce this regulation, the State Administration of Commerce and Industry issued in 1994 a notice giving the administrative department of territorial wild animals above the county level the power to give administrative punishment for the purpose of strengthening the management of wild animals and their products in the market. The Ministry of Forestry has also formulated the management regulations or technical guidelines for trade of wild animals, management of hunting rifles and bullets, hunting reserve construction, wild animal park construction, wild animal breeding, wild animal survey and wild plant and animal transportation.

(2) Issuance of Regulations for Punishing Illegal Cases of Wild Animals

In May, 1994, the Ministry of Forestry and the Ministry of Public Security issued the “Regulation Concerning Jurisdiction of Criminal Cases of Territorial Wild Animals and Case Filing”, which was formulated according to the relevant provisions in the “Criminal Law of PRC”, the “Criminal Accusation Law of PRC”, the “Law of Wild Life Protection of PRC” and the National People’s Congress’s “Supplementary Regulation Concerning Punishment of Killing National Key Protected Rare and Endangered Animals”. The forest police department has also formulated some specific standards for punishing criminal cases related to territorial wild animals and relevant case tiling, which is one of the most important legal documents enacted together with the “Wild Animal Protection Law” and provides an important guidance for the local governments to enforce in an effective way the “Wild Animal Protection Law” and “Territorial Wild Animal Protection Law”.

(3) Implementation of “Regulation Concerning Protection of Wild Plants”

The State Council issued this regulation in September, 1996 which went into effect from January, 1997. It has five chapters and 37 Articles, providing regulations over the management and protection of wild plants. This regulation is the first kind in China to regulate the protection and management of wild plants, which will play an important role in regulating the work in this field. Currently the forest and agriculture departments are formulating the specific standards and a list of the national key protected wild plants according to this regulation so as to enforce this regulation effectively.

(4) Formulation and issuance of departmental regulations

The forest department has improved and formulated a series of departmental regulations for conservation of species resources and habitats. In June, 1994, the forest department issued the forest-related part for implementing the Regulation Concerning Plant Quarantine. In August, 1993, it issued the “Provisional Regulation Concerning Management of Forestland”. In December, 1993, it issued the “Method of Management of Forest Parks”. In September, 1995, the “Method of Management of Timber Seeds under the Regulation Concerning Seed Management” was issued and in November, 1996 the “Regulation Concerning the Management of Coastal Protection Forest Belt” was issued.

4.2.3 Relevant action plans and programs

(1) Biodiversity Conservation in Forestry Action Plan

The Ministry of Forestry formulated in 1992 “Forestry Action Plan for Biodiversity Conservation”, which has analyzed the status quo and problems of forest biodiversity, made an analysis and assessment of the existing conservation policies and proposed the objective and task for future biodiversity conservation.

- To establish and improve the national network of nature reserves, identify the areas with biodiversity significance and protect 140 reserves out of which 23 are priority protected areas;
- To identify and protect the wild species important to biodiversity and those that needs conservation actions and establish 8 animal ex-situ conservation centers and 6 plant ex-situ conservation centers;
- To set up bases for timber species resources;
- To establish the system of biodiversity information and monitoring as well as the uniform information standard and monitoring method and set up or improve the departmental network of information and monitoring;
- To pursue the ways to coordinate the conservation and sustainable utilization

of biodiversity, establish biodiversity reserves, implement the sustainable land use and development plan beneficial to biodiversity within these reserves, set up demonstration projects for effective management of reserves and establish the-regional pattern of economic development to coordinate the conservation and sustainable utilization of biodiversity.

(2) National Planning for Forest Ecological Construction

As required by SPC, the Ministry of Forestry formulated in 1994 the forest-related part of the National Planning for Ecological Construction 1996-2050. This part proposed the guiding principle, strategic goal and key project distribution for planning and made investment estimate, benefit analysis and prospect for plan implementation on the basis of analysis of the status of the land ecological issues and forest ecological construction. This plan has put forward the phase-by-phase goals:

A. Short-term goal for 1996-2000

- To increase the forest coverage to 15.2% of the total land area with an additional forest area of 9.98 million hectares;
- To control an area of 3.43 million hectares of deserts and desertified land;
- To control an area of 21.37 million hectares of soil erosion by biological means;
- To increase the urban green area coverage to 30%;
- To increase the area of forest and wild animals and plants reserves to 60.95 million hectares, accounting for 6.3 1% of the total land area;
- To increase the area of forest parks to 9 million hectares, accounting for 0.94% of the total land area of the country;
- To set up 6 projects for conservation of endangered wild animals and 4 projects for conservation of endangered wild plants.

B. Mid-term Goal for 2001-2010

- To increase the forest coverage to 17.5% with an additional forest area of 19 million hectares;
- To control an area of 11.43 million hectares of deserts and desertified land with an additional controlled area of 8 million hectares;
- To control an area of 37.02 million hectares of soil erosion by biological means with an additional controlled area of 15.65 million hectares;
- To increase the urban green area coverage to 35%;
- To increase the area of forest and wild animals and plants reserves to 70.68 million hectares, accounting for 7.36%;
- To increase the area of forest parks to 19 million hectares, accounting for 1.98% of the total land area of the country;

- To set up 22 projects for conservation of endangered and rare wild animals and species banks and 5 projects for conservation of rare and endangered wild plants and species banks.

C. 201 1-2050

- To increase the forest coverage to 25% or so of the total land area of the country;
- To increase the area of nature reserves and forest parks to 13% or so of the total land area of the country;
- To increase the urban green area coverage to 40% or so of the total area of the cities.

(3) Forestry Action Plan for China's Agenda 21

To implement China's Agenda 21 as a follow-up to the UNCED in 1992, the Ministry of Forestry formulated in 1995 the Forestry Action Plan for China's Agenda 21. It put forward the overall strategic goal and measures for forestry development in China and outlined the blueprint for the forestry development in the new century, so it becomes one of the guiding documents for mid-term and long-term development of forestry in China. The goal set for biodiversity conservation and sustainable utilization in this plan is the same as that set in the National Planning for Ecological Conservation.

(4) National Ninth Five-year Plan for Forestry and Long-term Program for 2010

In 1996, the Ministry of Forestry formulated the "National Ninth Five-year Plan for Forestry and Long-term Program for 2010". This plan and program put forward the guiding principle, basic policy, goal, tasks and strategic layout for forestry development on the basis of analysis of main problems in the forestry sector and outstanding contradictions and future favorable conditions for forestry development. The main measures were also worked out for implementing this plan and program, The plan and goal made in this document are a specific demonstration of the goal and content in the Forestry Action Plan for China's Agenda 21 and will provide the guidance for the forestry development before 2010 in terms of the sustainable development goal and actions.

(5) Other relevant action plans

The Ministry of Forestry also formulated the "Program for Implementing the 'Principle Statement on Forest Issues'", the "Action Plan for Implementing the United Nations Convention to Combat Desertification", "National Planning for Afforestation 1989-2000", "National Planning for Desertification Control, 1991-2000" and "China Program for Survey of Wetland Resources", all of which are

being effectively implemented.

4.2.4 Progress in Implementing the Policy, Regulation and Action Plan

(1) Protection and Management of Wild Animals and Plants

Smooth progress is being made in the rescuing of endangered species through management and engineering. The giant panda, a world-class endangered wild animals known as the “national treasury of China”, is being endangered by the food shortage. With the rescuing efforts, 149 sick pandas were saved and 54 ones returned to nature, which substantially reduced the losses of giant pandas. Currently the project of giant panda and its habitat protection, which was approved by SPC and the State Council, is being implemented. With this, the number of existing nature reserves and those under construction has reached 28, which results in stabilizing the wild species of giant pandas. Wolong Nature Reserve in Sichuan Province has made breakthrough achievement in artificial breeding of giant pandas by bringing up all the eleven young panda babies. The giant panda population now across the country is 1000 or so, taking a stable trend as a species. As a world-class endangered bird, Nipponia Nippon was few when it was found in 1981 and its population has reached 80 as a result of rescue projects. Success was also achieved in artificial breeding of the Yangtze crocodile with the population growing to over 5000. The population of deer living in Hainan Island has increased from 50 to over 500. The wild horse and the David’s deer were originated from China but now has become extinct. After reintroduction of species in 1984, the population of these animals has grown to 60,300 and 10 respectively.

(2) Construction and Management of Nature Reserves

According to the statistics made by the Ministry of Forestry, by the end of 1996, China has set up 574 nature reserves for forest, wetland and wild life ecosystems, covering an area of 61.12 million hectares which accounts for 6.37% of the total land area of the country. Among them, there are 73 national nature reserves with the area totaling 10.21 million hectares. Seven of them has been included in the list of international important wetland identified by the Convention on Wetland(including Mipu Nature Reserve in Hong Kong), three of them in the East Asia-Australia network of aquatic animal protection and 8 of them in the network of MAB of UNESCO. Up to now, the forestry departments have invested 200 million yuan into the construction of national nature reserves with 54 national ones completed or to be completed.

(3) Implementation of the Convention on Wetland

China is a Party to the Convention on Wetland. In 1996, the Ministry of Forestry formulated “China Action Plan for Wetland Protection”. In 1995, a national survey

was conducted over the wetland resources. For this, the Ministry of Forestry formulated the National Program for Survey of Wetland Resources and many provinces established the provincial leading group and survey teams. In the meanwhile, the Ministry of Forestry has conducted extensive cooperation with UNDP, FAO, the World Bank, IUCN, the International Crane Foundation(ICF) and Wetland International in the field of wetland resources conservation and wetland reserves construction and bilateral cooperation with the Russian Federation, Japan and Australia in this field.

(4) Implementation of the UN Convention to Combat Desertification

To implement this Convention, the Ministry of Forestry formulated the “National Action Program for Combating Desertification” and the “National Plan for Desertification Control, 1991-2000”. Since 1994, a national survey has been undertaken towards desertified land or land degradation by involving many departments and experts from different disciplines. Research has been intensified on biodiversity conservation in desertified areas and the artificial breeding of the plants combating desert. Since 1991, an area of 4.278 million hectares of desertified land has been controlled with an area of artificial afforestation reaching 1.42 million hectares and the closed grass breeding 1.2 16 million hectares.

(5) Nurturing, protection and management of forest resources

Since 1990, China has accomplished an area of 24.7 million hectares out of artificial afforestation, 12.74 million hectares out of plane afforestation and 26.26 million hectares out of closure afforestation. The number of the people participating in voluntary tree planting has come to up 2.2 billion if calculated on an accumulative basis with the total number of trees planted coming up to 11 billion, increasing the forest coverage from 12.98% to 13.92%. This leads to a double increase in both forest area and timber accumulation. Now twelve provinces have eliminated infertile mountains and desertified land. The forestry department has adopted many actions in the field of forest resource fostering:

- To accelerate the implementation of the National Program for Afforestation, 1989-2000. Up to now, 25 provinces and autonomous regions have made decisions on eliminating infertile mountains and comprehensive afforestation within a given time;
- To follow the practice of afforestation by mobilizing all the forces and encouraging the voluntary tree planting by strengthening the education and publicity. Various forms of afforestation will be combined with the participation of the specialized departments and the public.
- To formulate and issue the national technical guidelines for afforestation, plane and closure afforestation and the standards for some main tree and seedling species.

- To popularize the advanced research achievements and effective practical technologies and establish an operational mechanism promoting commercialization of research results through planning and financial means.

(6) Implementation of forest resource management policy and regulation

- To establish preliminarily a system of deforestation limit characterized by total-amount control and case-by-case management. All the provinces and autonomous regions will set up the goal responsibility system for forest resource protection and formulate the specific regulations over the deforestation limit and a system of supervision over implementation of deforestation limits.
- To formulate and improve the regulations and policies for forest land management and complete the certification of the state-owned forest. In 1992, the Ministry of Forestry issued the “Provisional Regulation Concerning the Management of Forest Land” and the State Council reissued the “Instruction on Further Strengthening Forest Land Management”, which further established the system of approval and compensation for use and clearing of forest land. In 1995, the licensing system for use of forest land was enacted nationwide.
- New progress in enforcement of forestry laws and regulations and a system of forestry regulation enforcement established preliminarily across the country. During 1990-1995, more than 1.9 million cases related to forestry were investigated and punished. Since 1993, national investigation has been made towards the enforcement of regulations related to the protection of wild animals and plants. From 1995 to the first half of 1996, the forest police investigated and punished thousands of illegal cases related to the wild animals and plants. China National Office for Management of Import and Export of Endangered Species investigated and punished in collaboration with the enforcement department the sales of rhino horns, tiger bones and Tibetan antelopes, the hunting of Asian elephants, the smuggling of elephant tusks, musk, butterflies, etc., which has effectively controlled the smuggling and hunting of animals in border areas in recent years.
- To strengthen the construction of monitoring system. Northeast China provinces and Inner Mongolia have preliminarily established the system of monitoring of forest resources in the state-owned forests. The Ministry of Forestry has stationed a supervisory body in Fujian Province whose responsibility is to focus on forest land management, timber consumption and timber circulation and strengthen the management of forest resources where they stay.
- To prevent the forest fire, strengthen the forest pest management and prevent the deforestation and rampant killing of animals, which is an important part of forest resource protection. Through the implementation of a series of regulations and policies, prevention of deforestation and animal killing will be enforced according to the relevant laws and illegal cases punished. Recent

years witness the substantial fall in the forest fire, with the rate of fire occurrence decreased from 8 thousandth to 1 thousandth, which is lower than the world average and achieves the best record in history. There is a considerable increase in the pest control and management with the rate of pest control increased from 36.7% in 1980-1985 to the present 40%.

- To establish the national monitoring system for the forest resources. National surveys towards forest resources are made every five years with surveys done towards timber consumption,, forest structure, artificially-bred forest and situation of maintenance every year. The local monitoring system is also being established or improved and surveys for planning will be done every ten years in provincial and autonomous region levels.

4.2.5 Other general measures

(1) Institutional building

The forestry department has strengthened the biodiversity management and research institutions. In addition to Department of Wild Animals and Forest Plants Protection under MOF, divisions responsible for wild animals and plants and nature reserves have been established accordingly in the forestry departments of 25 provinces and autonomous regions. The National Office for Management of Import and Export of Endangered Species was established with more than 10 local offices in cities. China Association for Protection of Wild Animals has established its provincial branches in all the provinces with the number of members coming up to 30 thousand. The research institutes of endangered animals were set up in northeast, northwest and south China. Fourteen rescuing and breeding centers for north China tiger, musk, wild horse, high-nose antelope, *Nipponia nippon*, Yangtze crocodile and other endangered animals have been established in Sichuan, Hunan, Guangdong and Guangxi. Also established are 230 wild animal artificial breeding farms, 21 international hunting closures, 3 giant panda artificial breeding bases, 1 national bird labeling center and 50 bird signaling points. There are altogether 2637 forest pest control stations across the country. There are 25,000 people working in timber checking stations and wild animal management stations, 150,000 people working in forest stations, nearly ten thousand people for forest fire prevention and control, 13,600 people for forest pest control and over 8800 people for quarantine.

(2) Education and publicity

Some laws like the Law of Wild Life Protection and the Forestry Law and the knowledge in the field of wild life conservation were publicized through various mass media and in various forms on the occasion of the Bird-loving Week or Month, Bird Festival, the World Wetland Day, Month for Protection of Wild Animals and the Tree-planting Day. The target of education and publicity is mainly the primary and high school students. In the past 'seven years, the forestry

department has held every year the national or local knowledge contests, composition contests, summer camps or study tours to nature reserves for protection of wild animals for children and youth. They continue to use some specialized newspapers and magazines like “China Forestry News”, “Nature”, “Wild Animals” and “Forestry in China” for educational and publicity purposes. They edited and published some pictorials and specialized books such as “For Nature”, “Endangered Wild Animals”, “Birds in China”, “Illustrated Maps of National Key Protected Wild Animals” and “A Collection of Laws and Regulations Concerning the Management and Protection of Wild Animals”. They have translated the book entitled “On Conservation Biology”. Through all this, more and more people have realized the importance of biodiversity conservation and participated in this process. According to a joint survey done by China Association for Protection of Wild Animals and China Survey Institute, 97.5% of over 1000 people interviewed agreed to the idea that to protect wild animals is to protect human beings ourselves.

