
Ramsar Small Grants Fund for Wetland Conservation and Wise Use (SGF)

National Communication, Education and Public
Awareness(CEPA) Plan for Wetland Protection in China

Office of Wetlands Conservation and Management,

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Chapter I Review of Wetland Conservation in China

Wetland is known as one of the three major ecosystems in the world. It has many important ecological functions such as water conservation, water purification, flood control, climate regulation and biodiversity conservation, thus dubbed as the Kidney of the Earth. Healthy wetland ecosystems not only provide various physical and cultural products for the human beings, but also play an essential role in maintaining the national eco-safety and mitigating the global climate change. Conserving wetlands, therefore, is of great significance for keeping ecological balance, improving the ecological conditions, promoting the harmonious co-existence between human beings and nature, and building a society with ecological civilization.

1.1 Overview of wetlands in China

Lying in the southeast part of Eurasia, China boasts a vast territory of 9.6 million square kilometers and a wide expanse of sea waters under its jurisdiction. Characterized by various landforms, complicated geographic conditions and diverse climates, China is one of the countries with multiple types and large coverage of wetlands worldwide.

1.1.1. Current status of wetlands in China

The statistics of the first national inventory indicates that China has a total area of 38,485,00 ha of wetlands (the area of each site should exceed 100 ha), excluding those in Hong Kong, Macao and Taiwan, with the man-made wetlands only including reservoirs and ponds. Among them, there are 36,200,500 ha of natural wetlands, or 3.77% of the total area; 2,285,00 ha of reservoirs and ponds; 9,250,000 ha of alpine wetlands with an altitude of over 3,000 m; and 7,470,000 ha of alpine wetlands with an altitude of more than 4,000 m. In the natural wetland, about 38% of the total area can be found in the marshes, with an area of 13,700,300 ha. Other natural wetlands include 8,351,600 ha of offshore and coastal wetlands, 8,351,600 ha of rivers and 8,207,000 ha of lakes, accounting for 16%, 23% and 23% of the total area respectively.

Wetlands in China support a wide array of flora and fauna, including 2,276 species of higher plants and 724 species of wild animals. Of the wild animals, there are 271 species of water birds, 300 species of amphibians, 122 species of reptiles, 31 species of mammals and over 1,000 species of fish. The wetlands in China are characterized by : (1) various types: All the 40 categories of wetlands designated by Ramsar Convention on Wetlands can be found in China, as one of the countries with the richest wetland types in the world; (2) large area: Wetlands area in China ranks the first in Asia and the fourth in the world; (3) wide distribution: They can be found across the whole country, whether from the cold temperate to the tropical zones, from the coastal to the inland areas, or from the plains to the plateaus; (4) regional difference: Geographically, most rivers originate from the eastern parts, while a majority of marshes are found in northeastern parts, and most of the lakes are distributed in the middle and lower reaches of the Yangtze River and the Qinghai-Tibetan Plateau; (5) rich biodiversity: China boasts diverse wetland

habitats, housing many endemic species. As a result, China has become a hotspot of wetland and biodiversity conservation worldwide.

However, wetlands in China face many threats and challenges, such as low level of per-capita area, poor quality (degradation), and weakness in protection and management, in particular. In addition to the natural factors like climate change, reduced rainfall and desertification, the human-induced factors mainly include: 1) Irrational conversion and over-exploitation of wetlands, leading to the decline of natural wetland areas and the weakening of their functions; 2) Over-exploitation of water resources and biological resources in the wetland areas, which results in the loss of biodiversity; 3) Severe pollution, making the water quality deteriorate; 4) Heavy loss of water and soil in the upper reaches of major rivers, causing heavy siltation in the rivers and lakes; and 5) Poor awareness of the officials and the public in some local areas on wetland conservation, an incomplete wetland protection and management system and insufficient financial input, which slow down the efforts of conserving and managing wetlands. Generally, the decline in the area of natural wetlands and the weakening of their functions have not been effectively contained yet.

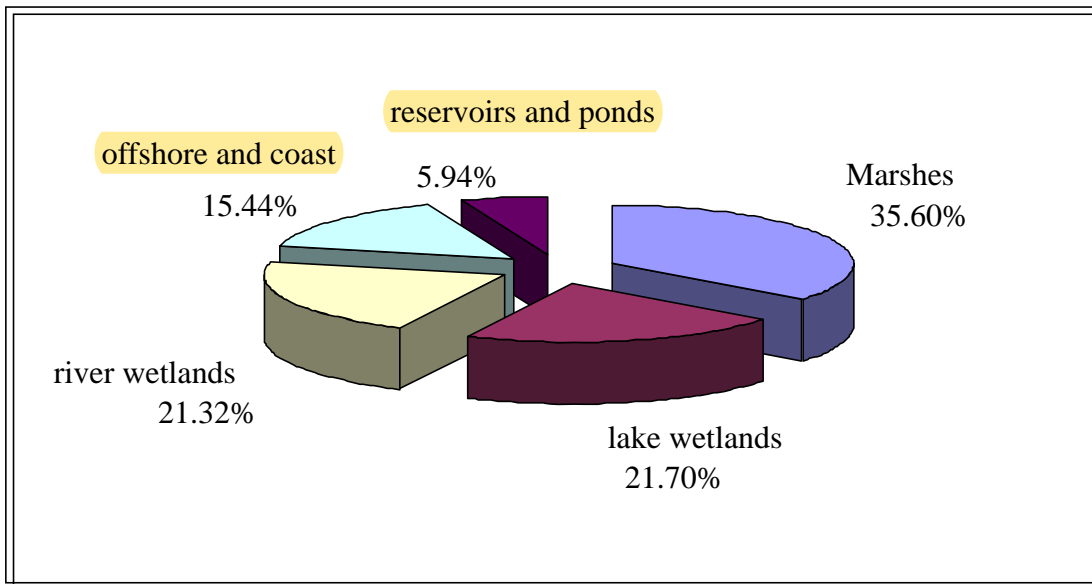


Chart 1-1 the shares of different wetland types in China

1.1. 2. Overview of major wetland types in China

According to the first national inventory of wetland resources (1995-2001) organized by the State Forestry Administration (SFA), 5 categories of wetlands are identified in China, i.e. marshes, lakes, rivers, offshore and coastal wetland and man-made wetland. Of them, there are 28 types, including herbaceous marsh, shrub marsh, forest marsh and inland salt marsh, permanent or seasonal freshwater or saltwater lakes, permanent or seasonal rivers, floodplain, mangrove swamp, muddy or rocky beach, estuary and delta, reservoirs and ponds, covering nearly all the wetland types designated by the Ramsar Convention on Wetlands.

1) **Marshes:** 96.5% of marshes in China can be found in the Songhuajiang-Nenjiang Plains in northeast China, the Qinghai-Tibetan Plateau, and the grassland in western Sichuan Province, as well as in the inland areas of Inner Mongolia, Gansu and Xinjiang in northwest China, which, altogether, cover an area of less than 66.5% of the total area in the country. In particular, about 55.7% of marshes are concentrated

in such areas as Heilongjiang, Jilin, Inner Mongolia, Gansu and Sichuan, which had historically expanded the areas for agriculture and grazing mainly through conversion of marshes, but cover an area of only 28.8% of the total area in China.

2) Lakes: More than 95.6% of lakes in China are located in the Qinghai-Tibetan Plateau, the middle and lower reaches of the Yangtze and the Huaihe rivers, inland areas of Inner Mongolia and Xinjiang, lower reaches of the Yellow River and the Haihe River, as well as the Songhuajiang-Nenjiang River Basin in northeast China. Around 36.2% of these lakes are mainly distributed in the middle and lower reaches of the Yangtze and the Huaihe rivers, the lower reaches of the Yellow River and the Songhuajiang-Nenjiang River Basin, which is densely populated with frequent economic activities and whose areas account for less than 19.1% of the total land in the country.

3) Rivers: In terms of river basin, most of the rivers, or 60.7%, in China are concentrated in such areas as the Yangtze and Huaihe River Basin, the Yellow and Haihe River Basin, the Songhuajiang-Liaohe River Basin, the Pearl River and Southeast coastal areas, which cover an area of 26.1% of the total land; while only 26.1% of the rivers run through the Qinghai-Tibetan Plateau, Inner Mongolia, Gansu and Xinjiang, which cover an area of 55.1% of the total land in China.

4) Offshore and coastal wetlands: The coastal wetlands to the north of Hangzhou Bay mainly comprise mudflats and estuarines, covering an area of 57.9% of the total coastal wetland areas across China; while mangrove and estuarine can be mainly found to the south of Hangzhou Bay, with an area of 42.1%. Specifically, as high as 79.9% of the coastal wetlands are distributed along the seven economically developed coastal provinces/municipalities, including Liaoning, Tianjin, Shandong, Jiangsu, Shanghai, Zhejiang and Guangdong, which span an area of 48% of the total area of coastal provinces/municipalities in China.

5) Reservoirs and ponds: As a major type of man-made wetlands with significant natural functions, reservoirs and ponds are mainly formed through building water conservancy facilities or developing aquaculture. Their major distribution, or 62.2%, is in the areas richer in water resources and more advanced in aquaculture, including the middle reaches of the Yangtze River, the lower reaches of the Yellow River, Northeast China Plain, as well as Guangdong, Zhejiang and Hainan, which cover an area of 38.5% of the total land area in China.

