THEMATIC REPORT ON TRANSFER OF TECHNOLOGY AND TECHNOLOGY COOPERATION

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Please provide summary information on the process by which this report has been prepared, including information on the types of stakeholders who have been actively involved in its preparation and on material which was used as a basis for the report.

The preparation process of this case report was as follows:

1. Under the guide of the Office of China Steering Committee on Implementing CBD of the State Environmental Protection Administration, Nanjing Institute of Environmental Sciences in SEPA undertook the task of preparing this case report. Ministry of Agriculture, State Forestry Administration, State Oceanic Administration, Chinese Academy of Sciences, etc. participated in the preparation.

2. The preparation process mainly includes collecting and compiling related policies and regulations, technology status of China's biodiversity conservation and sustainable use, information on management situation, development trends and technology communication and cooperation with other countries. According to the preparation format of the case report, all participation parties drafted out the first draft and held many meetings to discuss the first draft, to present revision suggestions, and to add information so that the Trial Edition of the Case Report could be completed.

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Transfer of Technology and Technology Cooperation

Inventory and assessment

1. Has your country developed an inventory of existing technologies or category of technologies, including from indigenous and local communities, for the conservation and sustainable use of biological diversity and its components, in all the thematic areas and cross-cutting issues addressed by the Convention?	
a) no	
b) an inventory under development	X
c) an inventory of some technologies available (please provide some details)	
d) yes, a comprehensive inventory available (please provide details)	
2. Has your country assessed the potential impacts of relevant technologies on biological diversity and their requirements for successful application?	
a) no	
b) yes, please give some examples	X (see below)
3. Has your country carried out an assessment of the needs for relevant technologies?	
a) no (please specify the reasons)	
b) yes, and please specify the needs met and the needs not met for existing technologies and for new technologies	X (see below)

Implementation of some relevant articles of the Convention, relevant decisions adopted at the previous meetings of the Conference of the Parties and recommendations of SBSTTA

4. In implementing the thematic programmes of work adopted by previous meetings of COP, has your country achieved the outcomes identified in these programmes of work through technology transfer and technology cooperation? (Decisions II/10, III/11, IV/6, IV/7 and V/4)	
a) no	
b) yes, but only a few activities in some programmes	X (see below)
c) yes, and a wide range of activities in many programmes of work	
d) if yes, please specify these activities and programmes of work	
5. Has your country undertaken technology cooperation with other Contracting Parties that lack the expertise and resources to assess the risks and minimize the negative impacts of introducing alien species? (Decision V/8)	
a) no	X
b) yes – please give details below (including types of technology transferred, actors involved, terms for transfer and means of access to technology)	
6. Has your country taken any steps or measures to facilitate transfer of technology to and technology cooperation with other Parties to develop and/or strengthen their capacity to implement the policy, program and practice for sustainable use of biological diversity? (Decision V/24)	
a) no	
b) yes, please specify detailed measures and steps	X (see below)

7. Could you provide examples or illustrations of benefit-sharing contractual agreements which have included technology cooperation and technology transfer as benefits to be shared? (Article 15)	
a) no	
b) yes	X
8. Has your Government taken measures, as appropriate, to ensure, as set out in the Article 16(3) that Contracting Parties providing genetic resources are provided access to and transfer of technology which makes use of those genetic resources? (Article 16)	
a) no	
b) yes, please provide some details	X (see below)
9. Have the taxonomic institutions in your country taken any initiatives in developing national priorities, both individually and regionally, in new technology? (Decision IV/1)	
a) no	
b) yes, in early stages of development	
c) yes, in advanced stages of development	
d) yes, some initiatives in place and some priorities identified	X (see below)
e) yes, comprehensive priorities identified	
10. Has your country been involved in technology development and/or transfer for the maintenance and utilization of ex situ collections? (Decision V/26)	
a) no	
b) yes – please give details below (including types of technology transferred, actors involved, terms for transfer and means of access to technology)	X (see below)
11. Has the clearing-house mechanism in your country been further developed in order to assist in obtaining access to information concerning access to and transfer of technologies? (Decision V/14)	
a) no	
b) yes, please provide some examples	X (see below)