(3) Research

Beginning from 1995, a survey was made towards wild animals and plants and wetland. Studies have been done on over 60 endangered and rare wild animals such as giant panda, golden monkey, Yangtze crocodile, south China tiger, wild horses, snow leopard, wild donkey, white-slip deer, David’s deer, red-crowned crane, black-necked crane and high-nose antelopes and on distribution, number, habitat, reproduction and utilization of many rare plants such as *Cathaya argyrophylla*, *Ormosia hosiei* and *Cycas panzhihuaensis*. Studies have been also conducted on the habit of migratory birds. A survey was made on the ecological diversity of main forest climate zones in China and studies done on the trend of their ecosystem evolution and the recovery of damaged ecosystems. Eleven long-term positioning research stations have been established for forest ecosystem. The techniques for artificial breeding of giant pandas, artificial reproduction of red-crowned cranes, artificial breeding of the Yangtze crocodile, pest control and management and bird labeling have been popularized. Formulated and popularized are also the standards for design and construction of nature reserves and the storage of timber species and the model of management tile for nature reserve operation. The Ministry of Forestry has also organized many training courses and workshops on nature reserve management, protection of aquatic animals and wetland, management of wild animal and plant protection, management of wild animal and plant trade, survey on wild animal and plant resources, domestication and breeding of wild animals, tourism in nature reserves and nature reserve information system management for the purpose of upgrading the management level of the staff working for biodiversity conservation. An information system of nature reserves has taken some form.

4.3 Policies, Regulations, Plans For Biodiversity Conservation in the Department of Agriculture and Their Implementation

4.3.1 Relevant policies

The Ministry of Agriculture has formulated a series of policies to encourage the agricultural biodiversity conservation, such as preventing the action of blind exploitation, abusing resources and destroying agricultural eco-systems, and making preferential measures in terms of investment, loan, project approval and technical assistance.

(1) Policy of arable land conservation

Arable land conservation areas should be established to ensure that the arable land area will not shrink any more. Protective measures should be taken for the high-yield farmland, the bases for high-quality products and economic crops and the vegetable sheets adjacent to big and medium sized cities. Their utilization should be strictly controlled, especially for non-agricultural activities.

(2) Policy of developing eco-agriculture

Scientific research should be strengthened with the emphasis on different types of eco-agriculture, integration of eco-agricultural construction with the development of eco-labeled food, introduction of the market mechanism for this purpose so as to invigorate the development of eco-agriculture.

(3) Policy of economizing and developing energy in the countryside

The energy development in the rural areas should focus on hydropower development in key counties and towns to promote rural energy development and its economical use and protect agricultural eco-environment.

(4) Policy of implementing cleaner production in township enterprises

The development of township enterprises has increased the income of the farmers, but they have also brought environmental pollution. We should intensify the efforts in adjusting the structure of the township enterprises and promoting technological progress and cleaner production in line with the overall industrial policy of the country.

(5) Policy of encouraging the conservation and study of agricultural biodiversity

The agricultural biodiversity conservation has long-term benefits, but its short-term benefit is not easily seen. The Ministry of Agriculture has formulated preferential policies for and raised more financial resources to supporting the institutions or groups engaged in biodiversity conservation so as to ensure the staff stability and smooth undertakings for biodiversity conservation.

4.3.2 Relevant regulations

(1) Regulations on heritage resources conservation

China is one of the countries in the world which abounds in the heritage resources. The Chinese government attaches great importance to the conservation and sustainable utilization of heritage resources and has formulated relevant regulations which have led to great progress in the conservation and sustainable utilization of heritage resources. The major regulations and laws in this field promulgated after the 1990s are as follows:

a. Regulations on Conservation of New Plant Species

In order to protect the right of new plant species, encourage the breeding and use of new species, and promote the development of agriculture and forestry, the State Council promulgated this regulation in 1997. The new plant species as defined in this regulation refers to new, special and properly named plants with the characteristics of consistency and stability which are artificially fostered or developed from wild plants. The regulation has stipulated clearly the content, ownership, examination and approval, the conservation period, termination and no-change period of the species right.

b. Detailed Implementation Rules of Crops Seeds

Issued in 1991, it has provisions on seed resources management, species selection and examination, the production, management, quarantine and storage of seeds and relevant penalties against this regulation:

- The central government will be responsible for collecting, sorting out, storing and utilizing the crops species resources in a planned way with the Species Resources Institute under the Chinese Academy of Agricultural Sciences authorized by the Ministry of Agriculture and the relevant units authorized by the competent agricultural departments at the provincial and municipal levels to undertake the specific work according to the national plan.
- The two-level systems are adopted for long-term and mid-term storage of crops species resources. The Species Resources Institute under the Chinese Academy of Agricultural Sciences takes the charge of long-term storage, while the relevant institutes under the Chinese Academy of Sciences and those at provincial and municipal levels take the charge of mid-term storage.
- The Chinese Academy of Agricultural Sciences is the managerial department in charge of the foreign exchange and import of a small quantity of the crops species resources for experimental use.
- In order to prevent overseas hazardous diseases, pests and weed from entering China, any group or individual should strictly follow the relevant regulation formulated by the plants quarantine departments and go through the procedure of registration, approval and reporting as well as the isolated quarantine examination.
- Any group or individual, when **applying(including exchanging and selling)**species resources to other countries, should go through the procedure of

registration and approval in accordance with the national **rules** on categorized management of crops species resources.

c. Provisional Regulations on the Import and Export of Crops Seeds(Seedling)

Issued by the Ministry of Agriculture in March, 1997, it has explicit regulations on the management and supervision of seed import and export and species resource.

d. Provisional Regulations on the Production and Management of Crops Seeds

Issued by the Ministry of Agriculture in 1997, it has explicit regulations on the production, management, contract management and liabilities in relation to crops species resources.

e. Regulations on the Management of Domesticated Animals Species

Issued by the State Council in 1994, it stipulates in Chapter II (Conservation of Domesticated Animals Species Resources) that

- The state shall protect the domesticated animals species resources at different levels.
- The state will establish resource nature reserve, genetic base and gene determination station of domesticated animals species in a planned way so as to carry out special conservation of rare and endangered species.
- The governments above the county level should support the mass examination, determination, conservation, foster and utilization of domestic animals species.

e. Law on Quarantine of Imported and Exported Animals and Plants

Issued by the Standing Committee of the National People's Congress of China in 1991, it stipulates that when the animals, plants and their products are imported and exported, the vessels that contain animals, plants and their products and the transportation instruments from the epidemic area should be quarantined.

(3) Regulations on Conservation of Wild Animals and Plants

a. Regulations on conservation of wild animals and plants

It was stipulated in the “Law on Conservation of Wild Animals” issued by the Standing Committee of the National People's Congress in 1988 that the administrative competent departments of forestry and fishery shall take charge of the management of terrestrial and aquatic wild animals all over China, while the administrative competent departments of fishery in the local government above the county level shall be in charge of the management of aquatic wild animals within

their jurisdiction. In 1993, with the approval of the State Council, the Ministry of Agriculture issued the “ Implementation Regulations on Conservation of Aquatic Wild Animals”, of which the major points are as follows:

- The administrative competent department of fishery under the State Council and Provincial Government should designate nature reserves for conservation of aquatic wild animals in key national and local nature reserves and waters where the aquatic wild animals live and reproduce.
- Fishing and killing of key national protected aquatic wild animals are prohibited. Special fishing license is needed if such action is necessary.
- Those who domesticate key national protected aquatic animals should obtain the permits of domestication and promulgation.
- Sale and purchase of key national protected aquatic wild animals or their products are prohibited.
- Export of key national protected aquatic wild animals or their products should be examined by the administrative competent department of fishery under the provincial government and approval of the administrative competent department of fishery under the State Council.

In February, 1995, the Ministry of Agriculture issued the regulations requiring that “ the production of trawl boat and sailing boat should be prohibited from July 1 to August 31 every year in the sea area to the south of 35 degree latitude north of the Yellow Sea and to the north of 27 degree latitude north of the East Sea” with the objective of protecting the fishery resources in these areas.

b. Regulations on conservation of wild plants

In 1996, the State Council issued the “Regulations on Conservation of Wild Plants” which appointed the Ministry of Agriculture and the Ministry of Forestry as the administrative competent departments for protecting the wild plants resources all over China. The key points are :

- Nature Reserves should be established in accordance with relevant laws and administrative regulations in key national protected natural distribution area of wild plants and key local protected area.
- Rescue measures should be taken to key national protected wild plants and local protected wild plants whose growth has been threatened in order to protect or recover their habitats. We should also establish breeding bases and species resources bases or take ex-situ conservation measures if necessary.
- Collection of national first grade wild plants is prohibited. The collection for special use like scientific research, artificial breeding and cultural exchange should apply to the competent department or other authorized departments under the State Council for collection license after the provincial competent department of the collection site has given preliminary approval.

- Sale and purchase of the first grade national protected wild plants are prohibited. Sale and purchase of the second grade ones need the approval of provincial administrative departments or other authorized agencies.

(3) Regulations of Eco-agriculture

After the 1990s, great efforts were made to formulate regulations of eco-agriculture, such as regulations on conservation of agricultural eco-environment, list of rare and endangered species and their conservation, measures for protecting valuable organisms and anti-pest insects in agricultural eco-environmental systems.

(4) Regulations on Management of Biotechnology and Biosafety

In 1996, the Ministry of Agriculture has issued “Measures for Management of Genetic Engineering Safety of Agricultural Organisms”, which provides measures for management of experimental research of agricultural genetic engineering and assessment of biosafety.

(5) Regulations on Monitoring of Agricultural Environment

Following the Provisional Regulations on Monitoring of Agricultural Environment, the Ministry of Agriculture has also issued the “Reporting Rules of Agricultural Environmental Monitoring”. Although this rule does not touch on biodiversity directly, its content has some influence on biodiversity conservation in the agricultural system. It consists of monitoring reporting system of atmosphere, water quality, soil and agricultural products in farmland as well as the reporting system of agricultural environmental pollution accidents.

4.3.3 Relevant Action Plan and Programs

(1) Action Plan of Agricultural Biodiversity Conservation

In 1993, while participating the formulation of “China Action Plan of Biodiversity Conservation”, the Ministry of Agriculture drafted “China Action Plan of Agricultural Biodiversity Conservation”, of which the major points are :

- a. To reinforce research and study, make plan of biodiversity conservation and utilization
 - Making a thorough investigation of biodiversity distribution of agricultural ecological system all over China
 - Drawing up biodiversity assessment standard of agricultural ecological system
 - Making a thorough investigation of agricultural utilization of wild animals and plants, and make plan of rational utilization.

- b. To strengthen on situ conservation of key ecological system and species and establish network of nature reserve and point.
- Building the 7 already-established nature reserves or those under construction into those of international significance;
 - Gradually completing the construction of 78 nature reserves which are in the plan of the Ministry of Agriculture;
 - Building some additional national nature reserves which are managed by the Ministry of Agriculture;
 - Establishing some on situ nature reserves of genetic species
- c. To strengthen ex situ conservation and storage of species
- Strengthening the research of domestication and utilization of rare and endangered wild animals and plants
 - Strengthening the collection, storage and breeding of crops species resources;
 - Strengthening the storage of domesticated animals species resources;
 - Strengthening ex-situ conservation of aquatic products resources
- d. To strengthen agricultural development planning and management of the nature reserves and adjacent farmlands and realize the coordination of conservation and sustainable utilization
- e. To establish the monitoring and information network of agricultural ecosystem, crops species resources, domesticated animals resources and aquatic products resources.
- (2) The “Ninth Five-year Plan and Plan for the Agricultural Environmental Conservation for 2010”

In 1995, the Ministry of Agriculture formulated the “Ninth Five-year Plan and Plan for the Agricultural Environment⁴ Conservation for 2010” with the major points as follows:

- a. The conservation and sustainable utilization of heritage resources
- Strategic target: to list conservation and sustainable utilization of heritage resources as one of the key technological projects and ten basic practical research projects of agricultural sustainable development
 - Major actions: to strengthen the basic research of species resources diversity, including collection and storage technology, assessment and utilization, selection and breeding of new species of crops and domesticated animals and fishes, and the technology of domestication; strengthen system construction of

seeds and seedlings, build or expand 10 renovation centers of crops species, 5 breeding centers of pasture grass and 6 breeding centers of aquatic products, and strengthen the establishment of seed management and supervision.

b. Construction and management of nature reserves

- Strategic target: Efforts should be made to increase the number of agricultural biodiversity nature reserves to 100 by the year 2000, and establish 200 agricultural biodiversity nature reserves of different kinds, 80 out of which are fishery water areas. The total areas of nature reserves for this purpose will reach 20 million hectares.
- Major actions: Emphasis should be put on the conservation of agricultural ecological functional areas, high-quality agricultural production areas, and rare domesticated animals species resources as well as the conservation of spawning, hatching, migrating route of key fishes and the wetland which has impact on fishery ecological balance.

c. Development of ecological agriculture

- Strategic target: to expand the number of national eco-agricultural counties from the present 50 to 100, and implement the construction projects of “100 eco-agricultural counties”
- Major actions: implementation of comprehensive harassment projects of ecological environment, conservation, development and construction projects of ecological environment, project of resources optimization; ecological environmental conservation and construction of agricultural production bases; rural energy construction and development of energy substitution; popularization of eco-agricultural technology.

d. Agricultural environmental monitoring

- Strategic target: to strengthen the monitoring stations of different kinds(farmland, fishery, grassland)at different levels(head station, central station and local station), enhance the capability of monitoring staff, work out standardized monitoring indicator system and scientific monitoring and assessing approach, and establish perfect information transmission mode and mechanism.

Major actions: In terms of the establishment of national agricultural environmental monitoring network, the work includes the expansion of environmental monitoring head station of the Ministry of Agriculture, the construction of 7 regional coordination centers and agricultural environmental monitoring stations at provincial and municipal levels and over 200 at county level, setting up of 500 state-controlled monitoring points. In terms of the establishment of national fishery environmental monitoring network, the work

involves the perfection of the present 25 stations, construction of 16 new second grade stations and 11 provincial stations.

4.3.4 Implementation of Policies, Regulations and Action Plans

(1) Conservation and sustainable utilization of heritage resources

- The agricultural departments have built 27 mid-term storage house of crops species resources, 15 storage gardens of fruit tree resources with 22,700 species, 10 resources gardens of perennial crops species, and fresh water fishes resources house, seminal fluid storage house and embryo houses, etc.
- Much work has been done on collection, storage and determination of heritage resources; 330,000 species resources of 160 crops have been collected in resource house; 2,799 pasture grass species have been collected, the determination of the biological features and agricultural characteristics of 3,186 pasture grass species has been finished; the identification of cytologic features of 1,300 pasture grass has been made; 590 spices and types of domesticated animals have been identified in China.
- The conservation and sustainable utilization of heritage resources has been defined as one of the examination indicators of the target responsibility system so as to strengthen the management of heritage resources. The coordination of every competent department is emphasized to ensure the implementation of conservation and sustainable utilization plan of heritage resources. The department of veterinarian under the Ministry of Agriculture has made plan to set up Specialized Committee of Biodiversity Conservation of Domesticated Animals and reinforce the conservation of domesticated species and the establishment of genetic base. It is now drafting the list of species resources of domesticated animals.
- Efforts have been made to effectively mitigate the threat of environmental pollution to heritage resources and realize sustainable utilization of heritage resources by means of industrial adjustment and technological renovation.