As to the geographical distribution of natural wetlands and man-made reservoirs and ponds in China, although the western areas are characterized by large land area and under-development, being located in the upper reaches of large rivers, and wide distribution of various types of wetlands, the highest concentration of wetlands is still in the east and central areas, particularly the plains in the middle and lower reaches of the Yangtze River Basin, the lower reaches of the Yellow River Basin and Northeast China, where there is a long history of socio-economic growth, dense population, and more agricultural and industrial activities.

1.1.3 Significant roles of wetlands in promoting the eco-safety and socio-economic development in China

Wetland serves as water storage reservoir and water purifier, playing a critical role in maintaining the regional water security. In China, about 2.7 trillion tons of water resources are reserved in the wetlands,

or 96% of the freshwater resources available for use in the country. Many rivers in Asia, such as the Yangtze the Yellow, the Lantsang(Mekong), the Ganges, and the Indus rivers, originate from the high-altitude wetlands in the Himalaya, providing water sources for 1.5 billion people living in this continent. Specifically in China, 25%, 49% and 15% of the water volume of the Yangtze, the Yellow and the Lantsang rivers are supplied by the Sanjiangyuan Wetland. The Lantsang River, in particular, plays a crucial role in maintaining the eco-safety of the five countries in Southeast Asia along its lower reaches. Wetland is also powerful in removing pollution and purifying water. A number of experiments in Beijing have proved that the water with poor quality of Category V can be improved to become Category III or even better after it passes through wetland areas.

In addition, wetland plays a vital role in carbon capture and storage. According to IPCC, an estimated 2.48 trillion tons of carbon is stored in global terrestrial ecosystems, with 500 billion tons sequestered in peat land, which covers an area of less than 4% of the land surface. In China, 4.7 billion tons of carbon is stored in the marshy wetlands, with 1.9 billion tons occurring in Ruoergai Marshes, which contributes significantly to controlling the CO₂ emissions. In the meantime, wetlands play a significant role in regulating the regional climate. The scientific study indicates the temperature of Bosten Lake in Xinjiang Uygur Autonomous Region, northwestern China, is 2-4 degrees centigrade lower than that of the surrounding desert areas.

Wetland is also called the Biological Supermarket and Gene Bank of Species. Natural wetlands are ideal habitats for many species of aquatic animals and plants. They also provide staging, migrating, wintering and breeding sites for many rare and endangered animals, particularly the water birds. China is rich in wetland biodiversity, which supports many rare and endangered species, such as Chinese alligator, Yangtze River dolphin and crested ibis that are endemic to China. Natural wetlands also keep the genetic properties of many species, with a great potential to promote the socio-economic development. For example, the ancient Hemudu Civilization produced the rice of high yield with wild rice gene, thus creating the history of rice production.

Wetlands provide the material basis for the human socio-economic development. The physical products and functions directly offered by wetlands, such as animals (particularly fish), plants, shipping, medicine, and energy, play a crucial role in promoting the social development in China. It is estimated that about 300 million Chinese people directly or indirectly obtain the products from wetlands, which have a total economic value of RMB 2.7 trillion Yuan.

Wetland is also the cradle of human civilization. Several millennia ago, our ancestors still lived a nomadic life near the marshes and grassland. They have created diverse and brilliant human civilizations in the historical process of depending on wetlands. The ancient Chinese civilization could find its root from the Yellow River. In the ethnic groups, many lakes are considered as the Saint Lakes and their important places for religious activities. For instance, the Tibetan Buddhists worship Nam Co Lake and Lake Manasarovar as their holy lakes. In China, all the four most famous ancient towers (Yellow Crane Tower, Yueyang Tower, Pavilion of Prince Teng, and Stork Tower) are located in and around the wetland areas, and many literary masterpieces on these topics have been passed down.

1.1.4 Wetland areas in China that have been listed as Ramsar sites

As per the criteria of Ramsar Convention on Wetlands for designating Ramsar sites, a total of 36 wetland areas in China have been inscribed as Ramsar sites, including Zhalong in Heilongjiang, Xianghai in Jilin,

Dongzhaigang in Hainan, Niaodao in Qinghai, Poyang Lake in Jiangxi, East Dongting Lake in Hunan, and Maipo in Hong Kong, among others.

1.2 Current Status of Wetland Conservation and Management in China

1.2.1 Introduction to wetland conservation and management efforts in China

1) Top priority has been placed by the Chinese government on wetland conservation efforts

Wetland conservation has become a focus of the government and the general public. The public awareness and initiative on wetland conservation has been further increased due to the exemplary roles of the officials, as well as the public education campaigns.

2) **Policy and legislation on wetland conservation has been further promoted.**

After the catastrophic flood of the Yangtze River in 1998, the State Council of China released a guideline of integrating the flood control (e.g. removing polders for flood diversion and returning cropland to lakes) with wetland restoration, which marked a new stage of the wetland conservation efforts in China. Over the recent years, the State Forestry Administration (SFA), in coordination with other agencies, have conducted research and pilot projects on some forward-looking policies such as payment for ecosystem benefits and ecological water replenishment, and some favorable achievements have been made. From a legal perspective, some laws that have been promulgated and implemented including the Law on the Administration of the Use of Sea Areas, the Environmental Impact Assessment (EIA) Law, the Water Law and the Law on Water Pollution Control, refer to wetland conservation. In particular, the EIA Law integrates the projects on wetland conservation into the scope of EIA approval. So far, SFA has drafted the National Regulation on Wetland Conservation, which will be finalized by incorporating the inputs from relevant agencies before it is submitted for approval of the Legal Affairs Office of the State Council. At the same time, legislation efforts on wetland conservation at the local level are also in good progress.

3) **Relevant institutions on wetland protection and management have been established and strengthened.**

In 2008, the State Council authorized SFA to be responsible for the organization, coordination, guiding and supervision of national wetland conservation and management, and the implementation of relevant international conventions. Earlier in August 2005, the central government approved the establishment of Wetland Management Center (WMC) of SFA (the Ramsar Convention Implementing Office of China). China National Commission on Implementing Ramsar Convention, consisting of SFA-the leading agency, and other 15 agencies, the first of its kind in China, was set up under the approval of the State Council in August 2007. It strengthened the institutional capacity of implementing international conventions and will contribute to promoting the wetland conservation efforts in China. Meanwhile, the wetland conservation institutions at provincial level have been enhanced by the forestry authorities. The capacity of the administrations for some wetlands of national and international importance, as well as the national wetland parks, has also been improved in the process of implementing the national wetland programs and

other projects. Thanks to the capacity building of WMC and its guidance to the local organizations, a sound system comprising the institutions on wetland protection and management at various levels is being developed, which lays a solid foundation for enhancing these efforts across the country.

4) National strategic planning on wetland conservation has been implemented.

(a) Special plan on wetland conservation has been developed. For example, the National Action Plan on Wetland Conservation in China was prepared in 2000, defining the actions of jointly enhancing wetland conservation. In the six key national forestry programmes, wetland conservation was listed as a major component and integrated into the national wildlife conservation and nature reserve development programme. In 2002, the Thematic Research on Wetland Conservation Strategy was completed, as one of the key components of Sustainable Forestry Strategic Research in China. In 2003, the National Wetland Conservation Programme (2002-2030) was approved by the State Council and in 2005, the National Wetland Conservation Programme Implementation Plan (2005-2010), jointly prepared by SFA and other 9 agencies, was ratified by the State Council, defining some key projects on wetland conservation, restoration, sustainable use demonstration and capacity building across China, and was officially launched in 2006. Over the next three years, more than 200 wetland-related projects have been approved by SFA and relevant sectors, with a total investment from the central government of RMB 800 million yuan, nearly 100 projects of which have been or are being implemented.

(b) In the special planning on such programmes as natural forest conservation, Grain for Green, building of coastal shelter forests, ecological conservation and development in Qinghai Sanjiangyuan Nature Reserve for which the forestry sector is responsible, wetland conservation and restoration is taken as a key part, playing a significant role in this regard.

(c) Wetland conservation is highlighted in the planning of relevant sectors. For example, the coastal wetland conservation is prioritized in the National Marine Function Zonation prepared by the State Oceanic Administration. While in the Integrated Planning on National Water Resources Conservation being prepared by the Ministry of Water Resources, the ecological water use needs of wetland are given initial assessment, and wetland conservation is included in the integrated river basin management. In addition, wetland conservation and restoration is adopted as a key measure for pollution control of some major rivers and lakes in China such as Huaihe, Haihe, Liaohe rivers, Taihu, Chaohu and Dianchi lakes.

(d) Long-term plans and programme implementation plans have been developed at local levels, defining the objectives, missions and measures on wetland conservation and restoration, with some local key projects having been prioritized for implementation. Thanks to the measures taken by the national, regional, local and site levels, a number of representative natural wetlands have been placed under effective protection, with the ecological functions of some degraded wetlands being steadily improved and the demonstration models for wetland sustainable use being established.

5) Wetland conservation network system has been strengthened.

Over the recent years, the development for wetland-related nature reserves at the national level has accelerated its process, with some natural wetlands having been secured. So far, more than 550 national wetland nature reserves have been built across the country. Meanwhile, some wetland parks and wetland protected areas have also been founded, which has further enhanced

the wetland conservation and management efforts. At present, a wetland conservation and management system, focusing on wetland nature reserves and supplemented by wetland parks and protected areas, is being made available in China, with 47% of natural wetlands, or over 17 million hectares, being effectively protected.