Role of public and private sectors in technology transfer and technology

12. Do you know of any examples of technology partnerships between public R&D institutions from developing countries and private-sector firms from industrialized countries? If so, to what extent have these partnerships involved	
a) the training of developing country scientists in the application of new technologies for the conservation and utilization of genetic resources	
b) information exchange on new scientific exchange and technological advances	
c) providing various technology components to developing country partner institutions	
d) engaging in joint R&D?	X

13. Has your country taken any measures or developed any programmes to encourage the private sector or the public-private partnership to develop and transfer technologies for the benefit of governments and institutions of developing countries, including South-South cooperation?	
a) no	
b) yes, please give details	X (see below)
14. Have any type of incentives been established in your country to encourage the participation of the private sector in conservation and sustainable use activities as sources of new technologies and potential financers of conservation programmes?	
a) no	
b) yes, please give details	X (see below)

Impact of intellectual property rights on technology transfer and technology cooperation

15. Are the technologies your country has accessed or wishes to access in the public domain or covered by intellectual property rights?	
a) public domain	
b) intellectual property rights	
c) both	X
16. Have intellectual property rights been a limiting factor in acquiring technologies for the conservation and sustainable use of biological diversity?	
a) no	
b) yes, please provide an example and specify the following: the type of technology sought (hard or soft technology); the area to which it is to be applied (e.g. forest, marine, inland waters, agriculture, etc.)	X (see below)

Capacity-building for technology transfer and technology cooperation

17. Have adequate institutional structures been established and/or is adequate human capacity available to access relevant technologies, in your country?	
a) no	
b) yes	X
18. What, if any, have been the limiting factors in implementing relevant technologies?	
a) institutional capacity	X (see below)
b) human capacity	X (see below)
c) others - please specify	X (see below)
19. Does your country consider that access to information and training or lack thereof has been a limiting factor in access to and transfer of technology?	
a) no	
b) yes, please provide some examples	X (see below)

20. Has your country been able to identify relevant technologies in specific areas for the conservation and sustainable use of biological diversity in your country?	
a) no	
b) yes, please give details	X (see below)
21. Has your country developed national policy and established international and national institutions to promote technology cooperation, including through the development and strengthening of technical, human and institutional capabilities?	
a) no (please specify the reasons)	
b) yes, please give some details or examples	X (see below)
22. Has your country established joint research programmes and joint ventures for the development of technologies relevant to the objectives of the Convention?	
a) no	
b) yes, please give some details or examples	X (see below)

Measures for facilitating access to and transfer of technology

23. Has your country established the mechanisms and/or measures to encourage and facilitate the transfer of technology to and technology cooperation with other Contracting Parties?	
a) no	
b) yes, please provide some details	X (see below)
24. Has your country established channels for access to the technologies developed and applied for attaining the objectives of the Convention?	
a) no	
b) yes, please provide detailed information	X (see below)

Success stories of and constraints to technology transfer and technology cooperation

25. Has your country identified any success stories and opportunities of and constraints to transfer of technology and technology cooperation?	
a) no	X
b) yes, please provide detailed information	

Further comments

Further explanation of Question 2:

Science and technology play a very significant role in China's biodiversity conservation and sustainable use. China has initiated basic and applied researches on the protection and use of genetic resources, and successfully conserved and reproduced plenty of rare species resources. China is one of the richest countries in farm crops in the world. Many gene banks with modern facilities have been established. And some plant seeds, pollen, germ cells, embryos and tissue cultures have been successfully preserved through cryoprotection technology. The gene bank of Chinese Academy of Agricultural Sciences has preserved over 300,000 resource materials of crop varieties. Kunming Institute of Zoology, CAS has developed a wildlife cell bank collecting 198 wildlife cells of insects, fishes, amphibians, reptiles, birds and mammals. These cells belong to 192 animal species, many of which are Chinese endemic rare endangered animals.

With focuses and in good order, China has implemented ex-situ protection and re-introduction of endangered wildlife such as giant panda, crested ibis, Chinese alligator, Hainan thamin, elk, Saiga antelope, Przewalski's wild horse, and cowfish. Over 60 rare endangered animals including giant panda and over 100 rare endangered plants including Camellia, Cathay silver fir, metasequoia, Phoenix tree, Puto Hornbeam, rehder Hop-hornbeam, etc. have been successfully reproduced through artificial fertilization and embryo transfer.