(2) Construction and management of nature reserves

Great importance has been attached to the construction and management of nature reserves of special habitat areas which abound in precious and endangered species, especially large-sized reclamation area (like Reclamation area of Three Rivers Plain), important wetland (like Ruo'ergai Grassland in Sichuan Province),important water area of aquatic products or habitat of precious and endangered aquatic animals. 47 grassland nature reserves and over 20 nature reserves of aquatic animals have been built up in China.

(3) Conservation and sustainable utilization of wild plants and wild aquatic

animals

- The species of many flowers, decorative wild plants, medical plants and other plants with economic value have been artificially induced in order to preserve their heritage genes.
- No-fishing zones and no-fishing period have been designated and Fishery Licensing System has been practiced to protect spawning and baiting bodies. In 1988, with the approval by the State Council. The nature reserve of spawning ribbon fish was set up in the East China Sea in 1993. The no-fishing zone of prawn was set up in the mid part of the Yellow Sea and no-fishing zones were designated in all the large lakes and rivers. Meanwhile, great efforts have been made to develop artificial breeding and natural reproduction, not only in the marine areas, but also in the fresh water lakes.

(4) Eco-agricultural construction

Starting from the year 1984, China began to encourage the test of eco-agriculture and carried out pilot test in many provinces, cities and autonomous regions. The testing sites outreached 2000, and the scale has expanded from ecological houses and villages to ecological counties. The achievement of ecological agriculture in China has been awarded by UNEP and 8 testing sites were granted “Global 500”.. In order to further the development of ecological agriculture, the Ministry of Agriculture, National Environmental Protection Agency and other 5 ministries began to carry out pilot test of the “construction project of 50 eco-agricultural counties all over China” from 1993.

(5) Development of Biotechnology and Management of Biosafety

Over 50 species of more than 20 crops like wheat, apple, orange, strawberry and tomato have been fostered with the chromosome engineering technology and popularized for a large-scale plantation in 266,000 hm^2 and make the yield increase by 45 million kg before 1992. As regards to fast breeding with the technology of breeding by applying plant tissue, over 10 production lines of apple, banana, orange and flowers have been established with the yearly production capability of 5 million seedlings for sale. As regards to the fostering of germ plasma, many crops have been fostered to revegetation and many new crops species which could resist the pests and diseases have also been acquired. The management of biosafety is being intensified.

(6) Agricultural Environmental Monitoring

The existing monitoring stations are: Central Environmental Monitoring Station under NEPA, the monitoring center under the Ministry of Agriculture, the fishery environmental monitoring stations in 4 sea areas (the South Sea, the East Sea, the Yellow Sea and the Bohai Sea) and 3 river basins (the lower reaches of the

Yangtze River, the upper and middle reaches of the Yangtze River and the Pearl River Valley), the environmental monitoring central station of reclamation area and grassland. In addition, 626 local stations have been built with 39, 167, 430 stations respectively at the provincial, municipal and county levels. There are also 22 monitoring stations in fishery areas and 5 in reclamation areas.

The Ministry of Agriculture has made 7 large-scale nationwide investigations on agricultural ecological environmental quality and trends. It also conducted investigation and assessment of agricultural resources and environmental dynamic changes, environmental quality investigation of ecologically fragile areas, environmental monitoring of nature reserves, and resources survey of grassland eco-system of different species.

4.3.5 Other General Measures

(1) Institutional construction

Under the leadership of the Environmental Protection Committee of the Ministry of Agriculture, the department of environmental conservation and energy under the Ministry of Agriculture was appointed as the competent department in charge of the formulation of action plan of biodiversity and the management of projects, the relevant departments in the Ministry of Agriculture will assist the department of environmental conservation and energy in the management of biodiversity. Four monitoring and information networks have been established in the Ministry of Agriculture to carry out the monitoring, research and information collection.

China Association of Agricultural Ecological Environmental Conservation and its branches in every province conduct on-site inspection and supervision, propose suggestions and promote technological exchanges.

The relevant research and monitoring institutes take part in the implementation of projects, research, monitoring of agricultural environment and construction of information network.

(2) Scientific research

- Many catalogues of biodiversity have been compiled such as list of crops and domesticated species resources, list of agricultural ecological system, list of endangered species.
- Great breakthrough has been achieved in agricultural biotechnology, including the identification and storage technology of heritage diversity, especially the fostering and vaccine research of crops and domesticated animals genetic engineering.
- Great progress has been made in ecological agricultural technologies, including the multi-layer utilization technology of resource, water conservancy

technology and pest control technology.

- Rural energy technologies including methane gas, wind energy, solar energy, hydropower and so on have been popularized in the nature reserves and their adjacent ecologically 'fragile and sensitive areas.

(3) Publicity and education

- To use all kinds of mass media to publicize the significance of heritage resources conservation, mobilize people to change those habits which are not good for heritage resources conservation, and make the conservation of wild animals and plants a common practice.

- 1 To let villagers and non-governmental organizations play the role of participation and supervision, encourage the reporting of the accidents in violation of laws, regulations and standards, encourage the formulation of "local rules for biodiversity conservation" and the publicity and education beneficial to biodiversity conservation, give full play to the role of women and village schools, popularize traditional agricultural technologies of indigenous people and communities.

(4) Personnel training

With the assistance of the International Heritage Resources Committee, sponsored by the Species Institute under the Chinese Academy of Agricultural Sciences, training courses of crops resources collection, storage and database construction were held. With the aid of relevant international organizations, training courses of wetland conservation were held by the Research Institutes of Agricultural Sciences regularly. The training courses of grassland ecological conservation were also held by the Ministry of Agriculture for many times. These training courses did help a lot in enhancing the capability of grass-root leaders and technical personnel.

(5) Information management

The Ministry of Agriculture has established the information release system, the agricultural environmental monitoring system has also made annual report, routine monitoring report and accidental monitoring report; the monitoring sub-network could link with each other and share the data since they use the same database program and the same technical standards and indicators.

4.4 Biodiversity-related Policies, Regulations and Plans of the Oceanic Administration Department and Their Implementation

4.4.1 Relevant Policies

According to the guiding principle of “overall planning, active conservation, scientific management and sustainable utilization”, the national competent oceanic department has adopted policies in conformity with the national situation and developmental level.

(1) policy of integrating exploitation with conservation

As the deepening of marine exploitation and the rapid development of marine economy, the marine ecological environment and biodiversity have been damaged, which calls for urgent protection. To establish nature reserves is an important measure for protecting the marine environment and resources, and ensuring sustainable exploitation and utilization of marine resources. However, exploitation of the abundant marine biological resources is one of the important ways to provide food for mankind, and it will play even bigger role in the future. Therefore, implementation of sustainable utilization of marine resources has uncountable significance for the maintenance and prosperity of mankind.

(2) policy of “the exploiters protect, the destroyers recover and the users compensate”

The permit license and paid-use systems were adopted in the marine exploitation and utilization. The exploiters must take protective measures for marine ecological environment and natural resources, and those which have been destroyed must be recovered.

(3) environmental assessment and feasibility study systems of exploitation and utilization

The big construction projects could only be set up after making prior marine environmental impact assessment and submitting assessment report and acquiring approval from the environmental conservation department and marine management department.

4.4.2 Relevant regulations

The legislation related to the marine resources protection has played important role in guarding the national marine rights and interests and managing and protecting the marine resources and environment, and at the same time provided legal basis and means for marine comprehensive management and industrial management.

In addition to the Marine Environment Protection Law, which was promulgated by the Standing Committee of the National People’s Congress, the oceanic administration departments have formulated several regulations and rules, such as Regulations on Management of Marine Nature Reserve, Provisional Rules on

Management of Using National Sea Areas, Regulations on Prevention of Shipping Pollution, Regulations on Marine Dumping, Standard of Sea Water Quality, and so on. What's more, there are also some regulations for individual reserves like Regulations on Management of Ecological Nature Reserve of Mangrove Forest in Shankou of Guangxi Province and Regulations on Management of Changli Golden Coast Nature Reserve. The formulation and implementation of these rules and regulations have played important role in promoting marine exploitation and protecting the marine resources and environment of China.

4.4.3 Relevant action plan and programs

(1) China Ocean Agenda 21

In order to put into effect the China Ocean Agenda 21, implement the Convention on Biodiversity and the International Maritime Law, the State Marine Administration has organized some experts to draft the China Ocean Agenda 21 in 1996. This Agenda touches upon marine nature reserve in the following aspects:

- a. construction and management of marine natural nature reserve and special nature reserve
 - Strategic target: to build some more national marine nature reserves and special nature reserves on the basis of strengthening the management of present nature reserves, rescue some precious and endangered species and typical ecological systems which face serious threat and form national network of marine nature reserve in China.
 - Major actions: to strengthen the scientific research of marine nature reserves and conduct research of environmental and eco-systematic dynamic changes in marine nature reserves and provide guiding information for conservation, management, exploitation and utilization; to strengthen the management of the existing marine nature reserve, speed up the construction of selected nature reserves, perfect the current administrative institutions, get additional necessary equipment and facilities, draw up the standard for grading and classifying the marine nature reserve and the technical guidelines for management of marine nature reserve, perfect current managerial mechanism and regulations, establish training system and enhance capability of the management.

To select and designate the special marine nature reserves, draw up a series of standards and regulations on the construction and development of special marine nature reserves, such as "Regulations of special marine nature reserves", "Reference standard for assessment of special marine nature reserves", "Technical standard for the management of marine special nature reserves" and "Standard for classification of special marine nature reserves".

b marine biodiversity conservation

- Strategic target! to make a thorough investigation of the basic situation of marine biodiversity in China, formulate assessment standard; strengthen the conservation of ecological system and species outside the marine nature reserve; establish information and monitoring system of marine biodiversity; build up aquariums in coastal cities so as to form a species conservation network ranging from the south to the north with complete species for research and teaching use.
- Major actions: to carry out investigation and research of marine organisms in China, work out list of Chinese marine organisms and study the situation, habitat, distribution, quantity and the principle of changes of the endangered species; to conduct conservation of the marine ecological system and species outside the nature reserve, protect the rare marine species in China and the world, and protect the ecological system of mangrove and coral reefs; to establish information and monitoring systems of marine biodiversity, conduct long-term dynamic monitoring of marine ecological species resources, gradually establish the monitoring system of marine ecological system, establish national information system of marine biodiversity conservation and link with international information system.

c marine environmental conservation

- Strategic target: to prevent, mitigate and control the pollution and impairment brought by the land-based activities to the marine environment, gradually realize total amount control of the pollutants whose concentration have exceed the permitted standard of marine environment; strengthen the environmental harassment and recovery of key sea area and bring the worsening trend of environmental pollution under control, recover the structure and function of the ecological environment; establish national monitoring and supervision system covering the Yellow Sea, the East Sea, the Bohai Sea and the north part of the South Sea in a short term and that covering the sea area all over China in a long term.
- Major actions: to conduct comprehensive assessment of environmental quality and pollutants holding capacity, carry out control of pollutants emission concentration and total amount, make rational layout of coastal outlet; promote the treatment of sea area and use artificial ecological means to gradually recover ecological system; establish monitoring, supervision, broadcasting and alarming system of marine environment in China, regularly evaluate the situation of marine pollution sources and environmental pollution; develop biological effect monitoring technology of marine pollution; apply the technology of remote sensing, computer modeling and information processing into the monitoring and supervision of marine environmental pollution.

(2) Action plan of marine biodiversity conservation in China

The State Oceanic Administration drafted this action plan in 1992 with the major points as follows:

- Strategic target: to maintain the rich marine biodiversity, protect various typical marine ecological system, protect and increase the resources amount of endangered and precious species, promote the sustainable exploitation and utilization of marine resources, keep the natural ecological system and scenery in a good state, ensure the sustainable development of marine economy and people's living standard in coastal regions.
- Major actions:
 - a. To make further investigation of the basic situation of marine biodiversity in China, formulate a list of Chinese marine organisms and their distribution, conduct a survey of species and organic classification in key sea areas and work out the assessment standard for marine biodiversity.
 - b. To strengthen construction and management of marine nature reserves. To further improve and upgrade the management of the existing management bodies and the level of facilities and technology in these nature reserves, the island ecosystem reserves, coastal wetland reserves, coral reef reserves, mangrove reserves and marine endangered species reserves will be established according to the principle of regional balance.
 - c. To reinforce the construction of information and monitoring systems of marine biodiversity, establish information center, computer network system, monitoring network system of marine nature reserve and network system of marine ecological monitoring stations.

(3) China Development Planning Program of Marine Nature reserves (1996-2010)

- Strategic target: Efforts should be made to establish network of marine nature reserves with relatively complete types and balanced system, basically realize the effective conservation of representative and typical marine resources, environment and biodiversity, realize intensified conservation of precious and endangered marine species background and resources, mitigate, contain and control the deterioration of marine resources and environment, and finally realize sustainable utilization of marine resources and benign circulation of marine ecological environment.
- Major actions:
 - a. To formulate the planning and principle for selecting and building the marine nature reserves, and make them represent the feature of natural scenery and marine biodiversity in the Chinese marine area which covers 3 climatic zones.
 - b. To draw up the management plan requiring that different management rules,

regulations and measures should be formulated in accordance with the real situation of different nature reserve; by the year 2000, the institutional construction and personnel allocation should have reached 70%,and 90% in 2010; in the “Ninth Five-year Plan” period, the basic construction of key national marine nature reserve should be finished, and by 2010, all work should have been done.

- c To make the research and publicity plan, to finish the basic survey and zoning of resources and environment in ‘all the marine nature reserves during the “Ninth Five-year Plan” period, make research of key protected species and conduct sample management demonstration, finish staff training, establish the publicity and education institutions in the national marine nature reserves during the “Ninth Five-year Plan” period and finish this work at the local marine reserves by 2010.

(4) Action plan of conservation and management of mangrove ecological system in China

- Strategic target: to carry out systemic and overall conservation and management of the existing mangroves ecological systems and their resources in China, and on the basis of making thorough investigation of the distribution of marsh that are suitable for planting mangroves, make overall recovery and construction of mangrove forests, build nature reserves for sustainable development areas of mangroves, enhance the production and anti-disaster capability of mangrove ecological systems.

- Major actions:

- a. to strengthen the construction of system and mechanism for protecting and managing mangrove ecological system, to set up management committees of mangrove ecological systems at all levels and China scientific consultative committee of mangrove ecological system, formulate management rules and technical standards for the conservation of mangrove ecological systems.
- b. to strengthen the basic research of mangrove ecological system, collect, sort out and evaluate the present achievement made in the research of mangrove ecological system, implement investigation plan of mangrove resources and environment, and establish monitoring and information systems.
- c. to strengthen the conservation of mangrove, carry out demonstration construction in the existing mangrove reserves, build ‘rive to ten new mangrove reserves covering a considerably big area of integrated land and establish 2 species resource gardens, 1 seed base and a group of mangrove parks.
- d to carry out the sustainable utilization of mangrove ecological system resources, make research of breeding and cultivation, build breeding garden, implement mangrove construction plan aiming at realizing 40-47 thousand hectare of secondary forests recovery in the marsh and afforestation in bare marsh, and construct ecological tourist area and fishery demonstration area of mangroves.