6) Publicity, education and training activities on wetland conservation have been actively undertaken.

To carry out extensive CEPA activities on wetland conservation, such opportunities as “Wetlands Day”, “Wetland Ambassador Action”, “Bird Watching Festival”, “Winter Camp”, “Summer Camp” etc shall be fully used and such media as TV, newspapers, periodicals and magazines shall be also utilized. Additionally, cooperation with schools and NGOs shall be conducted for training of wetland conservation staff.

To achieve better results in publicity campaigns, the SFA’s Office of Wetlands Conservation and Management has established a “Wetlands China” website (www.shidi.org) to enlarge publicity efforts by means of network advantages in wetland conservation and improvement of public awareness.

7) Implementing Ramsar Convention and international cooperation has been further enhanced.

Since its ratification of Ramsar Convention in 1992, China has been actively involved in various activities of the Convention, and has made outstanding achievements in this area. It has participated in the meetings of the Conference of Contracting Parties, promoted and implemented the relevant decisions and initiatives of the Convention, applied for the Ramsar sites, strengthened supervision and enhanced international cooperation on wetland conservation.

As a result, the great achievements of the Chinese government on wetland conservation have been widely acclaimed by the international community. These include the prize of Gift to the Earth, the prize of the Global Recognition for Wetland Conservation and Wise Use by Wetlands International, Wetland Science Prize, and the Award for Conservation Leadership, among others.

1.2.2. Major approaches on wetland conservation in China

At present, China conserves natural wetlands through three major approaches: nature reserve, list of important wetland areas, and wetland park. In addition, other approaches, including forest park, scenic spots and historical sites, water source protected area, water resources scenic area and coastal park, have also played their due roles in protecting wetlands.

1) Nature reserve

Nature reserves in China are divided into those of national, provincial, municipal and county levels. Many wetland areas have been designated as nature reserves, although they are not just targeted for wetland conservation. Inland wetland has been clearly defined as a category of nature reserves. In this sense, nature reserves have virtually played a significant role in wetland conservation in China.

2) List of important wetland areas

Important wetland areas consist of the wetland areas of international importance and national importance. Wetland areas of international importance, or Ramsar sites, in China are applied and designated by the Office of Implementing Ramsar Convention of SFA according to the specific regulations and requirement of the Convention, while those of national importance in China are defined by a number of agencies and institutions (e.g. State Forestry Administration-SFA, Ministry of Science and Technology, Ministry of Land and Resources, Ministry of Water Resources, Ministry of Agriculture, Ministry of Housing and Urban-Rural Development-MOHURD, Ministry of Transportation, Ministry of Environmental Protection, and Chinese Academy of Sciences) as per the Criteria of Wetland Areas of National Importance¹. **List of important wetland areas** is a specific way on wetland conservation requested by Ramsar Convention for the contracting parties to follow.

3) Wetland parks

At present, wetland parks in China comprise the national wetland parks designated by SFA, local wetland parks designated by the local governments, and the national urban wetland parks designated by MOHURD and included as urban green land system. Wetland park is an approach on wetland conservation and use adopted by the local governments to respond to the *Circular of the General Office of the State Council on Enhancing Wetland Conservation and Management* (GFB[2004]#50). Compared with nature reserves, wetland parks can be used for public awareness, and eco-tourism activities based on the wetland areas restored or artificially made.

4) Other approaches on wetland conservation

Besides the above-mentioned three major approaches, some other approaches, such as forest park, scenic spots and historical sites, water source protected area, water resources scenic area and coastal park, also prove to be useful for wetland conservation by including natural ecological conservation in the relevant regulations, in particular the regulations on water resources scenic spots and water sources protected areas.

1.2.3. Major achievements on wetland conservation in China

Firstly, establishing wetland nature reserves is the most powerful measure in China to conserve natural wetland and its biodiversity. From 1970s to the end of July 1992 when China ratified Ramsar Convention, more than 150 wetland nature reserves had been established across the country, covering a total land area of 970.5×10^4 ha.. Since 1992, particularly after the promulgation of Regulations on Nature Reserves (“Regulations”), China has stepped up its effort in establishing wetland nature reserves. According to China Wetland Network, as of the end of 1999, a total of 262 wetland nature reserves (with an area of 1551.9×10^4 ha.) had been built, including 39 at national level (with an area of 330.7×10^4 ha.), 85 at provincial level (with an area of 1030.5×10^4 ha.) and 116 at municipal or county levels (with an area of 109.8×10^4 ha.). As of the end of 2005, the number of wetland nature reserves across the country had been increased to 473, with an area of 4346×10^4 ha., including 1715×10^4 hm² of natural wetland areas. As a result, 45% of the natural wetland areas had been included in the nature reserve system. As of the end of 2007, the figure rose to 553, covering an area of 4780×10^4 hm², with about 50% of natural wetland placed under effective protection.

Secondly, the governments at various levels are actively undertaking the **designation and**

conservation of important wetland areas while promoting the development of wetland nature reserves and implementing the Action Plan on Wetland Conservation in China. Until the World Wetlands Day 2008, a total of 36 wetland areas in China have been inscribed as Ramsar sites, including Zhalong in Heilongjiang, Xianghai in Jilin, Dongzhaigang in Hainan, Bird Island in Qinghai, Poyang Lake in Jiangxi, East Dongting Lake in Hunan, Mai Po in Hong Kong, Yancheng in Jiangsu, Dalai Lake in Inner Mongolia, Shuangtai Estuary in Liaoning, Lashihai Lake in Yunnan, Ruergai in Sichuan, Beilun Estuary in Guangxi, to name just a few, with an area of 380×10^4 ha., representing 10.5% of the total natural wetland areas in the country. In the Action Plan on Wetland Conservation in China 2000, a total of 173 natural wetlands were listed as the Wetland Areas of National Importance according to the conditions of natural wetland types, endangered species conservation, natural wetland areas and population of water birds, spanning the eight regions, i.e. Northeast China, North China, Central China, Southwest China, South China, South West China, Inner Mongolia and Qinghai-Tibet regions. Wetland conservation efforts have also been carried out in line with the National Wetland Conservation Programme (2004-2030) and National Wetland Conservation Programme Implementation Plan (2004-2010).

Thirdly, it was defined in the *Circular of the General Office of the State Council on Enhancing Wetland Conservation and Management* (GFB[2004]#50) issued in June 2004 that ‘different forms can be undertaken to enhance wetland conservation and management for the wetland areas which are still unqualified to be designated as nature reserves, such as building wetland protected areas or all types of wetland parks according to the local conditions’. Since 2005, the SFA, the former Ministry of Construction (now MOHURD), and other relevant sectors have started to conduct construction and management of national wetland parks or national urban wetland parks across the country. As of November 2007, a total of 18 national wetland parks and 26 national urban wetland parks have been approved by SFA and MOHURD respectively. At the same time, the wetland parks and other forms of protected areas have also been designated by the local governments. The preliminary figures indicate that at least 140 wetland parks of different types have been or are being built, covering an area of 81×10^4 ha..

Lastly, although 50% of the natural wetland areas in China have been designated as nature reserves, the wetland nature reserves and natural wetlands in China are unevenly distributed. The figures in 2003 suggested that, in such areas as the middle and lower reaches of the Yangtze and the Huaihe Rivers, the lower reaches of the Yellow River, the Haihe river basin, the Songhuajiang-Liaohe Plains in Northeast China, and coastal areas in southeastern China, which are more densely populated and economically developed, and covering a land area of 26.1% of the whole country, although its natural wetland areas account for 47.6% of the natural wetland lands across China, the wetland nature reserves in these areas only take up 23.6% of the total size of wetland nature reserves in the country. This indicates that many natural wetlands have not been designated as nature reserves or are not suitable to be protected as nature reserves in the central and eastern parts due to dense population and frequent economic activities. Under such a context, the local governments in these areas, particularly the lower reaches of the Yangtze, the Yellow, and the Huaihe rivers, as well as the southeast coastal areas, have carried out the planning and development of wetland parks, playing an important role in conserving the wetland in these areas.

1.2.4 The role of publicity and education in wetland conservation and management in China

Wetland publicity and education, one of the major tasks of the government agencies related to wetland

conservation and management in China, is an integral component of implementing national wetland conservation and restoration programmes. As an emerging effort that has attracted increasing attention from the whole society, it still needs a relatively long period of time for the general public to fully understand and recognize the importance of conserving wetland. The timing will largely depend on the contents, methods and results of the wetland-related publicity and education.

The wetland conservation cannot be made successful without the wise policy-making and top priority of the government sectors and officials at various levels, as well as the active participation of the general public. Although environmental protection is being included as a cardinal national policy, there is still a poor public awareness on wetland conservation, with the frequent occurrence of such activities as damaging the environment and encroaching the wetland areas. As a result, we can only achieve a sustainable development in wetland conservation as long as we conduct ongoing publicity and education campaigns to enable the policy-makers and the general public to understand the importance of conserving wetlands and how to conserve wetlands, win their support and fully engage them in wetland conservation.

Chapter II Status Quo of Public Awareness on Wetland Conservation

To better understand the current status of public awareness on wetland conservation and provide support for wetland conservation action planning in China, we have designed questionnaires to conduct survey in this area. The methodology and the feedbacks of the survey are presented as follows:

2.1 Methodology of survey for public awareness on wetland conservation

2.1.1. Target groups

The targets of the survey mainly include the staff of the government agencies on wetland management, the general public around the wetland areas and the student groups.