Developing medicinal industry through research and application of biotechnology is rising. Many notable successes have been achieved, including haploid breeding of glutinous rehmannia, polyploid breeding of achyranthes root and root of red-rooted salvia, artificial fertilization of forest musk deer, artificial synthesis of musk, etc. Biotechnology can be mainly applied to the production of endangered species used in Chinese traditional medicine hard to be domesticated and reproduced, and also can realize the preservation of germ plasm genes.

In the aspect of agriculture, reproduction technology of wild economic species and advanced genetic breeding technology are used to cultivate many new varieties with high yield and high quality, so that the Green Revolution in agriculture takes place. Biological control technologies are used to prevent crop diseases and insect pests. To avoid the pollution of pesticide with high poison and the damage to beneficial organisms, many biological control technologies have been explored and applied. Some new technologies come forth, including pest control by pests, grass control by pests, pest control by bacteria, disease control by bacteria. These technologies contribute to the biodiversity conservation in cropland ecosystems. Since 1978, China has achieved certain successes in gradually realizing the sustainable use of grassland resources by such measures as greatly developing artificial grassland, aerial seeding of pasture, ameliorating grassland and enclosed cultivation.

In the aspect of forest, remote-sensing technology has been applied to forest ecological monitoring and achieved positive effects. During 1987 Daxinganling Fire, the Ground Station of Remote-sensing Satellite of

CAS measured the east and west fire location and heat-radiation projection of fire trend, which played an important role in timely and accurately grasping fire situation, correctly estimating fireproofing isolation belt and guiding the outfiring in the field.

In the aspect of ecosystem restoration and reconstruction, the restoration and reconstruction technology of damaged ecosystems and species diversity technology of artificial ecosystems have restored some representative degraded ecosystems, especially those seriously suffered from drought, salinization, desertification, deforestation and soil erosion.

Further explanation of Question 3:

In the aspect of technology of biodiversity conservation, China has preliminarily established a national ecological monitoring network. CAS and departments of environmental protection, forestry, agriculture, oceanography, etc. have over 6000 environmental monitoring stations and ecological location stations to monitor and research on the structure, function, and succession of forest, grassland, desert, wetland and ocean ecosystems and the ebb and flow of species. However, present application of biodiversity monitoring technology is still limited. The index and method of investigation and monitoring need standardization and normalization. The means of monitoring is behindhand. It's necessary to fully and specifically investigate and systematically and chronically monitor China's species and ecosystems. Corresponding biodiversity information system should be established to restore, record, deal with and monitor information related to biodiversity.

China's restoration and reconstruction of degraded ecosystems mainly aim at key damaged and degraded natural regions, including "Sanbei" shelter forests, shelter forests at Yangtze River and the middle and upper reaches of Yellow River and coastal shelter forests. Comprehensive control of mountains, water and cropland has been initiated at over 10000 rivers suffering from severe soil loss. However, the technology of ecosystems protection and restoration has been still incomplete. It's necessary to protect degraded ecosystems in large scales and develop key technologies to solve particular ecosystem restoration, in-situ protection technology for vulnerable and endangered ecosystems and species diversity technology for artificial ecosystems.

China has initiated researches on the technology of protecting wild endangered species and successfully reproduced over 60 rare endangered animals such as giant panda, Chinese alligator, golden monkey, yakin, South China tiger, black-necked crane, red-crowned crane, etc. and over 100 rare endangered plants such as Camellia, Cathay silver fir, metasequoia, Puto Hornbeam, rehder Hop-hornbeam, etc. through artificial fertilization and embryo transfer. However, a few rare species have been artificially reproduced. Many rare species in China are urgent to be protected. Ex-situ reproduction technology and biological gene engineering technology for other rare endangered species need to be developed.

Great progress has been achieved in research on the technologies of sustainable use of biodiversity.

Arboretums and zoos all over the country have initiated introduction for domestication and reproduction of economic animals and plants. At present, there are over 300 medicinal materials from artificially cultivated animals and plants in China, among which over 200 can be produced and supplied in a large scale, including ginseng, angelica, lagehead atractylodes, glutinous rehmannia, Sanchi, tuckahoe, gastrodia tuber, pilose antler of a young stag, pearl, liquorice, ephedra, spine date, cornel, weeping forsythia, divaricate saposhnikovia, rough gentian, etc. In addition, it's also successful to cultivate hybridized paddy with high yield and quality using the wild sibling species and to artificially simulate natural environment to adapt to the growth and reproduction of migratory species. However, in comparison with advanced countries, China's technology of sustainable use of biodiversity has still a large gap currently. It's necessary to further develop the technologies of sustainable use of biological resources, including reproduction technology for wild economic plants, artificial breeding technology for wild economic animals, and biotechnology related to the development and use of genetic resources.