4.4.4 Implementation of Policies, Regulations and Action Plans

(1) Construction and management of marine nature reserves

In order to implement the Development Plan of Marine Nature Reserves, the State Marine Administration has always attached great importance to the construction of marine nature reserves which have increased constantly and made substantial progress.

a. construction of marine nature reserves

In line with the natural conditions and need of development, by the end of 1996 China has built up 61 marine nature reserves with different characteristics, of which 48 are related to marine biodiversity covering an area of 1.29 million hm^2 and 15 are national nature reserves covering an area of 0.31million hm^2 . Some of the nature reserves aim at protecting precious and endangered species in Chinese sea areas like *japonensis*, some aim at protecting special ecological systems like *coral* reefs, *mangroves*, while some aim at protecting precious marine organisms. These nature reserves have played very good role in on situ conservation of marine biodiversity and sustainable utilization of marine organisms resources.

b. management of marine nature reserves

In order to give full play of the marine nature reserves, the national marine managerial department has adopted various measures to strengthen the management. Since the 1990s, the major measures adopted are:

- To formulate plan of nature reserve: Many topical options and plans were formulated like “ Construction Option of Ancient Coast and Wetland Nature reserve in Tianjin”, “Planning of Marine Nature Reserves in Liaoning Province”, etc. so as to construct marine nature reserves in a stepped way.
- To strictly enforce the laws and facilitate resource recovery in accordance with relevant laws: For example, Sanya management office of nature reserve sends out ships for inspection regularly. In 1992-1994, they have inspected for 256 times, investigated 120 accidents against the laws, confiscated 40 detonators for killing fish and 20 kg of dynamites, and fined over 2,000 yuan.
- To intensify the construction of infrastructure and improve the management condition: 4.5 million yuan has been invested to national marine nature reserves to build houses for business use and purchase necessary transportation and communications facilities.

Due to the strict enforcement, gratifying achievement has been made in resources recovery of nature reserve with the population of protected species increasing obviously.

(2) conservation of typical ecological system

The marine ecological system is various with typical ecological system of mangrove, coral reefs and river mouth as well as large quantities of harbors and became the cradle of offshore organisms multiplication and growth. In the process of convention implementation, special importance has been attached to the conservation of coral reefs and mangroves ecological system, much work has been done in the investigation, research, conservation and management of mangrove and coral resources.

- a. investigation on typical ecological system: From the late 1970s to the mid 1990s, two large-scale comprehensive investigations have been organized to make thorough study of utilization, environmental evolution, biodiversity and ecological environment of mangrove and coral resources and accumulated rich materials.
- b. conservation and management of typical ecological system: Recently, the national and local governments have formulated action plans for conservation of mangrove and coral reef ecological systems and carry out planned treatment and conservation in key areas. 11 mangrove nature reserves of mangroves have been established up till now, and about 50% of the mangrove forests have been protected and managed. In addition, management, research, development and monitoring institutes of mangrove and coral reef ecological systems have also been established.

(3) conservation and utilization of marine organisms resources

- a. to make the marine zoning and utilization plan: from 1989 to 1991, China has carried out a large-scale marine zoning which exposed the intrinsic natural properties and its relation with social and economic development, provide certain scientific basis for rational exploitation of marine space and resources, effective conservation of ecological environment and strengthening the comprehensive oceanic management. At present, the State Marine Administration has drafted the China Development Plan of Ocean, 11 Development Plans of Marine Industries and 12 Marine Development Plan of Coastal Regions.
- b. conservation of marine organisms resources

In order to protect the aquatic resources, since 1950s, China has begun to ban fishing in some sea areas or in a certain period, as referred to no-fishing zone and no-fishing area. For example, in Bohai Sea, there is no-fishing zone and no-fishing period for jellyfish and shrimp. In 1995, fishing was forbidden in Summer season in the Yellow Sea and the East Sea for the purpose of protecting 80 to 100 thousand tons of baby ribbon fish which otherwise might be caught. Since 1980s, artificial pouring of shrimp seedlings has begun, almost 0.6 billion were poured artificially

in 9 coastal provinces and cities like Fujian. Over the past 10 years, it was proved by the fact that the 24 artificial fishing reefs really have the functions of collecting, propagating fish and protecting fishery resources. The above measures did play active role in the conservation of fishery resources and biodiversity outside the nature reserves.

(4) Monitoring and Conservation of Marine Environment

a. marine environmental monitoring

The marine pollution investigation began in the early 1970s, unified and regular monitoring of environmental quality was implemented in Bohai Sea area in 1978, in 1984, over 100 institutions from the departments of environmental protection, communication, ocean, water conservancy, aquatic production and military have formed “ national monitoring network of marine environment” with the monitoring area of 2 million km². The State Marine Administration established monitoring center and station network in every sea area, and sent planes and ships to monitor the marine environment and inspect those against the laws. Recent years have seen an intensified environmental monitoring work.

b. marine environmental conservation

The pollution situation of coastal areas in China has been basically made clear, planned treatment has been carried out in key sea areas. While scientifically utilizing the environmental capacity, of the sea area, one-time or periodical reduction is used to the pollutants whose emission have exceeded the load so as to recover the environmental quality; technical and equipment renovation is facilitated by relying on technological progress and promoting cleaner production, economic means are adopted to coordinate the speed and scale of regional development. In recent years, the state has invested 0.13 billion yuan in 215 treatment projects and give treatment to coastal cities and some key enterprises so that the environmental quality of the Bohai Sea and the Yellow Sea has been greatly improved and the petroleum pollution has been basically brought under control. In addition, China has also put license system of marine dumping into practice so that the arbitrary dumping to the ocean is basically contained.

4.4.5 Other general measures

(1) publicity and education

Recently, by means of films, video, publishing materials, seminars and exhibitions, knowledge of marine biodiversity has been popularized, people’s awareness of marine natural conservation has been greatly enhanced.

(2) scientific research

In the early 1990s, the State Oceanic Administration has organized 40 institutions

and 132 scientists to make systematic research on the marine species recorded over the past 70 years. The result showed that there are 20,178 kinds of species in Chinese sea area at present, among which 1,388 are fish, 1,923 are shellfish, 790 are alga, 39 are mammals, 246 are stone coral and 40 are mangrove plants.

The “comprehensive investigation of resources in coastal zones and sea beaches” and “comprehensive investigation of resources on islands” all over China, which took eight years, made systematic, overall and in-depth research on aquatic resources, biodiversity and ecological environment in Chinese sea area.

(3) pilot test of marine ecological station

From May to December, 1990, the State Marine Administration has made pilot ‘test of marine ecological station in Shengshan Island of Zhejiang Province and Xiamen Island of Fujian Province. The pilot test was of critical importance to understanding the situation and tendency of ecological environment in sea area, promoting the rational utilization of marine bio-resources and protecting marine biodiversity. The ecological monitoring has provided information for the competent department of oceanic affairs, offered services for the management of ecological environment and conservation of biodiversity, founded basis for further construction of marine ecological stations.

(4) personnel training

The national marine managerial department has attached great importance to personnel training recently. “ National Workshop on Marine Nature Reserve”, “Training Courses on Marine Supervision and Enforcement” and “ Training Courses on Management of Marine Nature Reserves” were held to enhance the capability of personnel.

4.5 Biodiveristy-related Policies, Regulations and Plans of the Construction Department and Their Implementation

4.5.1 Relevant Policies

(1) Policy of non-gratuitous use of scenic spots resources

In September, 1992 , the General Office of the State Council issued the *Report on Strengthening the Management of Scenic Spots* made by the Ministry of Construction, in which it is stressed that the conservation of scenic spots resources should be strengthened and the policy of compensated use of these resources should be adopted. With the approval of the local government, scenic spots could collect conservation fee for scenic spots resources, which shall be used specially for resources conservation and maintenance.

(2) Policy of “Conservation First” for scenic spots resources

In March, 1994, the Ministry of Construction issued the Green Paper - *The Situation of and Outlook on China's Scenic Spots*, which stipulates that the fundamental policy for the management of scenic spots is “strict conservation, overall management, rational development, sustainable utilization” and puts forward the policy of “Conservation first” for scenic spots resources. The Green Paper not only states that the characters and functions of scenic spots should be recognized in a scientific and precise way, but also advances that the most important function of scenic spots is to protect the ecological environment and biological diversity. It also reinforces that scenic spots resources should be maintained intact and sustained over generations.

(3) The policy of integrating urban greenbelt building into the urban overall plan and the plan for national economy and social development.

In 1992, the Ministry of Construction issued the *Order and Priorities of Development for Present Urban Greenbelt Building*, which advances that priority support should go to those urban greenbelt which could help improve the urban ecology and beautify the city appearance. It is also raised that better management of zoos and botanical gardens should be encouraged and more efforts should be devoted to research work and the spread of popular science to help with the *ex-situ* conservation of flora and fauna.

In the same year, the Ministry of Construction issued the *Measures for Implementing the Present Policy of Industrializing the Building of Urban Greenbelt*, which requires that every city should integrate greenbelt building into its overall urban plan and its national economy and social development plan. In the investment for the construction and development of residential areas, certain amount of fees must be charged for building urban green belt according to the cost of construction. Priorities should be given to greening parks, streets and the ecological environment on which the city depends. The measures put forward three points: to develop zoos and botanical gardens; to *ex-situ* protect endangered flora and fauna; to spread popular science and undertake the public education.

4.5.2 Relevant laws

(1) The building and management of scenic spots

In 1985, the State Council issued *the Provisional Regulations on the Management of Scenic Spots*. Its Article 8 stipulates that all scenery and natural environment within scenic spots must be under strict conservation and no damage or change at will is allowed. Article 9 stipulates that scenic spots authorities should conscientiously protect the vegetation and habitats of the flora and fauna, regularly

close hillsides to facilitate afforestation, make the whole region green by planting trees, protect the forest and prevent fire as well as prevent and control plant diseases and insect pests.

In 1987, the Ministry of Construction issued *the Measures for Implementing the Provisional Regulations on the Management of Scenic Spots*, which provides specific regulations for certain problems. In the 1990s, the Ministry of Construction made in succession *the Standards for the Sanitary Environment Management of Scenic Spots(1992)* , *the Regulations on the Construction of Scenic Spots(1993)*, *the Rules on Punishment in the Management of Scenic Spots(1994)*, *the Standards for the Safety Management of Scenic Spots(1995)*. Various provinces made their own regulations on the management of scenic spots within their localities in the light of relevant national policies.

In 1995, the General Office of the State Council issued *the Notice on Strengthening the Conservation of Scenic Spots*. It is stipulated that scenic spots are valuable, non-renewable natural and cultural heritage. The relation between economic construction and resources conservation must be handled in a right way. Top priority in the management of scenic spots is the conservation of scenic spots resources. The principle of strict conservation, overall management, rational development and sustainable utilization must be adhered to.

(2) The construction of zoos and the *ex-situ* conservation of the wild animals

In November, 1993, the State Council issued *the Notice on Strengthening the Ex-situ Conservation of Wild Animals in Zoos* made by the Ministry of Construction which requires that the people's governments at various levels should reinforce their leadership in the *ex-situ* conservation of wild animals in zoos, and give concern and support to scientific research, management and international cooperation in this field.

In 1994, the Ministry of Construction issued *the Regulations on the Management of Zoos in Cities*, which provides regulations on the planning, construction and management of zoos and the conservation of wild animals in zoos.

(3) The construction of urban greenbelt

On May, 25, 1992, the State Council issued *the Regulations on the Management of Urban Greening Efforts*, which provides regulations on the planning, construction, conservation and management of urban greenbelts. It is stipulated that no units or individuals are allowed to damage the terrain, topography, water bodies and vegetation of those areas allocated for greening efforts. It also has regulations on the conservation of ancient and rare trees in cities.

In March, 1991, the Ministry of Construction issued *the Notice on Strengthening the Conservation and Management of Ancient and Rare Trees*, which requires that various localities should organize their forces to implement the measures for the management of ancient and rare trees, strengthen the conservation of ancient and rare trees and scientific research, and actively make or implement regulations on the conservation of ancient and rare trees.

In 1992, the Ministry of Construction issued an notice on the naming of “garden cities”. It is targeted to improve urban environment, make cities greener and more beautiful, and protect natural mountains and rivers as well as biodiversity.

In 1993, the Ministry of Construction promulgated *the Regulation on the Indexes of Urban Afforestation Planning and Construction*, which provides urban per capita green belt area, urban green belt coverage and indexes for the planning of urban greening efforts in the short and long term in China.

4.5.3 Relevant action plans and programs

(1) Plan for the conservation of wild animals

- Plan for *ex-situ* conservation of giant pandas

In 1993, entrusted by the Ministry of Construction, the Chinese Association of Zoos made *the Plan for the Ex-situ Conservation of Chinese Giant Pandas*. It elaborates on the history and *status quo* of herding giant pandas in pens as well as the purpose and significance of giant panda conservation. It also discusses the urgency and necessity of the *ex-situ* conservation of giant pandas and makes a detailed implementing plan. So far this project has been going on very smoothly. The number of the species of giant pandas within the bases are increasingly on the rise.

- Plan for the conservation of *Nipponia nippon*

The aim of this plan is to improve the living environment of *nipponia nippon* and its *ex-situ* breeding. Major actions taken are: to encourage farmers to give up the use of chemical fertilizer and pesticide: to conserve the habitat and to improve the facilities for catching and breeding. Years of research has witnessed the adoption of artificial propagation of *nipponia nippon*, the improvement of its living environment, the increase of its species.

- The conservation plan for *Panthera tigris amoyensis*

The aim of this plan is to ensure the sustained existence of *panthera tigris amoyensis*. Major actions taken are: the, adoption of measures to prevent the catching and

killing of *Panthera tigris amoyensis*; the establishment of nature reserves to protect its living environment; the study of its habits and characteristics; the plan for its artificial propagation.

- (2) The plan for protecting the ecological system of urban gardens and parks as well as the diversity of ecological environment

This plan relies on urban botanical gardens (in Beijing, Hangzhou, Xiamen, Shenzhen and Urumqi) as its main body. It requires to set up bases for the *ex-situ* conservation of plants, collect and protect the plant species in this ecological region, and protect typical types of local ecological environment.

- (3) Plan for the centralized conservation of urban rare botanical plant species

With botanical gardens as its bases, the plan aims to establish collecting and protecting centers for botanical plants in major botanical gardens across China, select priority species for conservation in the light of local characteristics and preserve the rich diversity of rare botanical plant species. This program will set up a number of bases to preserve the species of flowers and plants in cities like Shanghai, Beijing, Kunming, Urumqi, Shenyang, Xiamen, Wuhan, Luoyang and so on.

4.5.4 The Progress in implementing the policies, regulations and action plans

- (1) The construction and management of scenic spots

By 1995, there are already 512 scenic spots in the whole country, among which 119 are at national level, 256 are at provincial level, and 137 are at municipal (town) level. The total area reaches 9.6 million square hm^2 , accounting for 1% of the national territory. Taishan Mountain, Huangshan Mountain, Wulingyuan, Jiuzhaigou, Huanglongsi, E'mei Mount and Lu Mount have been included in the *Catalogue of World Natural Heritage*. Although scenic spots sort of protect natural ecological system, a large amount of touring facilities have damaged the natural scenery in varying degrees. The influx of tourists also causes environmental pollution.

- (2) Construction of zoos and *Ex-situ* conservation of wild animals

At present, there are 171 zoos and animal showing areas across the country, among which 28 are of large scale located in 28 mega-cities and capital cities. There are over 600 kinds of vertebrate with a total number of more than 100,000. Over 100 kinds of foreign rare animals, about 1000, have been introduced through gift exchanges.