2.1.2. Design of questionnaire

A uniformly designed questionnaire is employed in the survey, which mainly consists of the following components:

- 1) socio-economic features of the target, including gender, education level, age, residence, occupation and position, among others;
- 2) the degree of public understanding on 'wetland'
- 3) the channel of public understanding on wetland

Closed questions are mainly used in the questionnaire with the purpose of obtaining the data for statistical research and assessing the status of awareness of the different social groups on wetland conservation.

2.1.3. Survey procedure

Most of the data collection for the survey took place from October to December, 2008. The basic procedures are explained as follows:

1) Pre-survey

Following the design of the questionnaire, we conducted a pre-survey in the College of Nature Conservation, Beijing Forestry University, identifying the problems in the questionnaire and making necessary changes for the follow-up survey.

2) Field survey

- (a) Drafted and revised the scheme for field survey based on the findings of the pre-survey to provide technical guidance for the field survey;
- (b) Identified the provinces for key investigation according to the position and values of the provinces in wetland conservation across China;
- (c) Communicated with the heads of the forestry departments/bureaus in charge of wetland management of the provinces to be surveyed, defining the rationale, methodology and matters of great concern for the survey, and appointed a specific person to be responsible for the project;
- (d) Sending the questionnaire and scheme of field survey to the specific person in charge of the project in the forestry department/bureau under the province to be surveyed, with the staff from the project team being involved in the field survey of some areas;
- (e) Collected and categorized the questionnaire. A total of 1,237 effective questionnaires were obtained, with the data analysis being conducted with SPSS.

2.2 Findings and analysis of the survey for public awareness on wetland conservation

2.2.1. Features of the target groups

1) Gender

In this survey, the male accounted for 55.6% while the female for 44.4% (Chart 2-1) .

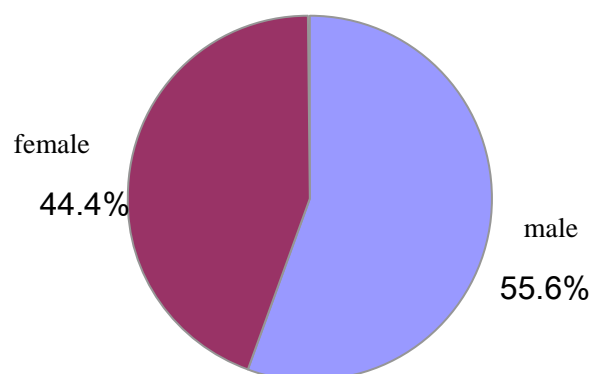


Chart 2-1 Gender of the target groups

2) Geographical distribution

Eight provinces/municipalities in China were involved in the survey, i.e. Beijing, Anhui, Guizhou, Henan, Heilongjiang, Jiangxi, Qinghai and Zhejiang. Specifically in Beijing, the target groups were all the undergraduate students.

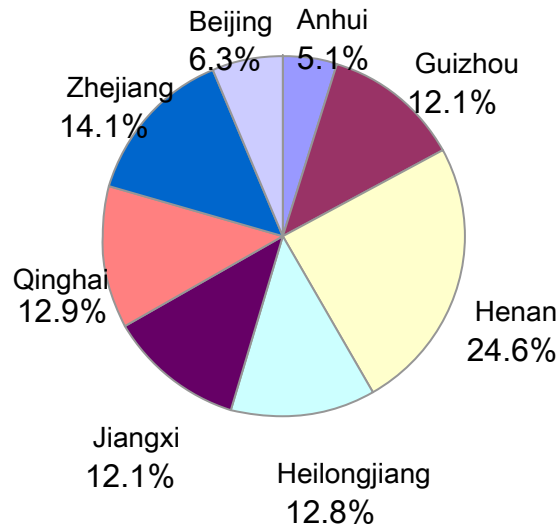


Chart 2-2 Areas surveyed

3) Occupations

There were 348 questionnaires collected from the government agencies, 342 from the wetland surrounding areas, 78 from the schools and 469 from other areas (Chart 2-3).

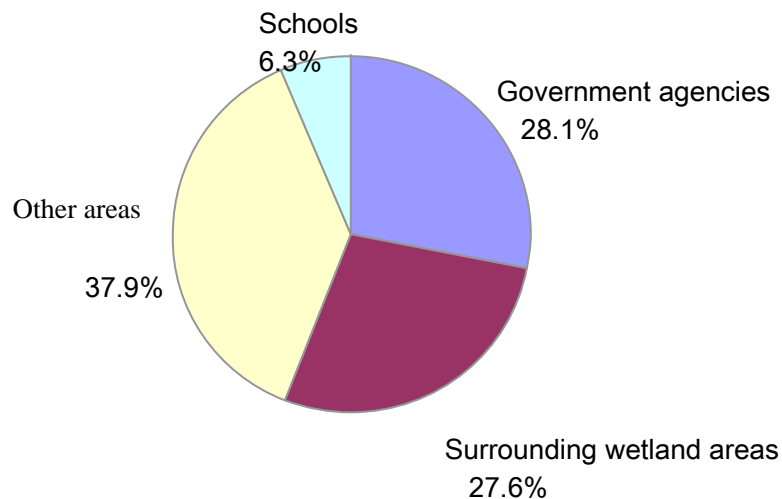


Chart 2-3 Distribution of the sampling sites for the survey

In the survey, the public servants, employees of the enterprises/institutions, students, and farmers/fishermen were the main target groups, representing 17.9%, 27.1%, 31.7% and 15.4% of the total respondents respectively (Chart 2-4).

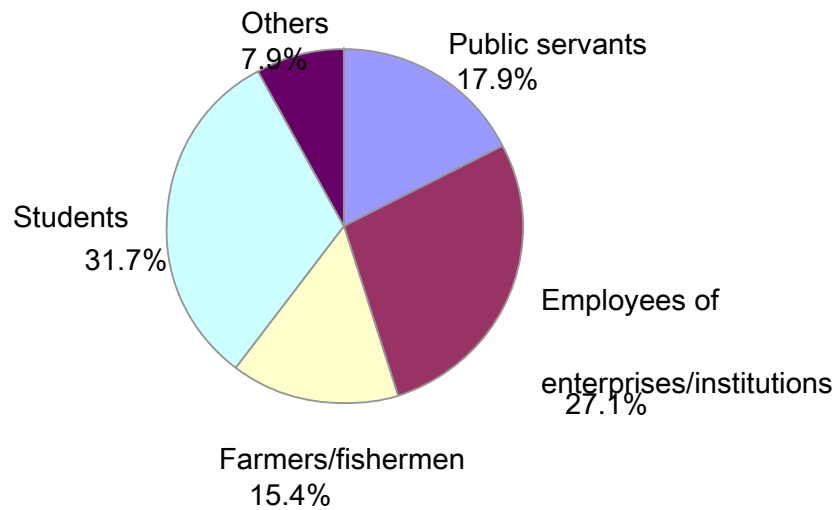


Chart 2-4 Occupations of the target groups

4) Age

The survey focused on the target groups aged between 18-50, among whom the groups aged between 18-30 accounted for 41.0%, while 37.0% were aged between 30 and 50. In addition, 22.0% of the target groups were aged below 18 or above 50.

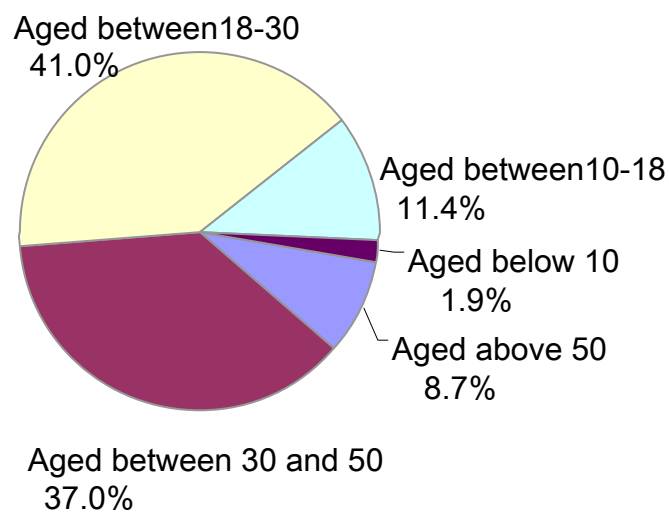


Chart 2-5 Ages structure of the target groups

5) Education level

In the survey, 45.9% of the target groups were college/university graduates, whereas 25.9% had graduated from senior middle schools/secondary technical schools, and 28.2% from junior middle schools or below (Chart 2-6).