Further explanation of Question 4:

In recent years, China has strengthened technological cooperation with all other countries and international organizations. Through the technological cooperation, China has introduced some advanced technologies of biodiversity conservation and sustainable use to contribute to China's biodiversity conservation and sustainable use, so that China can keep up with international standards in many fields, such as the protection of endangered animals and plants, the protection and use of forest resources, the management of nature reserves, and sustainable use.

Under the support of GEF, "Chinese Nature Reserve Management" and "Chinese Wetland Biodiversity Conservation and Sustainable Use" programmes have been implemented as the models of the management of Chinese nature reserves and the protection of wetland biodiversity. Cooperated with WWF, China set up a research center of giant panda in Wolong to research on the wild ecology of giant pandas' habitats and their reproduction. It has gotten substantial achievements. China cooperates with IUCN to reintroduce elks and with ICF to research on red-crowned crane, white crane, black-necked crane, etc, which has active effects on Chinese wildlife.

In the aspect of forest protection, using the experience of USA and Canada for reference, China has established a sound center of forest fire control and a monitoring system of avigation outfiring and fire situation, and strengthened biological control of forest plant diseases and insect pests. In the aspect of afforestation, oriented afforestation has been introduced from Germany and Sweden to provide chief sources for Chinese construction of fast-growing prolific forests and shelter forests.

"Qinghai Management Project of Forest resources" in cooperation with Australia and "Ningxia Gratuitous afforestation Project" in cooperation with Japan government help Chinese forestry improve its capacity of dealing and management, representatively from the angles of sustainable dealing and effective protection,

restoration and use of resources and environment.

In addition, China cooperates and communicates with concerned departments in USA, Canada, Japan, Australia, Russia, etc. in the field of nature reserves, which has improved the management level and management technology of Chinese nature reserves.

Further explanation of Question 6:

In multilateral and bilateral cooperation in the field of biodiversity, China has actively contributed to international technological communication and cooperation. In regional environment action plan, China has actively taken measures to promote the technological cooperation with neighboring countries, based on the tenet that a single country cannot solve environmental problems by herself. Chinese government, together with Korean government and Japanese government, has developed a conference mechanism of environmental ministers in the three countries. On solving the problems of water pollution and the protection of water resources at the transnational rivers, China is actively seeking technological cooperation with related countries. Moreover, China has developed technological cooperation of transnational nature reserves with Mongolia and Russia bordered on Northwest China.

In 1997, according to Chairman Jiang Zemin's propose of "China is willing to open a center of environmental protection" in the fourth informal leaders meeting of the Organization for Asian and Pacific Economic Cooperation, Chinese Center of Environmental Protection of Organization for Asian and Pacific Economic Cooperation was set up in Beijing and opened door to the outside world. The center has become the place of providing personnel training, information exchange, technological research and cooperation for members of the Organization for Asian and Pacific Economic Cooperation.

Since 1985, Chinese government has offered support for some African countries and provided them with training and technological service on ecological agriculture, exploitation and use of forest resources, etc.

On August 29-30, 2002, the agronomist investigation group from Mozambique investigated and visited Jiangsu Academy of Agricultural Sciences. Due to the group's interest in the research accomplishments in the fields of paddy, cotton, etc., both parties preliminarily met the preliminary intention of a cooperation project on sweet potato and discussed the probability of other cooperation projects on agricultural technologies.

Further explanation of Question 8:

According to the three major objectives of CBD and the requirement of international economic development, Chinese government amended Exclusive Law in January 1993 and published Regulation on the Protection of New Plant Varieties in April 1997. Genetic resources and technologies related to the biodiversity conservation and sustainable use are protected, including production approaches of animal and plant varieties and medicine

production and invention means. According to Chinese situation and international convention, plant variety resources such as paddy, maize and chrysanthemum, etc. and most products and materials involved in biotechnology have been listed under the protection scope of new plant varieties, which will be gradually extended. A legislative framework of the protection of intellectual property on genetic resources and technology transfer has preliminarily formed. Therefore, laws and institutions ensure the countries, units and individuals providing genetic resources have the rights and benefits to share the exploitation and use of the genetic resources. On April 23, 1999, China became a member of International Convention of the Protection of New Plant Varieties and preliminarily realized the meeting with international system of intellectual property.