(3) Construction of Flora and the *ex situ* Conservation of the Wild Plants

As of 1994, 110 floras and tree gardens have been set up in China, and 23,000 species of high-class plants have been introduced, 13,000 species of which are of the category of regional family of China. And the Reserve Garden for Cycasin and ginger in South-China Flora Garden, Reserve Garden for mountain tea in Kunming Flora Garden have been established; and in Beijing Flora Garden, there established a Base for species of Peony, Peach-flower and Chinese Rose, among which, there are 250 species of peony, 45 of peach-flower and a tree garden is also set up and into which the wood plants are introduced from the three-north (Northeast, Northwest and North of China); Hangzhou Flora Garden has already collected 3500 species (and the unit below the species) of plants, preserving above 40 species indigenous plants and 104 species of state-classified rare and endangered plants; Shenzhen Flora Garden has set up an international *ex situ* Conservation Center for Cycasin, collecting 11 categories and 128 species and its variations, accounting for 1780 trees of cycasin; Shanghai Flora Garden has set up a seedling conservation base for Cotoneaster.

Since 1990, some other gardens like Qingdao Flora Garden, Huhhot Flora Garden have been established, and Tianjin Flora Garden, Three Gorges Flora Garden are on the blueprint. But due to the lack of finance, the construction of the floras gardens can not yet meet the demand of the plants diversity.

The artificial breeding and research has been undertaken in many flora gardens, and the artificial breeding of indigenous rare and endangered plants in China has come to a success.

(4) Urban Green-land Construction

- The Catalogue of Biodiversity of National Green-land System Surveying the species of the animal and plants in the national green-land and compiling the catalogue paves the way for making out conservation plan. To date, this work has been undergoing smoothly and meticulously in the big cities.
- 1 The Conservation and Management of the Urban Ancient Trees and Their Rare Species. The ancient trees and their rare species are the important component of the urban biodiversity and it is valuable in terms of scientific research, culture and history, and the conservation and conservation of the urban ancients trees and their rare species is one of the important subject of that of the urban biodiversity. The urban construction authorities shall study and adopt the conservation measures for the ancient trees and their rare species and use the modem information technology for the management of them based on the survey of the status quo of the national ancient trees and their rare species. At present, almost all the municipalities nationwide have finalized the work of survey and classification of the ancient trees and used the technology of ancient

trees protection and rejuvenation, and in some of the cities it has been computerized in the management of the ancient trees.

4.5.5 Other General Measures

(1) The Institution Construction

The Urban Construction Department of the Construction Ministry has its specialized Scenic Area Management Division and Urban Green-land and Afforestation Division. The former division is in charge of the planning, construction, and legal management of the Scenic Areas and the latter is in charge of the urban green-land and afforestation. For the effective management of the scenic areas and the garden green-land, most of the national and provincial scenic areas have established the management institution, for example, the scenic areas management bureau or commission which functions administratively. And every city has its urban garden green-land and afforestation management authorities, such as the garden bureau or division.

The Chinese Association for Scenic Areas was founded in 1989, its function is to assist the government in the publicity of the policies and guidelines on the scenic areas, strengthen the linkage within the industry by disseminating the information and training the staff. The Chinese Zoology Association has founded the Giant Panda Breeding Technical Commission, South-China Tiger Conservation Coordination Commission, Crane Conservation Coordination Commission and it is also planned to set up some other specialized commission such as for primate conservation. And the sub-commission of Flora Garden of the Chinese Garden Association was founded in 1995, and its main function is to promote the construction of the flora system construction and the conservation of the biodiversity.

(2) Scientific research

● Biological research on the conservation of giant panda

Significant results have been gained from the scientific researches conducted such as *the Study on the Breeding and Disease of Giant Pandas*, and *the Study on the Reproduction and Physiology and Artificial Breeding of Giant Pandas*.

The BDNF gene cologne of giant pandas and the study of order analysis, organized by the Chengdu Zoo, is of significant importance to disease prevention, pathological research, the conservation and salvation of giant pandas.

● Research on the *ex-situ* conservation of plants

Scientific research staff in the botanical gardens conduct *ex-situ* conservation of plant diversity around the central theme of plant species collecting and domestication with exotic species. Botanical gardens in Shanghai, Hangzhou,

Beijing, Kunming, Xiamen, Shenzhen and some other cities have been collecting the species such as peony, peach-flower and Cotoneaster etc.. They have conducted studies on the classification and ecology of most plants and have compiled catalogue of plants and monographs.

(3) Publicity and Education

The number of zoo visitors reaches 170 million people-times each year in China. This makes it essential to conduct education activities in zoos. In 1993, Shanghai Zoo built a Science and Education Hall with a view to providing the adolescents with education on nature conservation and biodiversity conservation. A Wild Life Museum was built in the same year in the Breeding Base for Giant Pandas within Chengdu Zoo. A Science and Education Hall was also set up in Beijing Zoo in 1997.

In some places like Beijing, Chengdu, Jinan and Fuzhou, science documentaries were produced on the conservation of wild lives for educational purposes, thanks to the assistance of local television stations. In the zoos of Shanghai and Chengdu, pamphlets on natural conservation were made available to visitors.

Measures were also taken to educate primary and middle-school students on botanical knowledge: hanging name tags on plants, organizing botanical or ecological summer camps, science guide tour, on-spot consultation, compiling and publish education pamphlets, organizing knowledge contests and lectures, etc. One example is that Beijing Botanical Garden takes advantage of the Yingtao Protected Nature Reserve within its domain by initiating a project called "Protecting the Red Leaves to Attract Birds", and receiving primary and middle-school students for field training. It also invested 3.5 million yuan to build a Botanical Science Hall, where a lecture of "Human, Plant and Environment" is conducted to spread popular science among primary and secondary school students and average citizens. The Shanghai Botanical Garden also conducted researches on "the Preliminary Exploration of Spreading Popular Science in Urban Botanical Gardens".

In May, 1997, Beijing Botanical Garden and Edinburgh Royal Botanical Garden in Britain have reached an agreement on the touring exhibition on bio-diversity and environmental awareness with the Edinburgh Royal Botanical Garden of the U.K.. The British side is responsible for the making of exhibition materials in the light of actual conditions. The exhibition will be held in five botanical gardens in China to enhance the whole citizenry's awareness of biodiversity. The project is going on smoothly at the present. The exhibition will begin in the spring of 1998.

(4) Personnel training

The Chinese Association of Zoos have organized "a national training course on the

breeding technology of cranes”(in March, 1990) and “a training course on the management of wild animal species and registration of spectrums and systems” in Chengdu (in 1994).

The Ministry of Construction and The Botanical sub-association of the Chinese Association of Gardens have held seminars on biodiversity conservation within the system of botanical gardens and parks on the plan, way and priority projects of biodiversity conservation. They have organized “the international training course on popular science about botanical gardens” in Nanjing in 1996; the “Sino-Japan seminar on gardens and cultures” and “ the national seminar on garden ecology and culture” in the city of Weihai in Shandong Province in September, 1996.

(5) Information

The Ministry of Construction and the Association of Zoos have gradually set up an archives system of animals. 25 species are classified as priorities for conservation and breeding, among which the giant panda, *Ailurus fulgens*, *Grus nigricollis*, *Grus* have joined the global network on animal species.

Information on botanical gardens mainly includes database on plant resources, the information collecting system of live plants, the location of various plants in botanical gardens and so on. At present botanical gardens in China pay great attention to the management of information on botanical gardens and develop their own systems in succession. The Nanjing Zhongshan Botanical Garden developed a system of collecting information on live plants and the location of various plants, which has already been applied in the Hangzhou Botanical Garden. The Beijing Botanical Garden conducts researches on the plant information system. The Shanghai Botanical Garden set up a data system on seeds.

4.6 Biodiversity-related Policy, Regulation and Plan of the Pharmaceutical Department and Their Implementation

Chinese herbs are an important component of Chinese medicine. As a traditional medicine, most of herbs used for disease prevention and control and health are from natural biological resources, i.e. medicinal parts of plants and animals. As studies on traditional medicine deepen, more and more people realize the advantages of Chinese medicine and are more inclined to use them, so the demand for Chinese medicine, including their by-products, is increasing day by day not only in China but also in other parts of the world. As a result, the conservation and sustainable utilization of natural Chinese herbs has become a long-term task to ensure the long-term development of Chinese medicine and serve human beings.

4.6.1 Relevant policy

(1) Policy of integrated conservation and utilization

In the Law of Wild Animal Protection, there is a provision that the policy for wild animals is to strengthen resource conservation, make active efforts in domestication and breeding and reasonable use of them. A series of protection measures have been also adopted towards widely used Chinese medicine, in particular those highly endangered or on the verge of extinction. A common understanding has been achieved that we would rather protect them than use them.

(2) Policy of Sustainable Utilization of Biological Resources

As early as in 1958, the State Council gave the instruction on developing Chinese medicine and put forward the policy of protecting the wild herbal resources and artificial plantation of wild herbs. Some supporting measures like financial and pricing readjustment to encourage the artificial reproduction or domestication of wild animals and plants in order to protect the wild herbal resources. The fund to support the production of Chinese herbs, has been increased since the 1970's.

(3) The industrial policy for 1991-2000

In 1991, the State Pharmaceutical Administration formulated the sector policy for 1991-2000, which adopted Chinese herbs production as the fundamental part for the development of Chinese medicine and provided some policy directives:

- To strengthen the guidance to the production of Chinese medicine by following the national policy of giving high priority to agriculture and make Chinese medicine by relying on policy and science and technology and increasing the investment and according to the quality, location and market of herbs.
- To adopt and practice the policy of attaching equal importance to conservation and production of wild herbal resources, to enforce effectively the Regulation Concerning the Management and Protection of Wild Herbal Resources, to change the practice of damaging the wild herbal resources while collecting them, to strengthen resource conservation by combining it with the artificial breeding.
- To continue to provide financial support to production of Chinese medicine, in particular to the artificial reproduction and breeding.
- To strengthen the education and publicity on the protection of herbal resources and provide a certain guarantee in terms of management bodies and financial resources.
- To limit strictly any activities that threaten the normal growth of wild herbal resources.

4.6.2 Relevant regulations

(1) Constitution of PRC

There is a provision in the Constitution that the modern and Chinese traditional medicine will be developed.

(2) The Law of Pharmaceutical Management of PRC

The National People's Congress promulgated the Law of Pharmaceutical Management in September, 1984. The Article 3 says that the State will protect the wild herbal resources and encourage the breeding of Chinese herbs. This is the first regulation in China to establish the policy of herbal resources protection in a legal way.

(3) Regulation Concerning the Management and Protection of Wild Herbal Resources

The State Council issued this regulation in October, 1987. This is the first regulation in China specialized in protecting the wild herbal resources. There are 76 wild herbs listed for protection, among which there are 58 herbal plants and 18 herbal animals. It clearly provides that the wild herbal resources shall be used within the prerequisite of conservation, i.e. the principle of attaching equal importance to conservation and utilization. There are three levels for protected species and protection measures: the first level is those herbal species which are on the verge of extinction will be prohibited from being collected; the second level is those which have a small area of distribution and are being exhausted and the third level is those which are being reduced seriously. Collection and procurement of these herbal species must be licensed according to the approved plan.

After this regulation was issued, the local governments formulated some implementing regulations. Considering some local situation, some local protected species have been added to the local regulations. For example, Xinjiang and Ningxia Autonomous Regions formulated a provisional regulation concerning the protection of licorice root, which plays an active role in protecting the licorice root in northwest China.

4.6.3 Relevant action plan and programs

(1) Ninth Five-year Plan and Planning for 2010 for Chinese Medicine

- Strategic goal: During 1996-2000, the area of Chinese herbs plantation will be stabilized at 400 thousand hectares or so. Priority will be given to increasing the output per unit and the herbal quality. A group of key species production bases will be built in the area with major production and convenient location

be made on the Chinese herbal resources nationwide for formulating a development plan. In April, 1983, the State Economic Commission issued a notice for undertaking such a survey. In July, 1983, a Leading Group for this survey was founded consisting of the State Pharmaceutical Administration, MOA, Ministry of Health, Ministry of Forestry, CAS, MOFTEC and SSB. An office for this consensus was established in Chinese Medicine Corporation to organize the survey. From 1989 to 1994, this office organized relevant experts and technicians to compile all the data and materials submitted by various localities.

This survey was a huge system project and the largest one ever since 1949. Altogether 40,000 people participated and an investment of tens of million yuan was made in it. The data from 1758 counties or cities in 29 provinces and autonomous regions were submitted. As a result, 1858 technical tiles were made, totaling 10700 copies. Among this, there were 1245 tiles of writing, totaling 6740 copies and 613 files of data, totaling 3960 copies. More than one million specimens and samples were collected through this consensus. Identification and reproduction of them were made later on.

According to the result of this survey, there are 12807 species of Chinese herbal resources, among which there 383 families, 2309 genus and 11146 species for herbal plants, 395 families, 862 genus and 1581 species for herbal animals and 12 categories and 80 species for herbal minerals. This survey also demonstrated the distribution of Chinese herbal resources according to which 9 first-level areas and 20 second-level areas have been divided across the country. The direction, ways and measures of development in each area were also studied. In addition, analysis was made of 68 species about their geographical suitability of growth and a data bank was established for 36e herbal species.

The final result of this survey was the compilation of a series books, including “Chinese Herbal Resources”, “A Summary Record of Chinese Herbal Resources”, “Regional Distribution of Chinese Herbs”, “Common Chinese Herbs”, “Atlas of Chinese Herbal Resources” and “Local Medicine and Prescriptions”, with about 9 million words and nearly 100 illustrations. The large amount of data and research results from this survey provide a basis for research, education, production, business and decision making related to Chinese medicine and relevant agricultural, forestry and husbandry activities. This consensus was an important chapter in the history of development of Chinese medicine.

4.6.5 Other General Measures

(1) Institutional building

The State Pharmaceutical Administration has established Departments of Production & Circulation, Science and Education, Planning and Finance and

Quality Control, etc.. Department of Production & Circulation is responsible for production and circulation of Chinese herbs and resource management. Department of Science & Education is responsible for science and technology development and education for Chinese herbs. Department of Planning & Finance is responsible for infrastructure construction and technical renovation of Chinese herbs. Department of Quality Control is taking care of the formulation and implementation of the quality standard.

Resource Development Center under Chinese Herbal Resource Corporation is dealing with the survey, research, conservation and sustainable utilization of Chinese herbal resources.

Institute of Chinese Medicine, Chinese Medicine Information Institute and their provincial branches are engaged in research, data or information collection in the field of Chinese medicine. In addition, CSA and Chinese Institute of Medical Research have established similar research institutions.

(2) Research

Studies are done in two areas. One is the studies on artificial breeding of wild herbal resources, such as some herbal animals like musk, tortoise, turtle, snakes, centipede, etc. and some herbal plants like tendril-leaf fritillary bulb, large-flowered skullcap, etc.. The other is the studies on substitutes for rare herbal animals such as rhino horns, tiger bone and musk.

Many research results have been achieved. For example, single-cell breeding of glutinous rehmannia and artificial fertility of musk and other achievements have won national or local science progress prizes. Some artificially-bred Chinese herbs have been produced in a large quantity and artificial plantation of licorice root with a certain scale achieved, which provides new ways for conservation of wild herbal resources and medical use of these resources.

(3) Education and publicity

By the end of 1995, China has had 30 institutions of higher education specialized in Chinese medicine with nearly 40,000 students. Twenty-three institutions of western medicine have also set up majors in Chinese medicine. There are also 51 technical schools specialized in Chinese medicine with about 40,000 students.