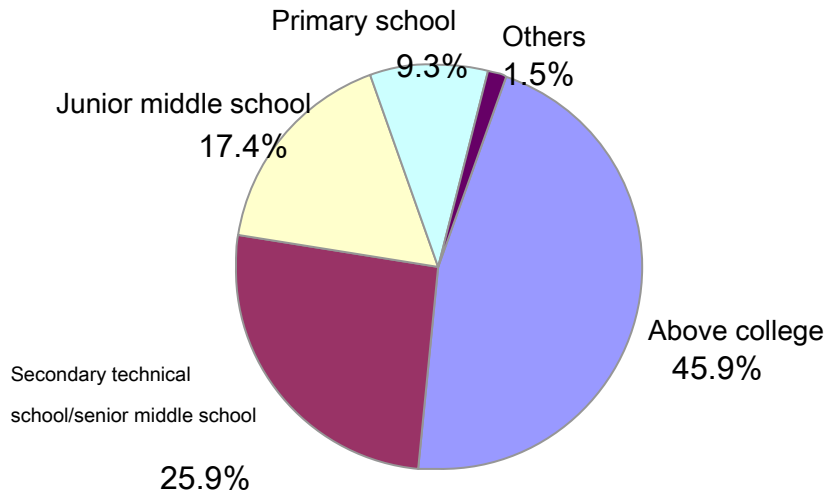


Chart 2-6 Educational level of the target groups

2.2.2. Understanding of the public on wetland

In general, 88.5% of the respondents are found to understand wetland. Most of the people have heard of the word of 'wetland'. However, in terms of geographical location, the people in Henan and Anhui provinces knew much less about wetland than other areas, suggesting that we should enhance public awareness campaign in these two provinces (Chart 2-7).

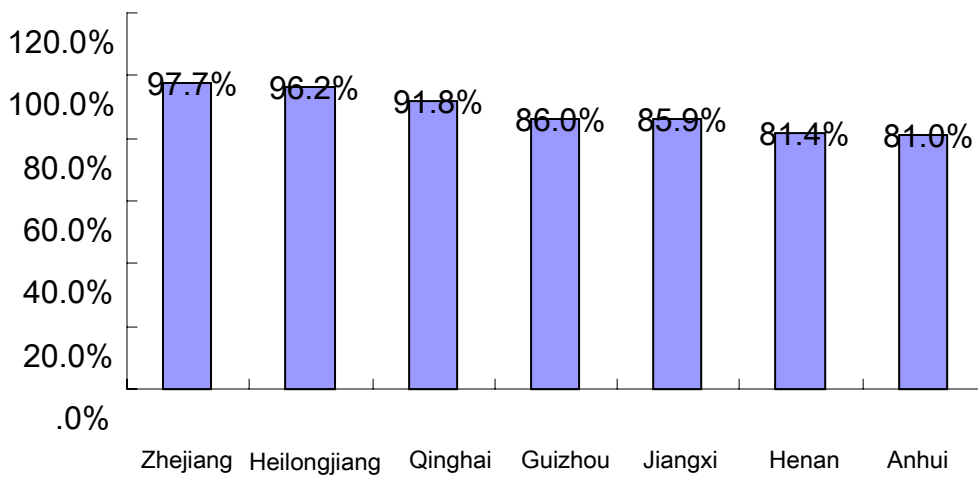


Chart 2-7 Understanding of the public in different areas about wetland

In comparison, the young persons understand much less about wetland than adults (Chart 2-8). As a result, it is of critical importance to strengthen awareness campaign on wetland conservation for the juveniles.

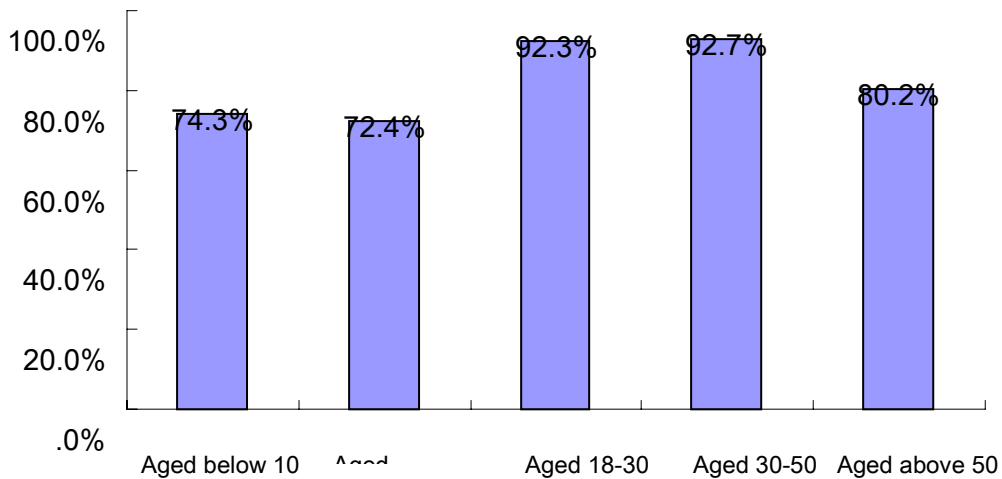


Chart 2-8 Understanding of groups of different ages about wetland

2.2.3. Sources of the public understanding on wetland

The survey result indicates that the general public learns about wetland mainly through TV, followed by newspaper, Internet, and the public campaigns on wetland (Chart 2-9). As to the students, particularly the undergraduate students, they mainly get to know the information about wetland in the schools. It can be seen from Chart 2-10 that the primary and middle schools conduct fewer educational awareness campaigns on wetland compared with the universities. For the farmers/fishermen, the public awareness campaigns prove to be useful for raising their understanding about wetland. Therefore, publicity campaigns on wetland conservation should be mainly leveraged to target this specific group.

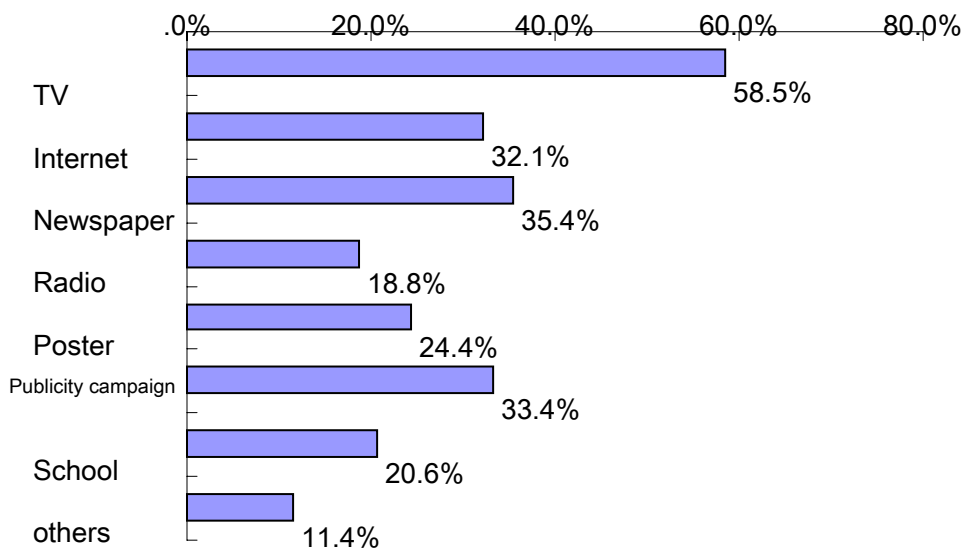


Chart 2-9 Sources of the public understanding on wetland

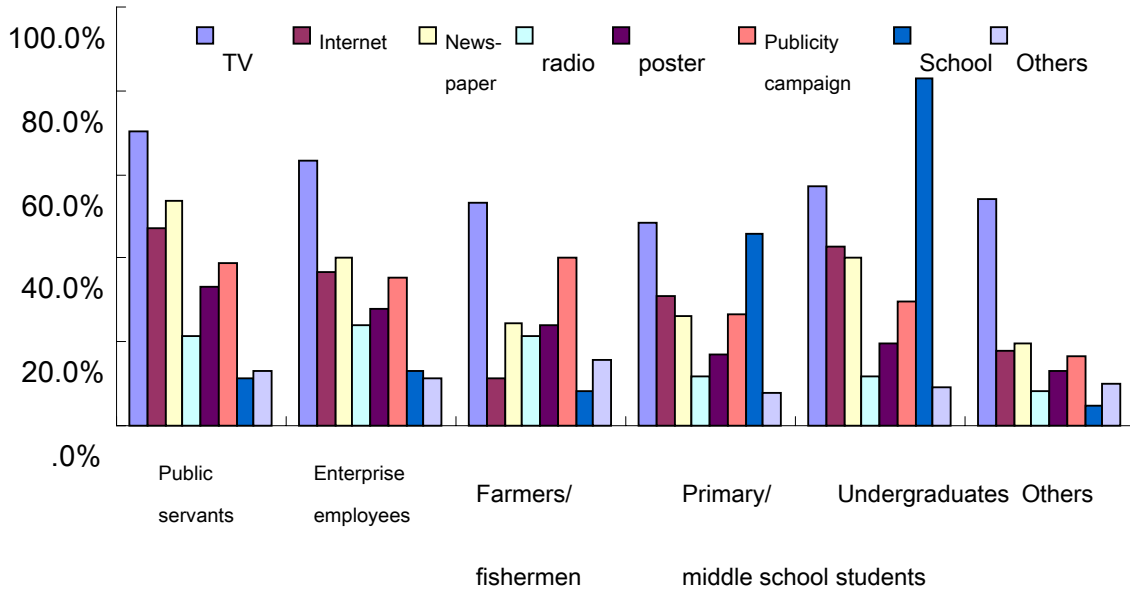


Chart 2-10 Sources of different social groups to learn information about wetland

2.2.4. Understanding degree of the general public on wetland

Under the Ramsar Convention on Wetlands, wetlands are defined as “areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters. They may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six meters at low tide lying within the wetlands”.