Chinese government actively participates in international negotiation and initiates varied forms of international cooperation to promote the construction of international multilateral system and mechanism of general adoption of the market principle on the obtainment of genetic resources and benefit share. During the negotiation of International Convention of Plant Genetic Resources, the delegation of Chinese government attended all meetings. Chinese government supports the principles of CBD and actively promotes the consistence of the two conventions in principles. It agrees and promotes to establish a multilateral system of the obtainment of plant genetic resources and benefit share. Within the multilateral system, China actively promotes convenient obtainment and insists on the dominion of the supply country and fair sharing of the benefits from the obtainment of genetic resources. Chinese government also believes that benefits from using germ plasm resources should be returned to those countries that preserve and provide the germ plasm resources. The benefit return should include providing chances of training, cooperation, technology transfer and related information obtainment.

Further explanation of Question 9:

Chinese government actively initiates scientific research on biological taxonomy. It not only keeps on the investigation, finding, description and inventory of the species, but also adds and expands relative research facilities, such as specimen exhibition, arboretum, location research station, etc., which provides sufficient information and service for the study and practice of biodiversity conservation and sustainable use.

Presently, basic research on biological taxonomy and inventory in China is insufficient. And China has no national action plan of biological taxonomy. To strengthen scientific research on biological taxonomy and inventory, research and application units of Chinese related departments put forward the following national priorities draft of biological taxonomy, but this is under implementation:

- Prepare the national action plan of biological taxonomy. Determine the demand of information on biological taxonomy, identify the factors to obstruct biological taxonomy, and present the objectives and planning of capacity building in China’s biological taxonomy.

- Gradually complete the census and inventory covering the whole country and all ecosystems through a comprehensive investigation involving many sections and subjects.

- According to the comprehensive investigation involving many subjects and long-term monitoring results, establish a database of ecosystems, habitats, species and genetic resources.

- Construct national and regional centers of biological taxonomy. Set up 5-10 comprehensive specimen exhibitions with great significance and large scale, and choose some specimen exhibitions with endemic features. Establish some regional centers of biological taxonomy.

- Develop extensive international cooperation. Contact with all liaisons proposing for biological taxonomy in the world, participate in the global information communication network of all regions proposing for biological taxonomy, exchange specimens with foreign specimen exhibition under the reciprocal principle.

Further explanation of Question 10:

Chinese government encourages and supports the technology development or transfer for maintaining and using collections from other places. For example, the Institute of Plant Protection, Jiangsu Academy of Agricultural Sciences developed a new prevalent pesticide Wenmeijing with a special effect to wheat and transferred the technology to Mexico Maize and Wheat Melioration Center. Iran was also interested in the technology.

Further explanation of Question 11:

Chinese government preliminarily established China National Clearing House for Biodiversity Information. It aims at exchanging and synthesizing biodiversity information (including information related to China nature reserves, biosafety, alien invasive species, the obtainment of genetic resources, the protection of traditional knowledge, etc.) within China and between countries to contribute to the information sharing and technology communication in these fields.

Chinese departments concerned have also developed some databases and information networks related to biodiversity. For instance, CAS has developed Biodiversity Information System, and its institutions have developed over 50 databases related to biodiversity, mainly including species inventory database, rare endangered species database, specimen database, ecosystem database, taxonomical code database, etc. Agricultural departments also developed a database of crop germ plasm resources and an external information exchange network of germ plasm, convenient for the searching of foreign countries. Departments of environmental protection, forestry, oceanology, etc. representatively developed environment database system, forestry database system, oceanology database system. The development and use of these databases promotes

the cooperation in science and technology between China and other countries, and furthers technology communication and transfer. But this database and database system separated in departments concerned need conformity and standardization in order to exerting adequately the function of the database system

Further explanation of Question 13:

Chinese government thinks highly of and encourages the participation of Chinese universities, academies and enterprises in international technological cooperation and communication. “Some Policies on Promoting the Development of Biotechnological Industry” drafted by State Economic and Trade Commission specifically stipulates that, in the progress of developing biotechnological industry, China must hasten nongovernmental technological communication and cooperation, encourage and support academies and especially enterprises to establish association workstation abroad, encourage internal enterprises to take various forms to develop technological cooperation with other countries and to develop or transfer technologies beneficial for developing countries. National Bio-medicine Policies supports potent medicinal enterprises and institutes to create research institutions abroad and to initiate technology development, product design and market expanding. It encourages foreign institutions of medicine research and development to establish cooperation research institutions in China.