In 1991, with the approval of SEC, China Medical University and Heilongjiang University of Chinese Medicine set up the major on Chinese herbal resources which will provide students for surveys and research on Chinese medicinal resources. But due to the small number of students and their work in only a few areas, the role of such major has yet to be brought to play.

according to the principle of reasonable layout and relative concentration. The processing of herbs and their products will be done in the places of origin wherever proper. Active support will be given to the breeding and production of environmentally friendly herbs. The major species and the resource substitute species will be developed for which there is a great demand in the market and have a good prospect of further processing. The conservation of endangered wild animals and plants will be strengthened by developing artificial breeding or domestication of these resources. By 2010, the plantation, processing and commercialization of Chinese medicine will be coordinated and more scientific plantation and breeding will be achieved through progress in technology.

- Main Action

- a. To set up demonstration areas where the advanced breeding technology and the production of economic scale will be combined; to establish 100. bases for production of common medicine on the basis of old origins of herbal resources and those with high quality and major production, to promote the advanced breeding or production techniques to those production bases so as to increase the quality and quantity of medicine and to exploit reasonably Chinese herbal resources for biodiversity conservation.
- b. To deepen studies and develop comprehensively. Whether wild or reproduced herbs, further studies are needed in order to upgrade the rate of utilization. Considering the waste resulting from use of only a certain part of herbs, further studies will be done to help utilize other parts of the herbs or develop other uses of the herbs in order to increase the rate of comprehensive utilization.
- c. To continue to provide preferential policy to the development of Chinese herbs at the national and local levels. The specialized financial support will be increased on the basis of existing resources to address some issues such as production and storage of Chinese herbs. The central and local governments shall give necessary preferential policy to the renovation projects in the pharmaceutical sector.
- d. To reform and improve the management of Chinese herb production. Active exploration will be made towards the practice where the raw material bases, the supply sources and production bases will be networked so that a close relation between supply and demand will be formed. Exploration will be also made towards the organization of supply, production and sales to ensure that the raw material will be delivered to the production enterprise with a proper scale of production and the users or the enterprises engaged in pharmaceutical business through long-term contracts and on the basis of mutual benefit.

- e. To strengthen the education and publicity on the policy of conservation and sustainable utilization of Chinese herbal resources; to foster more specialized personnel; to popularize the basic knowledge of biodiversity and increase the public participation in protecting the natural resources.

4.6.4 Progress in implementing the policy, regulation and action plan

(1) Conservation and sustainable utilization of wild animals and plants

To implement the Convention on International Trade in Endangered Species(CITES), the State Council issued a notice in 1993 on prohibiting tiger bones and rhino horns for medicinal uses, so the trade in tiger bone and rhino horns was stopped across the country. In the context of conservation of wild animals and plants and utilization of herbal resources, studies have been done and considerable progress made in developing the substitutes for and artificial breeding of wild animals and plants. Successful examples of this are the substitute for tiger bone, artificial musk and the studies on rhino horn substitute.

To develop the artificial breeding of wild animals and plants is an important way of conserving and utilizing biological resources. Such breeding actually started in the 1960's but with a small scale and focusing on breeding of some home-originated economic animals like deer, musk, fox and marten. After the 1980's, the government gave special support to the breeding of wild animals which facilitate the development in this sector. Marine animal breeding is also developed in coastal areas where they get major economic benefits from such breeding.

In terms of herbal plants, more than 100 Chinese herbs are artificially planted which basically meet the market demands. For sustainable utilization of wild herbal resources, Heilongjiang set up a provincial station for management of wild herbal resources, 106 management stations and 35 reserves for wild herbal resources and adopted an by-turn collection for wild herbal resources. Yikezhao County in Inner Mongolia made a closure for protection of licorice root which covers an area of 80,000 hectares and an increase from 360,000 hectares of licorice root in the 1970's to 470,000 hectares in the whole county.

The breeding of wild animals and plants has relaxed the need for exploitation of wild animals and plants and promoted the sustainable utilization of these resources since it provides a large quantity of herbal products to the market. However, the rush to the artificial breeding leads to the collection of a large amount of wild plant and animal resources and a disorder in the sales of products.

(2) National survey on Chinese herbal resources

The State Council held in December, 1982 decided that a systematic survey would

(4) Storage and management of Chinese herbal species resources

In 1987, SPC listed the project for Chinese herbal plant species bank as one of 50 key projects for the period 1985-1990, which was implemented by Zhejiang Provincial Pharmaceutical Bureau. This project was completed and commissioned in March, 1993. The scale of this bank has the capacity of 50000 pieces of 200 species, consisting of the stores for short term(5 years), mid term(10 years) and long term(20-30 years) and their buffer rooms. The establishment of this bank has laid a basis for safe storage of species resources, information exchange, development and exploitation and technical service in the field of species resources.

Chapter V. Further Action to Implement the Article 6 of CBD

5.1 Assessment of the Current Situation of the Implementation of the Article 6

5.1.1 Understanding of the Strategic Status of Biodiversity Conservation

Since the UNCED and the conclusion of CBD in 1992, the word of “biodiversity” has been recognized by the Chinese public, in particular the environmental authorities at different levels of government and put on the important agenda of government departments.

- (1) The Committee of Environmental Conservation under the State Council attaches great importance to biodiversity conservation

This Committee is the supreme body in China to guide and coordinate the environmental conservation. In the past five years, biodiversity has been one of important discussion topics of this Committee. Immediately after the UNCED, this Committee had a special meeting for discussing the implementation of CBD in China and identifying the leading agency for promoting China’s ratification of CBD which enabled China to become one of the first earliest countries to ratify CBD.

This Committee has ever held several on-site meetings for dealing with the ecological damages caused by mining in Alkin Nature Reserve in Xinjiang, the ecological worsening due to unreasonable exploitation activities in border areas of Shanxi, Shaanxi and Inner Mongolia. To protect wild animals and the environment, this Committee and the Committee of Environment and Resources Conservation of the National People’s Congress has organized for four consecutive years the national investigation on the enforcement of environmental laws and regulations. To deal with some problems in time, this Committee convened special meetings and listened to reports on biodiversity conservation. A few examples are given in the following:

- Early in 1994, this Committee heard the report on the work in nature reserves and the implementation of the Convention on International Trade in Endangered Species;
- In December, 1994, this Committee examined China Action Plan for Biodiversity Conservation and launched this action plan;
- In June, 1995, this Committee examined and adopted in principle the National Program for Development of Nature Reserves;
- In May, 1996, this Committee heard the report on the implementation of CBD in China, discussed about the future follow-ups and solved some practical problems in the implementation.
- In November, 1996, the Committee examined and approved in principle

China Biodiversity Country Study.

(2) NEPA's Strategic Reorientation

NEPA is the environmental authority under the State Council and the Committee of Environmental Conservation. Its recognition of the significant status of biodiversity conservation has been upgraded in recent years. In 1994, NEPA officially announced that it would attach equal importance to nature conservation and industrial pollution prevention and control by identifying nature conservation as one of four key work areas of the environment department. It also pointed out that nature conservation would focus on biodiversity conservation which is an important aspect for environmental conservation in China. NEPA has also given its priority to nature conservation in terms of institutional arrangement, financial resources allocation and personnel arrangement to ensure the smooth undertaking of nature conservation. It was clearly proposed at the Second National Conference on Nature Conservation held in July, 1997 that to strengthen the nature conservation and prevent the ecological damage would be the strategic priority for future environmental conservation.

Some resource management departments as of forestry, agriculture, marine administration, pharmaceutical administration and construction have adopted biodiversity conservation as their departmental priorities in the process of exploitation of natural resources and production. Some provincial and local governments have increasingly paid attention to biodiversity conservation by setting up the Provincial Committee for Biodiversity Conservation or Nature Conservation to coordinate the biodiversity conservation in the region.

(3) The understanding of the significance of biodiversity conservation to be increased

However, the significant status of biodiversity has not yet been generally understood, whether at the national or the local levels. The leaders of some local governments lack the knowledge of biodiversity and the relation between the local economy and biodiversity conservation. Even some local environment departments pay more attention to industrial pollution prevention and control than to nature conservation without putting it on the local agenda and giving to it adequate financial investment and human resources. All this has practically restrained the biodiversity conservation in these regions. Therefore, nature conservation is not balanced from the point of the whole country. Some has done excellent work in nature conservation in terms of the increasing number and areas of nature reserves due to the importance given to nature conservation by the leaders in these provinces while some others are the contrary.

5.1.2 Legal Construction for Biodiversity Conservation

(1) Good basis for legal construction for biodiversity conservation

Legal construction is fundamental to biodiversity conservation. It relates to many departments, in particular resource management departments. To coordinate the conservation and exploitation activities requires legal basis, otherwise it is difficult to do the work of conservation. Since the 1990's, the national and local governments have formulated a group of laws and regulations concerning nature conservation. For example, the Law of Conservation of Wild Animals and its implementing regulation and the Regulation Concerning the Conservation of Wild Plants provide a legal basis for protecting the wild animals and plants. In addition, the legal system for management of various natural resources has come into being. The issuance of the Regulation Concerning the Nature Reserves in 1994 provided a legal basis for management of nearly 800 nature reserves across the country. In particular after the State Council issued the Decision on Several Environmental Issues in August, 1996, the basic policy for nature conservation was outlined in this decision. It was decided that, the active measures would be adopted to conserve biodiversity and focus research on biodiversity and ecological conservation. All these laws and regulations laid a good basis for biodiversity conservation and made a good beginning for legal construction for biodiversity conservation. Generally speaking, the legal construction for nature conservation is not satisfactory but weak compared with that for industrial pollution prevention and control.

(2) Inadequate legislation for conservation of ecosystems

China has issued and is enforcing 8 laws related to natural resources, including forest, grassland, fishery, wild animals, water resources, mineral resources and land. However, there is inadequacy in these laws for effective conservation of natural ecosystems. First, the core of these laws is the management of the utilization of natural resources rather than aims to protect the ecosystems. Secondly, there is no complete legal system to cover all the natural resources, for example, no regulations concerning the wetland, fresh water resources and desertified land. Thirdly, there are few provisions related to the conservation of ecosystems. Fourthly, the limited provisions related to resource conservation are distributed in various laws, lacking the completeness and system. In addition, the laws mainly cover the resource management which is practically undertaken several departments under the State Council. As a result, the operation difficulty arises more often than not due to the overlapping functions of exploitation and conservation.

Therefore, there is a great need to formulate a comprehensive law covering both natural environment and natural resource conservation, i.e. "Law of Ecological Conservation" or "Law of Nature Conservation".

(3) The law of species conservation to be improved

Although a relatively complete legal system for wild animals has already been established, they are primarily focused on the conservation of a limited number of large vertebrates, neglecting various species of invertebrates, and even many small invertebrates. Among 96 protected animal species identified as Class A in the List of National Protected Animals, there are 79 mammals and birds, accounting for 82.3%; 4 fish species and no amphibian while the invertebrate, which constitutes a major part of animal species, makes up only 7.3% with 7 species included therein. Many small animals, very vulnerable and easily subject to damage, have not yet been identified before extinction. Therefore, the legislation for small animal protection should be strengthened; and the List of National Protected Animals should be expanded to include appropriately more species, in particular the low-class endangered animals.

The legislation concerning the artificial breeding of wild animals is incomplete. The artificial breeding and domestication of wild animals are encouraged by the Chinese government. In the past 10 years, tens of thousands of such artificial breeding farms as well as ex-situ conservation bases have been set up throughout China which contribute to the saving of the endangered animals and supply of rare medicine and other economic products. However, a few farms, in order to pursue the economic profit, do whatever they could do to hunt the wild animals illegally for sale or for breeding. Therefore, the concerned departments should draft the specialized laws and regulations as soon as possible so as to regulate the approval procedure for establishing and managing such farms and the sale of their products.

(4) Weak legislation for genetic resources conservation

The legislation for genetic diversity is rather weak. Although the State Council has already issued the Regulation of Seeds Management and the Regulation of Stock Animals, the Regulations of Seeds Management and the Rules for Management of Agricultural and Timber Seeds; yet they are neither adequate enough nor detailed in that they touch little on the protected targets, protective measures and the management systems in relation to the protection of genetic diversity. In particular, there are no specialized regulations concerning the collection, maintenance, import and transportation of genetic resources. In this regard, the present regulations should be modified or a new specialized law formulated according to the international situation and the requirements of CBD.

(5) Loose enforcement of the regulations concerning biodiversity conservation

Although many biodiversity-related laws and regulations have been issued, the cases that regulations are neither being followed nor strictly carried out still prevail, in particular in the remote and rural areas. Not only the publicity of the laws and regulations, but also the enforcement should be improved and strengthened. Stricter requirements and heavier penalties should be introduced to the laws and regulations

to prohibit the killing and trading of wild animals. The local governments, based on its condition, should expand the species for general conservation. The commerce and industry administration and the public security departments should strengthen the inspection of wild animal trading in the markets and use of wild animals for food in hotels and restaurants.

(6) Importance should be attached to the legislation for tourism resources.

Presently, more scenic areas are being constructed rapidly. Importance should be attached to the conservation of the tourism resources and the wild fauna and flora resources in the tourism attractions. Although the concerned laws and regulations have been issued, due to the pursuit of economic profit and the low environmental awareness, the blind development like the construction of buildings, roads, cable cars, and the deforestation in the scenic spots have affected the resources and the habitats of the animals. There are no special laws and regulations of fauna and flora conservation in the tourism areas. It is a high imperative to improve the awareness of the tourists as well as the managers of tourism attractions.

5.1.3 The implementation of the action plan of biodiversity conservation

(1) Some action plans and priority projects have been implemented

As mentioned in Chapters 3 and 4, many strategies, action plans and programs have been formulated for the conservation of biodiversity, like China's Agenda 21, Action Plan for Biodiversity Conservation and the programs for the conservation of forestry and ocean, the program for the improvement of environmental awareness and the multi-departmental plan.

The Chinese government and the departments concerned have made positive contributions to implementing these plans or programs. For example, in July 1994, when China's Agenda 21 was issued, a round table meeting had been organized to discuss the implementation and international bidding for the priority projects, with the participants from UNEP and the World Bank. A Special Office under the Administrative Center of China's Agenda 21 had been established. Up to now, 60% of the projects identified by China's Agenda 21 have been implemented or are being implemented. As for priority projects in the field of biodiversity conservation, the pilot project of panda conservation, the prevention of desertification and conservation of mangrove and wetland have been carried out.

Part of programs and priority projects in Action Plan of Biodiversity Conservation have already been implemented. Within 3 years, over tens of nature reserves have been set up, with the institutional capacity of the management institutions strengthened. The GEF project of the management of nature reserves in China is

now being implemented, aiming at exploring the experience and strengthening the capacity building of the management through constructing and managing, in line with international standards, over 10 nature reserves including Shennongjia, Wuyi mountain, Poyang Lake, Xishuangbanna, Qingling. In the aspect of breeding stock conservation, the ex-situ conservation projects for the endangered species including Southern China Tiger project, Northern China Tiger Project, and Zhuhuan have been carried out. Regarding the conservation of wetland system, GEF is planning a project for the conservation and sustainable utilization of the wetland system in China. The preparatory work for the project has already started and the program for a bunch of wetland conservation is being formulated now. In terms of information management for biodiversity, the project Biodiversity Data Management (BDM) of UNEP/GEF has been implemented, with BDM Plan being formulated and the information resources being catalogued. Presently, SPC has already incorporated the project of sharing Natural Resource Information into the Ninth Five-year Plan. The project has been started at the end of 1997, with a budget of 10 million allocated for its R&D program.

In addition to this, many other departments and institutes have also carried out many projects for biodiversity conservation, including the genetic resources conservation by the agriculture department, marine nature conservation by the oceanic departments, the cataloguing project by the Chinese Academy of Sciences and State Education Commission, the sustainable utilization of Chinese traditional herbs by the pharmaceutical departments etc.