As to ‘which areas are wetlands’, only 13.3% of the respondents give a completely right answer (Chart 2-11), suggesting a rather limited understanding of the general public on wetland. Most of the respondents cited lakes, marshes and rivers as wetlands, but more than half of them do not regard beaches, reservoirs, paddy fields and fish ponds as wetlands.

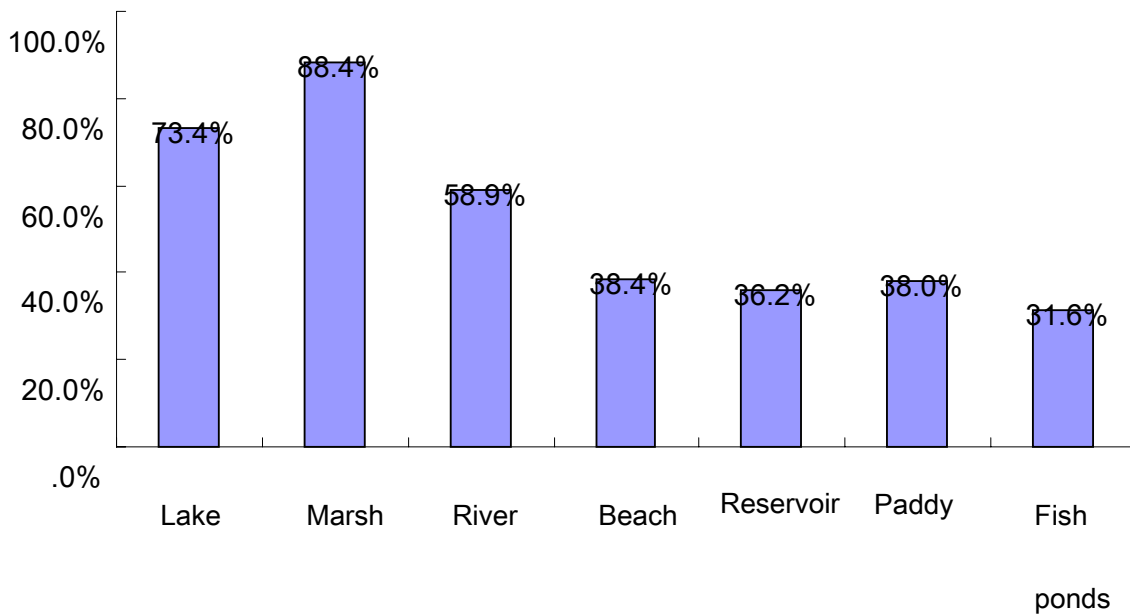


Chart 2-11 Understanding degree of the general public on various wetland types

Most of the people cited wetlands can provide such functions as water conservation, climate regulation, protecting wildlife, removing pollution, etc., but know little about other functions as flood control, provisioning of aquatic products, and soil retention (Chart 2-12), and much less about the cultural functions such as recreation, and inheriting folk culture.

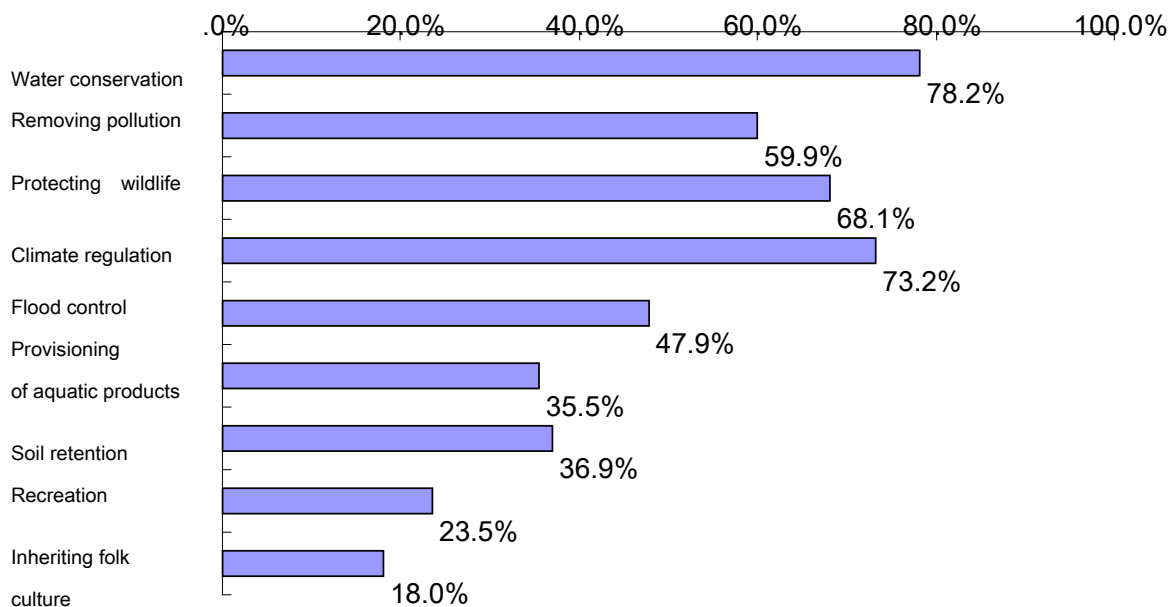


Chart 2-12 Public understanding on various wetland functions

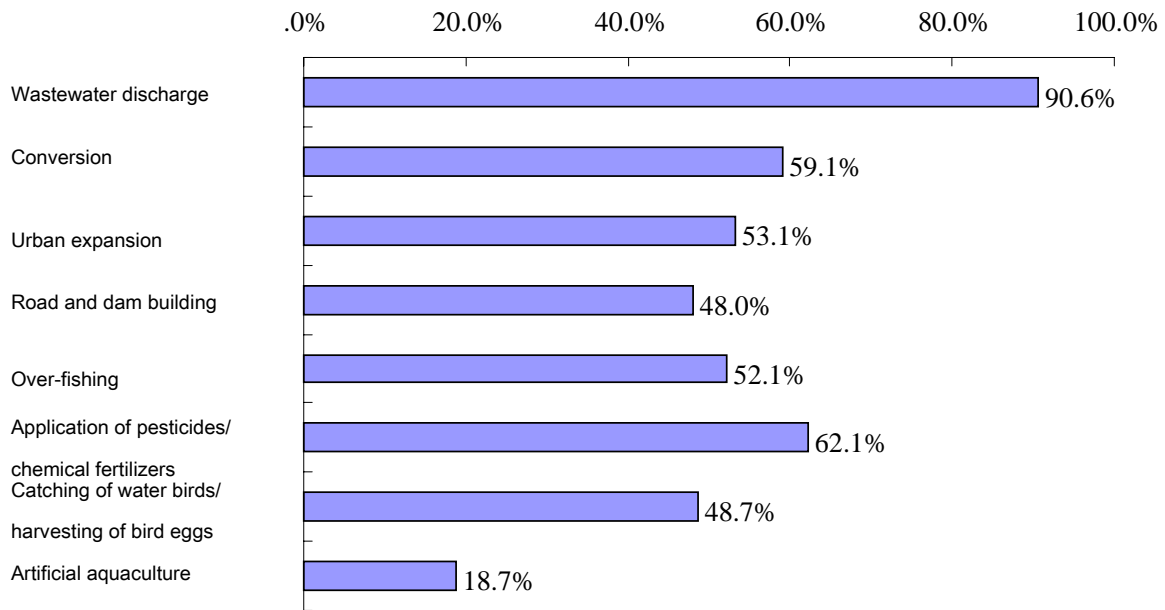


Chart 2-13 The general public's views on the threats to the wetland areas

In terms of the threats to wetland, wastewater discharge is generally recognized as the major threat, followed by the application of pesticides and chemical fertilizers, conversion, urban expansion, over-fishing, catching of water birds and harvesting of bird eggs, road and dam building, and artificial aquaculture (Chart 2-13). Except for wastewater discharge, nearly half of the general public knows little about other threats of the wetland, while most of the people do not believe that artificial aquaculture will cause threats to the wetland areas.

2.2.5. Publicity sources recognized by the general public

Most of the respondents cited that TV, radio and Internet are the most effective ways to publicize information on wetland conservation. More than two thirds of the respondents mainly learn the information on wetland conservation through TV and radio, while 38.0% of the respondents mainly through Internet (Chart 2-14).