Chinese departments concerned actively initiate technology cooperation and transfer with the governments and institutions of some developing countries. Since 1985, Chinese government has provided support for some African countries. For example, it provided training and technology service in the aspects of ecological agriculture and the exploitation and use of forest resources.

In October 2000, Chinese government gave 4 promises on the “China-Africa Cooperation Forum—2000 Beijing Minister Meeting”: keep providing support for African countries within its capability; offer specific fund; support and encourage Chinese potent enterprises to invest in Africa; expand technology training under multilateral support; develop economic and technological cooperation, including the technology of biodiversity conservation and sustainable use.

In 1999, Wuhan Kenuo Bio-Pesticide Limited Company and Vietnam Anjiang Plant Protection Service Company (the biggest pesticide dealing company in Vietnam) determined the cooperation project of transferring bio-pesticide and related technologies. In August 2000, China International Science Center and Cuba Molecule Immunity Center determined the cooperation project of transferring single-cloned antibody technology and set up Baitai Bio-medicine Limited Company.

In 2002, after China joined in WTO, Chinese government actively promoted non-public-owned forestry enterprises to extensively participate in international market competition, exploitation of forestry resources and transferring technologies of the use of forest resources. It encourages nongovernmental businesses to develop joint venture cooperation with foreign large companies and blocs or dealing transnationally.

Further explanation of Question 14:

The Constitution prepared in 1998 specifically stipulates that “keep upholding and guiding nonpublic economy such as individual economy and private economy for their healthy development.” For instance, at the end of 1980s, with the release of policies such as “one has those one created” and “one benefits from those one invested in”, local governments developed in succession preferential policies and measures encouraging afforestation by nonpublic economic bodies. In the early 1990s, the policy of hastening the development of nonpublic economy is combined with the restructure system of forest industrial enterprises in key national forest regions. Private enterprises are encouraged to legally participate in the protection and exploitation of forest resources in various forms such as acquisition, merger, exclusive share-holding, mutual share-holding, transferring right of management, etc. All potent scientific personnel or owners of private enterprise, as well as leaders or personnel of enterprise units, public institutions and event services can participate in afforestation, exploit forest resources by oneself or by joint adventure and get subsidy for afforestation. The created forests belong to the investors. After many years’ development, nonpublic forestry has become a significant part of Chinese forestry. It’s estimated that from 1997 to May 2002 87% of the total investment in forestry development was private capitals.

Further explanation of Question 16:

1. As far as the status of biotechnology transfer concerned, almost all countries treat their biotechnology as patents or other forms of intellectual property. No country will transfer its biotechnology gratuitously or at a low price. In the process of technology transfer, some countries usually emphasize protecting intellectual property and enterprises’ commercial benefits to restrict technology transfer or bring forward too high requirements for technology transfer.

2. The technology types wanted to be obtained mainly include:

（1） Hard technology

• Technologies related to agriculture: cultivate good varieties of animals and plants with high quality, high field, disease resistance and reversion resistance by the means of combining modern biotechnology and normal breeding technology; realize rapid reproduction of some forest trees, fruit trees, economic crops, vegetable, rare Chinese herbal medicine and ornamentals in short supply to promote the formation of production system by tissue cultivation and detoxifcation technology; reproduce good varieties of livestock and develop good fish varieties by embryo transplant, nucleus transplant and sex control.

• Technologies related to agriculture: cultivation technology of good forest germ plasm resources; technology of the preservation of gene resources and the amelioration and use of varieties; management and preservation technology of natural forests and natural secondary forests; lasting maintaining technology of ecological

stability of artificial forests and productivity; protection technology of rare endangered animals and plants in nature reserves; technology of controlling degraded environment and desertification, etc.