(2) Some of the projects cannot be implemented due to lack of financial resources

The implementation of those action plans as well as priority projects needs financial support. The projects introduced above are basically implemented with the international assistance or state specialized research funds. As such large projects need a sound financial support and it is very difficult to rely on just one department or one authority to provide financial resources, only a limited number of projects could be implemented.

GEF is the temporary financial system for CBD, bearing the responsibility for assisting the developing countries to implement the Convention. However, as so many countries in the world present their applications, GEF cannot meet such financial needs. Therefore, although China has presented a number of biodiversity project applications to GEF in the past 5 years, only two of them has been funded. In addition, the preparatory period for the project is too long, which affects the timely project implementation.

The Chinese government and the authorities concerned have adopted an active attitude to the conservation of biodiversity by identifying as many as 100 priority projects. But because of inadequate financial investment, most of the projects

cannot be implemented. In this sense, the financial problem is the major factor influencing the implementation of the projects.

As a developing country, China cannot allocate too much financial investment in biodiversity conservation projects. The departments concerned and the local governments have made an arduous efforts in the conservation of nature by allocating financial resources for such efforts in this field. But most of the nature conservation have not been conducted due to insufficient financial resources, which are far from enough to realize the ambitious targets. We can say that the financial problem is the key issue for implementing the biodiversity projects in China. It is hoped that international attention will be given to this issue.

(3) The requirements for formulating and completing the action plan

At the national level, China has no national strategy for biodiversity conservation, but many strategic targets have been reflected in China Biodiversity Country Study and the Action Plan for Biodiversity Conservation. These programs and strategies formulated by a single or several departments should be updated and finalized according to the mid-term programme of work identified during each COP. The Strategy and Action Plan of Wetland Conservation in China and The Strategy and Action Plan for Combating Desertification should be completed as soon as possible, and meanwhile the following programs should be formulated: the strategy and action plan for pasture conservation, for wild flora, genetic resources of agricultural plants, and domestic poultry breeding stock.

5.1.4 Other Aspects to be further strengthened

(1) Integrated coordination for biodiversity management

Biodiversity conservation is an comprehensive task which needs the participation and cooperation of different departments. To conduct a good coordination work will bring the roles of these departments into full play. The National Environmental Conservation Agency of China (NEPA) has already carried out much important work with the successful cooperation of Foreign Affairs Ministry, the State Planning Commission, the State Science and Technology Commission, Ministry of Finance, Ministry of Construction, Ministry of Agriculture, Chinese Academy' of Sciences, State Oceanic Administration and State Pharmaceutical Administration Bureau etc. However, since the interests and responsibilities of many departments are involved, there are always some contradictions and different opinions between different departments. To harmonize the actions of these departments will call for common persistent efforts of all the relevant departments.

To reach this target, NEPA should further strengthen its role in coordination and supervision, which include the drafting of the national plan and strategy for

biodiversity conservation, formulating the important regulations and policies, organizing important activities, supervision and inspection of biodiversity conservation of the central departments and local governments. In doing so, NEPA will hear the comments and views from different departments.

As for other departments concerned in the field of resources administration, like the departments of forestry, agriculture, urban construction, oceanic administration and traditional Chinese medicine, they should do their own work well. All the resources administration departments should provide their support to NEPA as required by coordination and inspection so as to ensure successful implementation of the Convention. The supporting agencies, including the departments of planning, finance, science and education, public security and media should provide their support to NEPA and the concerned resources administration departments in terms of financial, scientific research, publicity emancipation and enforcement inspection assistance based on the national general strategies, plan and programs.

(2) The contradiction between development and conservation

Environmental conservation has been identified as a basic state policy and sustainable development has been insistently promoted, but, economic development is still the most important work for the local governments. The trend that more attention is given to development than conservation still exists. With the rapid population growth and economic development, the contradiction between economic development and utilization of natural resources is getting serious. For example, in some areas cases like this still happen: the deforestation, over exploitation of land resources, pasture damaging and desertification. The over-hunting and rampant mining contribute to the shrinking of habitat areas and decreasing population of species and the agricultural development through intensifying land resource exploitation and encroaching the habitats of wild ecosystems also threatens the wild habitats. Therefore biodiversity conservation is still a heavy task.

The existing facilities of biodiversity conservation is also posing challenges. Due to human activities, the phenomenon of “isolated island” arising from the construction activities is getting increasingly serious. Some nature reserves are being changed into forestry parks or scenic spots for tourism industry by the local governments. Still serious are the imbalance between the conservation and reasonable utilization of wild animals and the illegal hunting of wild animals. In particular in remote areas, the protective measures are hard to be effectively implemented.

The coordination between the construction department of the nature reserves and the local governments is not far from satisfactory. This lack of coordination have sometimes caused unexpected difficulty to the biodiversity conservation. How to improve this situation and how to utilize the resources rationally is an important issue for the conservation and sustainable utilization of biodiversity under the

market economy.

(3) The problems facing the marine biodiversity conservation

The over-hunting generates severe degradation of the biodiversity resources, especially the traditional high quality aquatic resources. Due to over-hunting, the structures of the marine fishes and other resources have been greatly changed, inducing the decreasing of the percentage of the high-quality fishes. With part of the marine areas heavily polluted, the water quality at the river mouth and along the bay are affected.

Many of the rare species, like whales, harbor seals, green turtles and hawksbill turtle are endangered due to the human behavior. The southern tip of Liaodong Bay, Bohai, which used to be the breeding places for harbor seals with the production capacity of 1000 seals per year, now only 200 seals are born there each year.

(4) The difficulties for sustainable utilization of traditional Chinese medicine

The consumption for traditional Chinese medicine is huge and increasing day by day due to the demand for health care. To ensure conservation and sustainable utilization of wild traditional medicine, domestic stock-raising and plantation of traditional herbs have been encouraged by the government since the 1950's and great progress has been achieved in this regard. Presently, over a half of the ordinary medicines come from domestic stock raising, in which important progress has been made. It is the same with the research on their substitutes. However, this cause has also encountered the following difficulties:

- Complex production technology. The variety of breeding technologies requires the research work to be undertaken to identify the characteristics of the rare species of animals from the point of view of biology and ecology so as to solve the technological difficulty in domestic breeding.
- Shortage of some herbal resources. Many of the traditional medicine could serve either as medicine or food and some of them for cosmetics; in particular, the demand of animals as food far exceeds that as medicine. Therefore, in many cases, market scrambling for medical resources prevails, which leads to resources shortage.
- Lack of international understanding. The international communities do not have a complete understanding of the facts of domestic breeding or of the practical market situation in China. Due to the cultural difference, some countries criticized China on its domestic breeding of the endangered rare species and imposed pressure on China by imposing sanctions and restrictions. In such context, more publicity promotion and explanation should be done to

help the international communities to understand the measures adopted in China and to win their support.

(5) The research and education difficulty encountered for biodiversity conservation

- The universities in China are extremely short of the educational bases for biology. The parks of plantation owned by schools were damaged and the field bases were canceled. Instead of field courses, taxonomy, ecology and bio-geography are given in the blackboard. There is also a lack of fund and proper places for field studies.
- Shrinking of specimen museums. Most of the specimen in the most of museums were collected before the Cultural Revolution. The problems facing the museums include financial difficulties, out-of-date buildings, talent erosion and poor management.
- Courses related with biodiversity conservation, which include taxonomy, ecology and bio-geography, are being overlooked and the supply of the highly professional research personnel and financial resources thereof could not be guaranteed.
- The courses in the universities focus much more on micro-biology than on macro-biology. The teaching facilities are old-fashioned and the teaching staff are aging without an adequate number of postgraduate students working in this field.
- To be precise, no national key lab nor open lab have been established in this field.
- Publicity for biodiversity is not adequate so that the public have less knowledge of it than of pollution prevention and control.
- No good publications and reading materials for use.

5.2 Further action to implement the Article 6 of CBD

Based on the existing policies, regulation and action plans, according to the National Ninth-Five Year Plan for Environmental Protection and the Long Term Targets for the Year 2010 and the mid-term program of work identified during the 'COP of CBD, adjustments and amendments should be made to the present policies, regulations, action plan and programs.

5.2.1 The priority action to formulate policies

- (1) To incorporate the biodiversity impact assessment system into the present EIA.

To draft the technical guidance of assessment index for biodiversity and to start the pilot projects. With the experience, the assessment system should be further finalized, including Terms of Reference, the guideline for assessment report and reviewing procedure etc. This assessment system are basically applied to the development and construction projects, including the projects of deforestation, reclaiming land from pasture, use of the marine area, reclaiming farmland from lakes, wetland exploitation, hydropower projects, harbors and ports, railways and high-ways.

- (2) To set up the mechanism for economic compensation for recovering the eco-environment.

To study the rule of resources value under the market economy situation, to find out the direct, indirect and existing values of biodiversity resources and to identify the price structure and discover the true value and price of biodiversity resources. Based on the initial findings, the compensation systems and fee collection system for the utilization of biological resources and the ecological recovery should be further studied.

- (3) To study and formulate the encouraging policy for utilization of bio-resources

According to the present consumption of natural resources and the characteristics of utilization, the policies and economic measures should be formulated with basic studies done and the cooperation of relevant departments, which should include the encouraging policies of resources conservation, of energy conservation, resources utilization and environmentally friendly substitutes development, and practical implementation of the principle of “the users compensate, the developers conserve and the damage-doers recover”, etc.

5.2.2 The priority action for legislation

- (1) To draft genetic resources regulation

The proposed regulation should clearly include in its content the type of classification and annex of name list; the principles for advanced informed agreement, that of achievements sharing and profit distribution in the development of genetic resources and rules of intellectual property rights protection etc. Besides, the relevant regulations should also be worked out, which might include the reporting system for import and export of genetic resources; reviewing systems, the quarantine system for the imported or exported genetic resources and the rules for pilot plantation.

(2) To draft the regulations of biosafety management

The proposed regulation should include the scope of living modified organisms(LMOs)from biotechnology, the rule of advanced informed agreement for importing LMOs, the requirements for LMO transportation, release, risk assessment and management and the mechanism for handling the environmental accidents as a result thereof.

5.2.3 Formulation of action plan and program at the departmental or inter-departmental level

(1) Action plan for in-situ biodiversity conservation

The action plan should contain: the rules of construction in nature reserves, the planning and implementation program in scenic spots and national parks, and the planning and implementation program of the protected natural spots and areas outside the nature reserves.

(2) Action plan for ex-situ biodiversity conservation

Based on the understanding of the overall situation across the country, a comprehensive target and priorities will be identified. To be formulated are the general planning and the implementation program of various species including mammals, poultry, reptiles, amphibian, fishes, invertebrate, flora, microorganism and genetic resources.

(3) Action plan for publicity enhancement for biodiversity conservation

In the education and publicity plan formulated by the education group under the National 'Implementation Coordinating Body, it should include TV and broadcasting program, newspaper and magazines, picture and posters, publication of books; exhibition; **film** shooting program and course book on biodiversity, training, etc.

(4) Scientific research plan on biodiversity

In the research plan formulated by the science research group under the National CBD Implementation Coordinating Body, the practical research work of national, departmental and local activities must be taken into consideration, e.g. National Strategic Research Program, Takeoff Program, Torch Program, Natural Sciences Fund Project, 863 Plan, departments' research projects, local scientific and research projects etc.. All these programs or plans should be well harmonized, with the key focus on the most priority projects, minimizing duplication, to strengthen integration and try to make as many as useful achievements.

(5) Implementation program of information management on biodiversity conservation

In the work plan formulated by the information group under the National CBD Implementation Coordinating Body, it should include establishing information centers of biodiversity and branch centers in various relevant departments, designating information source points, realizing information networking and information sharing, development of a number of databases.

5.3 Further implementation of the existing strategies, plans and programs

To review and summarize the implementation of the existing strategies, action plans and programs and identify the priority projects accordingly.

5.3.1 Further implementation of the construction plan for nature conservation

- (1) The priority activities of in-situ conservation for forest and rare animals and plants
 - To set up and manage the GEF financed 5 nature reserves of international demonstration importance, including Taibai mountain , Fuping, Zhouzhi, Niubeiliang, and Changqing nature reserves and Nipponia Nippa conservation stations, Xishuangbanna of Yunnan, Shenlongjia of Hubei, Poyang lake of Jiangxi and Wuxishan of Fujian.
 - To set up 27 nature reserves involving panda conservation, set up a bunch of nature reserves for rare animals and plants including panthera tigris amoyensis, panthera uncia, cathaya argyrophylla, camellia chrysanthap. Constructing nature reserves in Qiangtang, Tibet and Kekexili , Qinghai will be given high priority so that they can become Top grade nature reserves.
- (2) The priority conservation for wetland ecosystems
 - To strength the construction of nature reserves for wetland eco-fishery in Shanjiangkou, clarify the changing status of biological communities, structure, species.
 - To strength the construction of wetland nature reserves in key grasslands where over 10 wetland nature reserves will be set up and incorporated into the conservation of wetland into the programs and plans of various management institutions,
 - To strength the construction of fresh water wetland nature reserves, investigate the distribution of wetland resources and the status of wetland ecosystem, complete the assessment of environmental impact caused by human activities, study the sustainable model for exploiting and utilizing wetland resources.

(3) The priority activities of in-situ biodiversity conservation in marine and coastal areas.

- To select and increase a bunch of marine nature reserves, set up nature reserve series for unique marine organisms, coastal wetlands, mangrove, coral reef, marine rare and endangered species.
- To select and set up specially marine protected areas, formulate a series of management norms, standards, codes for specially protected marine areas including regulations for specially protected marine areas, technical standard of specially protected marine areas, reference standard for assessing specially protected marine areas,
- To strength the conservation of coral reef and mangrove ecosystem; to make a survey aimed to find out the fundamental situation of the coral reef ecosystem and the threat it faces; to formulate the action plan for conservation of the coral reef ecosystem; give priority to the conservation of coral reefs in coastal areas and South China islands; to set up 5 to 10 new mangrove reserves covering a considerably big area of integrated land and reconstruct 50 thousand hm² of mangrove in the coastal beaches.
- To improve the existing management institutions for nature reserves, increase necessary facilities and equipment, improve the current management mechanism for marine nature reserves, strengthen the regulation and management rules for nature reserves, provide training to increase the quality of management staff.

5.3.2 The further implementation of ex-situ conservation program for rare and endangered species

(1) The priority activities of ex-situ conservation for rare and endangered species.

To set up and strength the ex-situ conservation facility for wild animals, set up conservation centers for wild animals in over 10 provinces; strengthen bird ringing stations in over 8 provinces to establish a nationwide bird ringing network; Set up breeding grounds for rare and endangered plants in Yunnan, Shanxi, Kunming, and Helongjiang and other provinces so as to recover the Chinese major rare and endangered flora.

(2) The Priority activities for agricultural germ plasma.

To continue surveying the distribution and supplementing the catalogue of domestic living stuck, poultry, cultivated plants and aquatic products, formulate the catalogue of rare and endangered agricultural products and investigate the degree to which they are threatened; set up a bunch of in-situ conservation points for wild relatives of crops, increase 23 medium-sized germ plasma banks, and over 10

nurseries for multi-year crops; set up 221 breeding bases for domestic living stock and poultry, establish the Semen bank for domestic living stock and poultry; clarify the genetic resources and their ecological environment in the 21 municipalities and counties in the Three Gorge reservoir areas, set up a mid-term germ plasma bank for these genetic resources, set up biodiversity conservation network for genetic resources of the Three Gorge area; set up information monitoring network for agricultural ecosystem, domestic living stock and poultry and aquatic products.

(3) The priority activities of establishing biodiversity conservation network for urban park and greenery patch system.