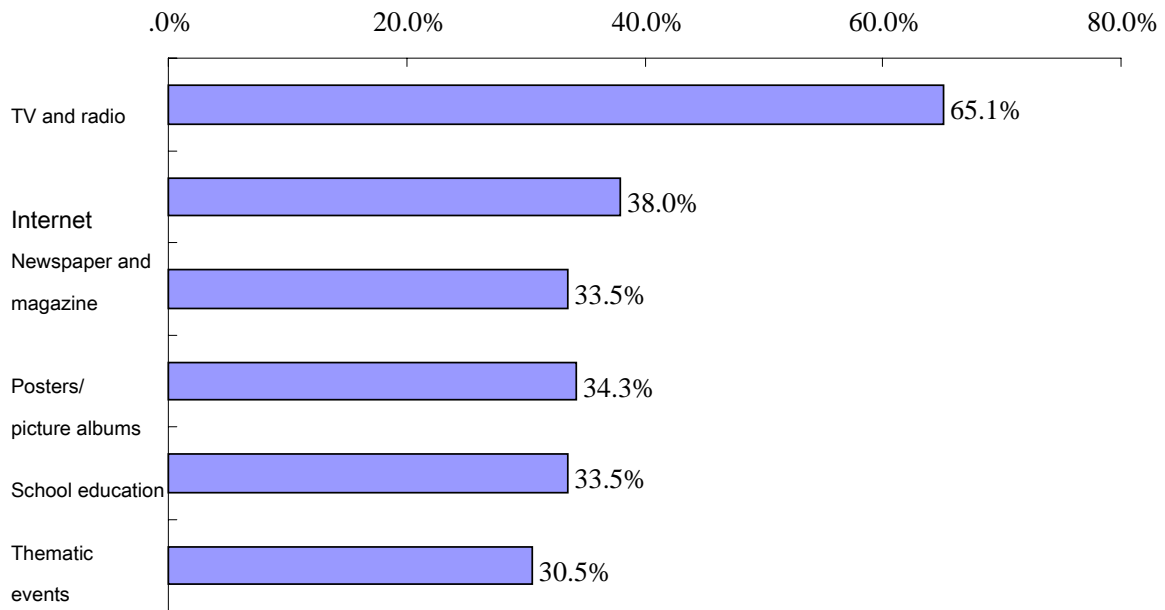


Chart 2-14 Publicity sources recognized by the general public

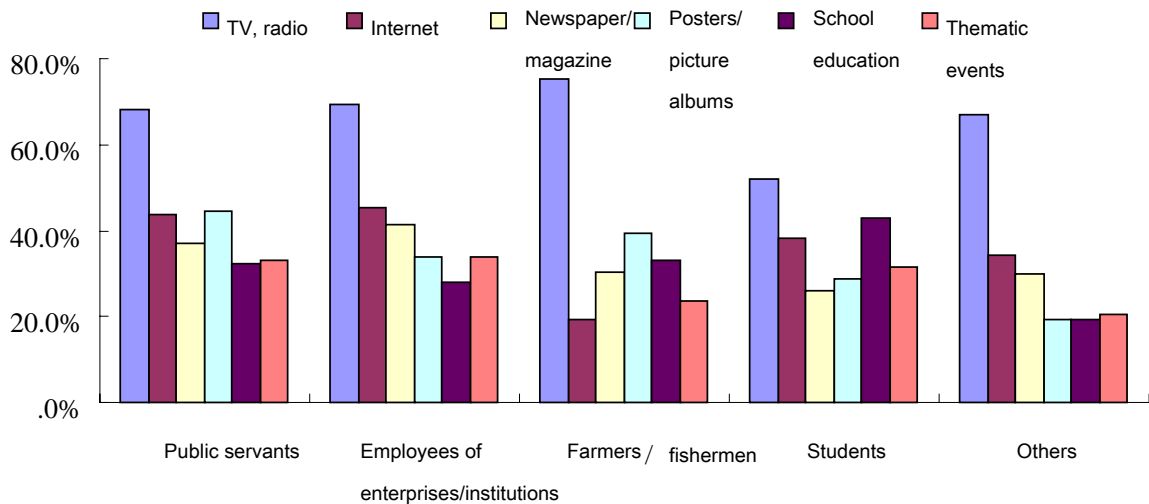


Chart 2-15 Publicity sources recognized by different groups

Specifically, as to the farmers/fishermen, posters/picture albums can benefit them more than the Internet for them to understand wetland; the undergraduates also expect to learn wetland mainly through posters/picture albums; while for the primary and middle school students, the school education is another valuable source of publicity in addition to TV and radio (Chart 2-15).

Chapter III Current Status of CEPA on Wetland Conservation in China

Despite the fact that the term of ‘wetland’ was introduced into China less than two decades ago, the publicity of the wetland-related government agencies on conserving wetland and its biodiversity has been carried out for a longer period of time. The competent authorities, scientific and education institutions, and civil societies have implemented a good number of publicity campaigns regarding wetlands and its biodiversity, such as environmental protection, pollution control, sustainable use of water resources, ecological and wildlife conservation.

Since China acceded to the Ramsar Convention on Wetlands in 1992, it has been enhancing publicity and education efforts on wetland conservation. In particular, the government authorities on wetland management at various levels, the scientific and education institutions, media and NGOs have conducted extensive publicity campaigns on the concept, functions and benefits of wetland through different sources. As a result, the term of ‘wetland’ has been gradually understood by the general public, and the public awareness on the importance of conserving wetland has been raised, thus significantly promoting the sound development of wetland conservation efforts in the country.

3.1 Relevant organizations and institutions implementing publicity and education on wetland conservation in China

The organizations and institutions to conduct publicity and education on wetland conservation in China mainly include the government agencies at various levels, the schools and NGOs, which play a leading role in publicity and education efforts in wetland conservation.

3.1.1 Government sectors

A large number of government sectors are engaged in wetland management in China. According to the existing administrative and legal systems, these sectors under the State Council such as forestry, agriculture, water resources, land, and marine are directly accountable for the conservation and management of relevant elements of wetland resources, while other sectors, e.g. the National Development and Reform Commission, NPC’s Environment and Resources Protection Committee, the Ministry of Finance, and the Ministry of Environmental Protection, are also involved in wetland management. . In addition, the nature reserves, work stations, general offices, as well as other relevant organizations and institutions have implemented publicity and education campaigns on wetland conservation from different perspectives and at different degrees.

1) Forestry sector

It is made clear by the State Council that the State Forestry Administration (SFA) is responsible for

‘organizing, coordinating, guiding and supervising the national wetland conservation and implementing the relevant international conventions’. To ensure the effective implementation of wetland conservation efforts and the Ramsar Convention, SFA is specifically required to: convene to draft the laws and regulations on wetland conservation, study the proposed technical criteria and procedures on wetland conservation, draft and organize the implementation of national or regional plans on wetland conservation; organize the national wetland resources inventory and dynamic monitoring; organize the implementation of wetland conservation and management, such as building wetland protected areas and wetland parks; conducting international collaboration on wetland conservation. Meanwhile, SFA is also placing top priority on the important role of publicity and education in wetland conservation. It has not only trained a group of high-caliber professionals on wetland conservation and management within SFA through various forms, including training workshops, study tours and seminars, but also raised the public awareness on wetland conservation by means of various sources, e.g. TV, radio, newspaper, magazine, and Internet, as well as other thematic campaigns, including World Wetlands Day (WWD), photography exhibition, and Wetland Ambassador Action.

2) Environmental protection sector

The Ministry of Environmental Protection (MEP) is responsible for: coordinating and supervising the key environmental issues; preventing and controlling environmental pollution and damage; supervising the environmental pollution control; implementing the national target on emissions reduction; guiding, coordinating and supervising the ecological conservation efforts. As is known to all, MEP places top priority on the publicity of environmental protection, evidenced by a slogan of ‘environmental protection starts from publicity’. The news reports on environmental protection cover a wide range of areas, having aroused great interest of the general public and produced extensive social impacts, and, thus, playing a significant role in promoting the environmental protection efforts in China. At present, MEP proposes another slogan of ‘environmental protection efforts start from publicity and grow with publicity’, suggesting the key role of publicity in environmental protection and the top priority of MEP on the publicity. Overall, MEP conducts publicity on environmental protection earlier and better compared with other sectors.

Publicity topics of MEP on wetland conservation ranges from water pollution control, environmental pollution control and river basin pollution control at the early stage to environmental and sustainable development education focused on biodiversity conservation and water resources conservation, and wetland ecological conservation projects with environmental impact assessment in the recent years. Various publicity forms are applied, including press release, World Environment Day, Earth Prize, People of the Year of Green China, China Environment Prize, photography exhibition, painting exhibition, primary and middle school education, environmental protection volunteers, and knowledge contest, among others.

3) Agriculture sector

The agriculture sector is in charge of agricultural and rural development. As agriculture is closely associated with wetland conservation, the significant roles of wise agricultural development in wetland conservation can be reflected in such issues as the **tradeoff between** wetland and agricultural land, the **non-point source pollution of agriculture**, the relation between agricultural development and wetland conservation. The Ministry of Agriculture can guide and encourage the farmers, herders and fishermen

in sustainably using the wetland resources to maintain the ecological health by means of publicity in terms of green agriculture, fishing ban, appropriate carrying capacity, restoring farmland to wetland, and other activities that benefit the wetland and its biodiversity conservation.

4) Water resources sector

Water is the essential element of wetland. The water resources sector is responsible for: maintaining the wise use of water resources, water resources protection and water saving; proposing strategic plans and policies on water resources, and convening to prepare the integrated river basin plans and flood control plans related to key rivers and lakes; coordinating and safeguarding the water for living, production and environmental uses, guiding the management and protection of water conservancy facilities and water bodies, the control and development of large rivers, lakes, estuaries and coastal mudflats, as well as the construction and operation management of water conservancy projects, and prevention and control of water and soil erosion, and other water resources related work. Therefore, the publicity of Ministry of Water Resources, ranging from water and soil conservation, water saving, to water resources protection and river basin management, is also related to the elements of wetland conservation and, has, in turn, promoted the wetland conservation efforts in the country.

5) Marine sector

The marine sector is responsible for protecting the marine environment, coordinating the marine monitoring, research, dumping of waste, use, observation and forecasting of marine environment, early warning of marine-related disasters, ecological conservation of islands, and the legal use of uninhabited islands. The publicity of the State Oceanic Administration, as the major sector in charge of coastal wetlands management, plays a critical role in effectively conserving coastal wetlands, one of the integral parts of wetland conservation publicity.