（2） Soft technology

It mainly refers to some management technologies of the protection of ecosystems and sustainable use of biodiversity, including the classification of functional regions and management of all ecosystems, construction standardization and effective management technology of nature reserves, construction standardization and management technology of species reproduction centers, development and management technology of biodiversity information system, management of biosafety, etc. It involves fields of environmental protection, forest, agriculture, ocean, inland water bodies, etc.

Further explanation of Question 18:

At first, as far as the assimilation of introduced technologies concerned, China has a few qualified personnel on the technology research and development of biodiversity conservation and sustainable use, insufficiency in application personnel and a few specialists. Chinese researchers lay particular stress not on industrialization but on theory.

Secondly, China is a developing country and has insufficient knowledge and experience on biodiversity conservation and sustainable use. The supporting technologies and production facilities are relatively outdated, so most instruments, and devices used in research and development need importing. These greatly limit the speed and growth of China’s research and development.

However, the general environment still needs ameliorating. An effective mechanism is urgent to be established to promote the transfer and application of scientific technologies.

Further explanation of Question 19:

At first, developing countries exigently need seeking the latest technologies from developed countries when developing economy and protecting environment. Mastering information on international latest technologies is a must to acquire proper technologies.

Secondly, biodiversity involves many fields and sections. On science and technology cooperation, departments of environmental protection, forestry, agriculture, and CAS have initiated some technology cooperation on species protection, management of nature reserves, personnel training and sustainable use during the last over 10 years. However, the absence of effective information communication and share protocol between sections has led to repeated introduction and weakened the technology acquirement and transfer.

Finally, international training is one of the effective approaches of technology cooperation. A country can know more information related to biodiversity conservation and sustainable use as well as corresponding technologies. For instance, UN sponsors diverse training classes on cooperation research and exchange visits of specialists, so that managers and technologists on biodiversity can know more technology information and managers can acquire or introduce advanced technologies.

Further explanation of Question 20:

China has the following technologies related to biodiversity conservation and sustainable use:

Technology of Biodiversity Information System and Monitoring System is applied to develop Inventory of China Biodiversity Information Resources, Database and Electronic Distribution Map of Nature Reserves in China, and China Endangered Species Database, and to dynamically monitor some wild animal and plant species, nature reserves and ecosystems in a long term.

China developed technology of the investigation, estimation and protection of wetland resources and technology of the preservation, reproduction and use of crop germ plasm resources to preliminarily complete characteristic diagnosis of agronomy, genetics and cytology. And spermatic fluid, embryos and tissue cultures of some terrestrial and aquatic animals have been successfully preserved through cryoprotection technology. Eco-agricultural technologies have been developed.

The investigation and monitoring technology of biological resources in the ocean include the investigation and inventory on the types and structure of ecosystems and rare endangered species, long dynamic monitoring of species resources in oceanic ecosystems, and the development of national information system of ocean biodiversity conservation.

On GMOs, the technology framework of estimation on GMO environment safety and monitoring environmental influence has been preliminarily set up. It includes the index, standard, approaches and procedure of risk evaluation on GMOs release, commercial production and transnational transfer, as well as developing a biosafety database.

Further explanation of Question 21:

To better implement the spirit of Rio Conference on Environment and Development in 1992, guided by the framework of *China's Agenda 21*, Chinese government prepared *China's Agenda 21—Environmental Protection*, *China Biodiversity Conservation Action Plan*, *China's Agenda 21—Forestry Action Plan*, *China's Agenda 21—Ocean*, and other national plans or action plans. It also earnestly fulfils its promised obligations, puts forward principles of international cooperation, broadens the fields of international cooperation, strengthens management capacity of international cooperation projects, determines the priority projects,

prepares plan of biodiversity cooperation projects, etc.

To unify and coordinate the actions of CBD implementation and promote international cooperation on biodiversity conservation and sustainable use, the State Council instructs SEPA to set up Coordination Group for Implementation of the CBD composed by 20 sections and actively organize and implement international cooperation projects on CBD implementation.

SEPA, Ministry of Science and Technology, Ministry of Agriculture, State Forestry Bureau, CAS, etc. also have sections in charge of international technology cooperation. For example, SEPA set up Center of International Cooperation on Environmental Protection. State Forestry Bureau set up Center of International Cooperation Projects. These agencies have developed technology communication and cooperation with some international organizations such as IUCN, WWF, Wetland International and some countries such as Japan, Korea, Germany, Canada, etc. Technology cooperation projects involve biodiversity conservation action plan, wildlife protection and biodiversity conservation, protection and sustainable use of wetland, construction of nature reserves, etc.