- To establish 4 botanical gardens in Guangxi, Guilin, Henan, Heilongjiang; Improve the ex-situ conservation facilities for wild plants in Shanghai, Hangzhou, Xianmen, Chengdu, botanical gardens, collect and protect local plant resources.
- To construct a large size greenhouse; collect and demonstrate 3,000-5,000 kinds of plant resources to conduct science popularizing activities and scientific researches.
- To conduct dynamic monitoring for the local fauna and flora species, ecological systems and genetic biodiversity in Huangshan, Qinghai Lake and Jiuzhaigou scenic spots, study the impact on biodiversity caused by human behavior, establish science'popularizing networks through media dissemination to protect biodiversity in famous scenic spots.
- To investigate the present status of biodiversity in urban parks and greenery patches. Set up information management system so as to form information network for biodiversity conservation in nationwide urban parks and greenery patches.

(4) The priority action for ex-body surviving of rare endangered species

To establish research bases for protecting embryo and egg cell at low temperature in Beijing and Chengdu. To promote domestic breeding technologies so as to save the endangered species. To conduct colone technology research for wild animals and breed species individuals with *panthera tigris amoyensis* and white flag dolphins as the main experimental targets. To preserve the genetic resources of ornamental plants at low temperature. Such low temperature preserving system should be established in botanical gardens in Beijing, Shanghai, Hangzhou, Shenzhen and Chengdu to preserve seeds of plants and ex-body materials.

5.3.3 Further implementation of the plan for sustainable utilization of biodiversity resources

(1) Priority action of sustainable utilization of traditional medicine

- To set up a seed nursery base for local pharmaceutical plants in each type of ecological reserve, based on the current pharmaceutical germ plasma banks and protected traditional medicine areas, set up 5-10 wild traditional medicine resource reserves including those for wild *panax ginseng*, tendril-leaved fritillary bulb of Sichuan origin, bullfrog, red deer, forest frog
 - Among 600 kinds of ordinary medicine, 120 to 150 kinds could be artificially bred, accounting for 40-50% of the total production capacity. Within the coming 5-10 years, continued efforts will be made in the plantation and production of Chinese herbs, holding 60-70% of the total output so as to alleviate the pressure on wild resources.
 - To select the key species in key areas. Artificially breed 30-50 kinds of pharmaceutical plants in large quantities. Conduct research on rational utilization technologies and economic measures to ensure the quantity collected less than the amount of growth.
 - To conduct research on regular used animal pharmaceuticals and the substitutes technology. Solve the problems of pharmaceutical provision through artificial breeding, chemical synthesis and develop the substitutes with the same medical effects. Summarize and assess the current technology for animal breeding so as to normalize the breeding management.
 - To adopt and finalize pharmaceutical germ plasma bank so as to bring into full play the current bank. Based on this experience, further expand the inventory of the bank so as to improve the practical effects of ex-situ conservation.
- (2) Priority action to construct pilot projects for sustainable utilization of marine resources.

- To establish the demonstration project zone in Zhoushan Fishery for sustainable utilization of fishery resources. Zhoushan Fishery Farm is the largest in the sea area of China. In recent years, due to the over-fishing and the marine pollution, the fishery resources decline and the diversity of species is reduced. It is necessary to make it clear about the fishing resources through surveys and analyze reasons for severe declining of the resources. Based on these preparing work, a multi-purpose adjustment and controlling program could be formulated for sustainable utilization and conservation of marine biodiversity resources.
- To establish a demonstration project in Nanlu Islands to display the coordination between marine biodiversity conservation and development. The project will explore the development format of coordinated nature reserve conservation and development, with the view to applying the basic theory of management and construction of marine nature reserves in China.

- To establish a demonstration project in the wetland beach along the Bohai Bay displaying the coordination between regional marine nature reserve conservation and utilization. Through the systematic arrangements of the projects, from the point (Nature reserve, demonstration spot) to the line (the coastal line) and from the line to the plane (the ecological system of continental based wetland above the tidal belt and that of sea based wetland below the tidal belt), the regional wetland conservation areas along the beach of Bohai Bay will be constructed as the one with the conservation, sustainable utilization and development of the wetland.
- To establish the national information center and monitoring network for marine biodiversity conservation and sustainable utilization. With the project, the computer network will be set up to provide information services on marine biodiversity, realizing the target efficient transmission of information. In Chengshan, Xiamen, Xiaochangshan Island and Dachangshan Island, there will be 25 marine ecological stations to be established, which provides surveillance over the ecological sensitive areas and typical ecological regions outside the reserve areas.
- To formulate and to complete the system of laws and regulations to ensure the sustainable utilization of marine resources. It is necessary to formulate the national laws and regulations in accordance with UN Maritime Treaty and formulate the regional and local regulations compatible with the national laws and regulations.

5.3.4 Further implementation of scientific research and education program for biodiversity conservation

- (1) The priority action for constructing the scientific research bases on biodiversity conservation
 - One university or research center will be selected to work together with the 8 nature reserves respectively. The project is to further strengthen the facility construction for scientific research, to train qualified personnel, enhance the research level and enthusiasm, expand and upgrade the specimen museums, upgrade constructions, renew specimen cupboard, collect more specimen and realize management enhancement by increasing access to information.
 - To set up a bunch of open lab on biodiversity conservation, which includes the biological lab for endangered species; the ecological function research lab on biodiversity; the cataloguing, assessment and technology research lab on biodiversity.
- (2) The priority action for publicity enhancement and capacity strengthening on biodiversity
 - To draw up the easily understandable materials and to produce records and

video for publicity enhancement on biodiversity conservation, to draw up the course materials on biodiversity conservation for primary, high school and university students, to draw up the training materials for the administrative staff on biodiversity conservation.

- To strengthen the education on biodiversity in primary, high school and universities; to incorporate more knowledge on biodiversity into the courses of Nature and Geography; to open the course universally on biodiversity conservation in the departments concerned in universities.
- To shoot films and TV programs on biodiversity, and publish more newspaper, magazines and books in this field, to construct various kinds of museums, education centers, exhibitions of natural preserves, to produce ad and poster and to construct network for publicity promotion and team training.
- To organize a series 'of domestic training courses for teachers, targeted governmental officials, facility management personnel and technical staff; and to organize professionals and administrative staff to study overseas.

Chapter 6 Mechanism of Supervising CBD Implementation and Experience Sharing Among Countries

6.1 Establishing the national supervisory mechanism for the implementation of the Convention

In order to implement the “Convention on Biological Diversity”, China set the strategic goals for the conservation and sustainable utilization of biological diversity, compiled China Biodiversity Action Plan and several multi-departmental or departmental Action Plans and Programs, in which remarkable progress has been made. However, the supervision mechanism at the national level is needed to better implement the Convention and the above action plans.

6.1.1 Giving full play to the leading agency’s role of comprehensive coordination

As the leading agency for the implementation of the Convention, NEPA is responsible for the organization and coordination of the implementation activities of the departments under the State Council. During the pass five years, NEPA has successfully organized and carried out a series of domestic activities, implemented a batch of priority projects. However, since the implementation of the Convention relates to all aspects of society and economy, it is far from being enough to depend only on NEPA. The roles of other related departments and local authorities should also be given into full play. The most important work NEPA should do is to organize, coordinate and monitor the activities of different departments and localities in the conservation and sustainable utilization of biodiversity. Therefore, NEPA should strengthen its comprehensive function of coordination and inspection hereafter. The key way to reach the goal is to further bring into full play the function of leading agency of “the Implementation Coordinating Group”. For this reason, the Coordinating Group should define the tasks, priority activities and priority projects of each department, understand the implementation status, difficulties and problems of the priority projects and help the departments and local authorities solve the problems. The most important is to monitor and inspect the implementation status of the action plans and implementation measures.

6.1.2 Giving full play to the supervision function of the People’s Congress Standing Committee

The Standing Committee of the National People’s Congress at different levels have the function of supervising the government’s administrative work and have played an important role in promoting the government to strengthen environmental protection. Under the National People’s Congress Standing Committee, there is the “Committee of Environmental and Resources Protection” , which have gained outstanding achievement in the legislation,

supervision and enforcement of the laws and regulations concerning the protection of environment and natural resources. The activities, such as “National Inspection of Law Enforcement of Environmental Protection”, “Trans-century Environmental Trip Around China” etc. organized in the past five years have greatly promoted the nature conservation, in particular the protection of wild animals and exerted the important influence nationwide.

The People’s Congress Standing Committee should not only carry out the activities in legislation and enforcement of environmental protection, but also play a role in supervising the government to fulfill international conventions, such as the implementation of action plans and protective measures in relation to biodiversity conservation. At present, the protection of biological diversity have been listed in various action plans prepared by concerned departments in charge of environmental protection and natural resources, such as action plan of environmental protection, action plan of forestry, action plan of agriculture, marine action plan, etc. , which have all defined a series of priority activities and detailed priority projects. The Environment and Resources Protection Committee needs to strengthen the inspection of the implementation of these action plans and priority projects, and make evaluation and recommendation of the work done by various departments.

6.1.3 Strengthening the coordination and administrative supervision of the State Council’s Environmental Protection Committee

The State Council Environmental Protection Committee is the highest coordinating body in China related to the environment. One of the State Councilors of the State Council is the Chairman of this committee and the members of the committee consist of the main leaders of about 40 departments and ministries. In the past ten years, the State Council Environmental Protection Committee has played an important role in coordinating and guiding national environmental protection and paid special attention to the protection of biodiversity. For instance, the Committee has approved in principle the documents of “China Biodiversity Action Plan”, “China Biodiversity Country Study” and “National Development Plan for Nature Reserve”. However, the most important is to pay close attention to the implementation of these plans and policies. Therefore, the Committee will strengthen the administrative supervision of various departments, strengthen the inspection of the implementation status and evaluation of the results, coordinate and solve the difficulties and problems arising in the process of the implementation.

6.1.4 Enhancing the media inspection and public supervision

The issuance of various action plans related to the protection of biodiversity will generally go through the procedure of press release. The media usually

give enormous publicity during issuance, but little attention to the implementation status of these action plans. The sound media supervision mechanism should be set up, which means the media should not only publicize the issuance of a specific action plan, but also make tracking reports on the implementation of action plans and carry out continuous and whole course media supervision. Therefore, the government and related departments could be promoted to effectively implement the action plans already issued and fulfill the measures already committed.

The public supervision is also very important. Many action plans are formally published and released to the society. The public has a certain understanding of the content, especially in the scientific and research circles. They usually pay close attention to priority activities and policy measures that government plan to take and even concern more about the implementation, and often make some good recommendations. The public supervision mechanism should be set up, which means setting up normal dialogue mechanism in public, especially between the experts and the government officials. The experts can raise the doubts and provide consultation for the implementation of some priority actions, policies and measures, and give suggestions.

The non-government organizations in the academic circles can discuss the formulation, implementation and progress of the action plans by taking the form of seminars, and make rational proposals in order to promote the work of the government departments.

6.2 Summary of China's experience in implementation of the Convention

Due to the difference in political system and social economic situation as well as culture, various Parties have their own characteristics in fulfilling the Convention on Biological Diversity. Therefore, they should make decisions and take actions based on their national situations. In the past several years, China has gained a lot of achievements and accumulated much successful experience. Other countries may use these experience for reference. Hence, the extensive exchange of information and sharing of experience among countries will promote the implementation of the Convention on Biological Diversity.

6.2.1 The guidance of the nation's sustainable development strategy

Since the United Nations Conference on Environment and Development in 1992, basing on the national situation, with the earnest attitude, Chinese government has fulfilled its commitment made in the UN Conference on Environment and Development, defined the strategy of sustainable development of the economy, and make this strategy reflect in various economic policies. China Agenda 21-A White Paper on Population,

Environment and Development in the 21st Century which was approved and released by the State Council in 1994 fully reflects the sustainable development strategy. The National Ninth Five-year Plan for Economic and Social Development and the Long-term Targets for the Year 2010 which was passed by the National People's Congress in 1996 further clarified that China would adhere to the sustainable development strategy.

The Chinese government considered that the continuous utilization of the nature resources and sound ecological environment are the prerequisites for the implementation of the sustainable development strategy. The sustainable development strategy will be efficiently implemented by taking the measures of protecting biological diversity, preventing soil erosion and desertification, developing the forest and improving the ecological environment in rural and urban areas, preventing and control environmental deterioration and pollution and actively participating global environmental protection cooperation. Therefore, the biodiversity protection and sustainable utilization has been incorporated into the policies and plans made by the central government departments and local authorities.

6.2.2 Extensive implementation of the ecological construction project

In the transitional process from traditional planned economy to market economy, Chinese government devoted itself to promoting the agriculture to change from extensive economic growth mode to intensive economic growth mode. The rapid growth of population and the excessive utilization of nature resources have led to the deterioration of the ecological environment day by day, the aggravation of the water and soil erosion and the land desertification and the rapid consumption of the biological environment. Due to these situation, the development of the nation's economy has been seriously restricted, the poverty in the area with the worsening ecological environment has been aggravated. Hence, the Chinese government pays close attention to the reform of the rural economy, encouraging the intensive production mode, encouraging the extensive implementation of the ecological construction project, such as afforestation, prevention and control of water and soil erosion and desertification, etc., and develop the technology of ecological agriculture. The ecological construction project has efficiently combined the development of agriculture and the protection of biodiversity.

Much useful experience has been summarized from the practice of the ecological construction in the past years, for instance: the experience on the construction of large-scale wind-prevention belt, construction of oasis in desert; experience on changing sloping fields into terraced fields to increase crop productivity; the experience on constructing large hydra-power and small hydra-power stations; the experience on renewing ecological vegetation; the

experience on planting economic forest, ecological forest etc. ; the experience on saving the irrigating water and adopting advanced technology; the experience on comprehensively control the small river basins; the experience in treating the deterioration, desertification and alkali of the grassland, etc..

6.2.3 Setting up administrative management system

A sound administrative management system has been set up to protect the environment and manage the resources. For instance: the administrative departments responsible for the environmental protection have been set up at all levels, from central to provincial and regional governments, the ministries of agriculture, forestry and urban construction also follow suits. The nature protection division is set up in provincial environmental protection agency to be specifically responsible for protection of nature and biodiversity in the province. Many regional, even county-level EPBs have set up the nature protection sections or appointed the specific duty personnel. The provincial forestry department and agriculture department have also set up specific organizations for the protection of wild animals and the nature reserve management organizations. The specific management organization is set up in the nature reserve, the appropriate personnel is allocated based on the size of the nature reserve. Generally, ten people are allocated in the national level nature reserve, several hundred people are even allocated in some nature reserves. Tens of thousands of people are engaged in the management of nature protection in the whole country. Because of such a relatively sound administrative system, the related laws and polices can be implemented.

6.2.4 Comprehensive coordination among various departments

The implementation of the Convention relies on ~~the~~ close cooperation among various government departments. A Coordination Group for Implementation of the Convention was set up soon after the signing of the Convention with NEPA as a leading agency. The related responsible personnel from 13 governmental agencies are the members. An Implementation Office is set up in the Department of Nature Conservation of NEPA, a specific personnel is assigned for daily work. There is a coordinator in each individual ministry. According to the need, right now the implementation coordinating group consists of 20 governmental agencies and will be further expanded to non-governmental organizations and other social groups. “The Implementation Coordinating Group” has played an important role in coordinating different agencies participating the follow-up activities of the Convention. It not only provides proposed position for the Chinese delegation to attend the Conference of Parties, but also guides the implementation of the China Biodiversity Action Plan, China Biodiversity Country Study, China Biodiversity Database

Management, etc.. It also plays a role of comprehensive coordination in the process of implementation activities.

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Annex 1: List of the Members of the Report Coordinating Group and the Report Reviewers

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