To further strengthen international cooperation on environment and development, China set up CCICED in April 1992. It is a senior consultation organization composed of Chinese and international well-known specialists, scholars and senior officials. It is in charge of presenting specific and valuable recommendations on energy and environment, biodiversity conservation, eco-agriculture construction, laws and regulations on environment, including recommendations on international technology cooperation and communication.

Further explanation of Question 22:

With the support of UNDP/GEF, China began to prepare *China Biodiversity Conservation Action Plan* in 1992. SEPA, Ministry of Forestry, Ministry of Agriculture, CAS, etc. participated in the preparation. Action Plan defines the objectives of 7 fields, 26 priority action plans and 18 priority projects needing immediate implementation. It mainly includes: strengthen basic research on China's biodiversity, improve the network of national nature reserves and other protected areas, protect wild species significant to biodiversity, preserve genetic resources of crop and livestock, develop the national network of biodiversity information and monitoring, and coordinate biodiversity conservation and sustainable use.

In 1995, China began to prepare *China's Biodiversity: A Country Study.* It defines cooperation and research fields of China's biodiversity conservation and sustainable use, including types and formation of ecosystems, investigation and inventory of rare endangered species, capacity building of biodiversity monitoring, technologies of biodiversity conservation and sustainable use, biotechnology and capability building of biosafety, etc.

To implement obligations related to CBD implementation and better understanding *International Criteria on*

biotechnology and safety technology, with the sponsor of GEF/UNEP, China began to prepare *National Biosafety Framework of China* at the end of 1997 and completed it in 1999. It is the first project on the management and research on biosafety in China with the involvement of multi-sections and the largest scale. It puts forward the framework of policy system and law system on China's biosafty management, the framework of technology criteria on the risk evaluation and risk management of GMOs and their production, and the need of national capacity building of biosafety management. But now there are not companys cooperating with Chinese government exciting Chinese office of some international organizations on biodiversity conservation

Further explanation of Question 23:

China has set up Coordination Group for Implementation of the CBD. For 10 years, Coordination Group for Implementation of the CBD has actively encouraged organizing and implementing CBD international cooperation project and promoted technology cooperation and communication with all other countries.

To initiate and promote international cooperation on specific fields of biodiversity, SEPA set up Center of International Cooperation on Environmental Protection. State Forestry Bureau set up Center of International Cooperation Projects in 2000. These agencies have developed technology communication and cooperation with some international organizations and some countries on wildlife protection, management of nature reserves, wetland biodiversity conservation, etc.

To promoting cooperation, National Biodiversity Clearing House of China began to operate on trial in 1998 and in due form in December 2002. It takes charge of the collection, preservation and communication of data on domestic technology cooperation and the searching, collection and acquirement of data on foreign technology cooperation.

Further explanation of Question 24:

Chinese government actively develops international cooperation and communication with diverse channels, many levels and extensive range in various forms such as bilateral, multilateral, and civilian ones, according to the principles of equity and mutual benefit, achievement sharing, protecting intellectual property, respect international customs. It has acquired some technologies of biodiversity conservation and sustainable use by actively participation in and extensively development of international scientific cooperation and communication on biodiversity.

1. Multilateral cooperation

China has developed good cooperation relationships with international organizations such as UNEP, UNDP, World Bank, FAO, etc.

2. Bilateral cooperation

China has some research cooperation on species protection, management of nature reserves, monitoring of forest resources, wetland biodiversity conservation and sustainable use with Germany, EU, Norway, UK, USA, Canada, Germany, Holland, Japan, Korea, Australia, Russia, etc.

3. Cooperation with NGOs and Academic Institutions

Chinese government actively develops civilian cooperation and makes the best use of communication and cooperation channels of domestic and foreign scientific and technological circles to develop extensive cooperation research and technology communication. For instance, it has some cooperation research with IFAW, CI, TNC, IUCN on endangered species, protection of ecosystem diversity and sustainable use of biological resources. It has some cooperation research with WWF on the protection of giant panda and its habitats.