3.1.2. Research and education institutions

A large number of domestic research and education institutions play an active role in publicizing wetland conservation. The concept of wetland conservation has been included in the teaching components, winning the recognition of education authorities and the schools at various levels. For instance, the basic knowledge on wetland has been incorporated into the text books of many primary and middle schools in Anhui and Hubei provinces; Selective course on wetland has been made available to the undergraduates in Beijing Forestry University; The Chinese Academy of Sciences and Anhui University have established the Key Laboratory on Wetland Ecology and Environment and the Research Institute on Biodiversity and Wetland Ecology respectively. As the publicity campaigns led by the research and education institutions are often characterized by large audience and regular implementation, these activities are the most sustainable way for publicity. Furthermore, these activities are of great potential because they mainly target the student groups, who are the mainstay for carrying out wetland conservation efforts in the future.

3.1.3 NGOs

Environmental protection NGOs are also an integral part of wetland-related publicity. According to the Status on the Environmental Protection NGOs in China 2008 issued by All China Environment Federation (ACEF) at its Annual Conference, as of October 2008, there were 3,539 environmental

protection NGOs across the country, including 1,309 government-funded NGOs, 1,382 NGOs affiliated to schools, 508 grassroots NGOs, 90 international NGOs in China, as well as 250 NGOs from Hong Kong, Macao and Taiwan, involving a total staff of about 300,000. These NGOs vary in their scales and structures. It can be seen that the government-funded NGOs and the NGOs affiliated to the schools account for more than 90%, with wetland-related publicity as one of the major components of their activities.

1) WWF

World Wide Fund for Nature (WWF) began its work in China since 1980 when Dr. George Schaller was invited to conduct survey on the behavior of the Giant Panda at Sichuan Wolong Nature Reserve. The principal aim of WWF in China is to offer solutions that will simultaneously reduce China's global impact and improve livelihoods here. Since then, WWF has been committed to raising the public awareness of the Chinese people on environmental protection to promote more public actions in this arena. Particularly after 1998 when the catastrophic flood occurred, wetland and freshwater ecosystem conservation has become one of the major focuses of WWF in China. It has worked closely with SFA and other relevant sectors in a wide range of topics, including wetland restoration, alternative livelihood in wetland areas, wetland nature reserve network development, rehabilitating the seasonal ecological and hydrological links of the rivers and lakes, nominating Ramsar sites, wetland publicity and education, and policy advocating in integrated river basin management.

In 1998, WWF started its tour of broadcasting films on environmental protection across China. One year later, it worked with Green Home, a domestic environmental protection NGO, to run Green Reporter Salon, in which environmental expert and media reporter are invited to jointly address the publicity on nature conservation each week. Since 1996, WWF has worked with the Ministry of Education under the financial support of BP to develop a nation-wide network on sustainability education. So far, sustainability education centers have been built in 20 key normal universities, Tibet University and People's Education Press in China. A total of 66 primary and middle schools across the country have been set up as the pilot schools on sustainability education. In addition, three field education bases on environmental protection have been built in the nature reserves in Yunnan, Chongqing and Shanghai.

2) Wetlands International

Wetlands International (WI) is a global NGO focusing on wetland conservation and management, which was jointly established by International Waterfowl and Wetlands Research Bureau (IWRB), Asian Wetland Bureau (AWB) and Wetlands America (WA) in 1995. WI (China) was formally launched in Beijing on September 26, 1996. Its major goal is to promote the wetland conservation and wise use in China and Northeast Asia by introducing technologies and funds, providing personnel training and technical support, and conducting information exchange. It enhances the wise use of wetlands through teaching technologies and raising public awareness on wetland values and functions, while improving wetland conservation through training and well managing wetlands by means of capacity building. At the regional scale, it develops some training products related to wetland ecosystem functions and biodiversity on the basis of training needs assessment. WI assists the contracting parties to Ramsar Convention in establishing training service bases, and increases the awareness of the policy-makers on the wetland values

through various communication and education tools. For example, it uses its website to meet the information needs of different stakeholders such as the expert's panel, expert network, the implementing agencies of relevant conventions and agreements, the relevant sectors and partners, while updating its progress to its members, staff and partners through newsletter, brochure, and website.

3.1.4. On-site publicity

On-site publicity on wetland conservation is generally conducted at the wetland nature reserves, wetland parks, wetland museums, and other organizations with publicity facilities. As a saying goes 'seeing is believing', on-site publicity can produce unexpected results when the audience directly experience the ecological functions (in particular the aesthetical and other cultural functions) of wetland at the site. To date, more than 550 wetland-related nature reserves and 80 wetland parks have been built in China, laying a solid foundation for the on-site publicity on wetland conservation. China Wetland Museum, approved by SFA, is the only one of its kind at the national level in China. Covering an area of 15,000 sqm, it is located in the Zijiangang Service Area, southeast of the main entrance of Zhejiang Hangzhou Xixi National Wetland Park, with a planned investment of RMB 300 million yuan.

3.1.5. Media and enterprises

Media and enterprises also play a vital role in wetland-related publicity. Such media as TV, radio, newspaper and Internet provide good sources in this regard. Some of them, together with enterprises, are also actively involved in the advocating, launching and organizing the publicity campaigns on wetland conservation, which transform themselves from the targets to the implementers of wetland-related publicity.

3.2 Targets, forms and topics of wetland-related publicity and education activities

3.2.1. Targets

A wide range of targets are covered for publicity and education on wetland conservation, which mainly include the following groups:

1) Wetland practitioners

Wetland practitioners are those who are dedicated to wetland conservation efforts. The publicity and education activities for this specific group are primarily implemented by the wetland conservation and management administrations themselves, covering professional training programs for improve their professional skills and working methods on wetland management.

2) Policy-makers

Due to the existing administrative system in China, the government's actions play a significant role in wetland conservation and management. As a result, the policy-makers are defined by SFA , GEF/UNDP Project of Wetland Biodiversity Conservation and Sustainable Use in China, and other projects, as one of the key targets for wetland-related publicity and education.

3) Relevant stakeholders surrounding the wetland areas

This group is most closely associated with wetland conservation, with their living and production activities directly affecting or being affected by the wetland conservation efforts. Therefore, the relevant stakeholders around the wetland areas must be taken into account in selecting the targets for publicity and education activities.

4) Students

Students are the future of a nation. The publicity and education activities for the students can produce over-spill effect to their families. That's why many wetland-related publicity campaigns target the students, particularly the activities implemented by the educational institutions.

5) General public

Raising the general public awareness on wetland conservation can promote the implementation of wetland conservation strategies and actions. The publicity and education activities targeted to the general public include those carried out by the media such as TV, radio, newspaper and Internet, in addition to those undertaken by the wetland-related museums, nature reserves and parks.

3.2.2. Forms

1) Publicity campaigns

Publicity campaigns are targeted to the general public by improving their understanding on wetland conservation through various means such as posters, leaflets, and news reports on the occasions of holidays or ceremonies. As this form can often involve a large audience, produce extensive impacts and disseminate the knowledge on wetland conservation faster, it is generally employed to conduct conservation-related publicity. However, as it is mainly targeted to the general public, it can only provide general information in this regard.

(a) World Wetlands Day (WWD)

In late October 1996, World Wetlands Day (WWD) was officially designated for February 2 of each year by the Standing Committee of Ramsar Convention. Each year since 1997, the Ramsar Convention Bureau will define a major theme for the WWD (Table 3-1), and many countries worldwide will undertake actions to raise public awareness. The Chinese government, organizations and citizens will also take advantage of this opportunity to undertake big and small activities for raising the public's understanding of wetland values and benefits in general, and the Ramsar Convention in particular.

(b) Wetland Ambassadors Action

Launched by **WWF** in 2001, Wetland Ambassadors Action (WAA) is a public event targeting to encourage college students to look into the environmental issues, in particular the wetland conservation issues. Many organizations, including the Secretariat of Ramsar Convention, the Office of Implementing Ramsar Convention of SFA, Mekong River Commission, Fishery Resource Management Committee of the Yangtze River, China Youth Daily, People.com, have sponsored the

event, serving as a bridge for the youth to better understand wetlands, their functions and threats.

WAA mainly targets the environmental protection groups of the undergraduates, with a complete and dynamic action model. Each year, the sponsor proposes an innovative theme for the event according to the current status and issues on wetland conservation. After that, each group develops its own bidding proposal and submits it on-line for selection. The sponsor will provide funding for the winning teams to implement their proposals. After receiving the training, the teams will go to the wetland areas during the holidays for field survey and publicity according to their plans. Each team is requested to submit a summary report and an awarding ceremony will be held to award the outstanding teams. After returning to their colleges, the teams are expected to further conduct publicity campaigns, disseminating the information on the wetland areas to the teachers, schoolmates and the local urban citizens. Over the past eight years, more than 300 college groups on environmental protection have been engaged in this event, covering a number of provinces, municipalities and autonomous regions in Amur, the Yangtze, the Yellow and the Lantsang river basins, and directly disseminating the knowledge on wetland conservation, restoration and sustainable use to millions of local people.

(c) Bird-watching festival

Bird-watching festival provides a platform for the bird lovers all over the world, and also serves as a good opportunity to raise the public awareness on the importance of conserving wetland and its biodiversity and enhance the collaboration with international conservation organizations. For example, five sessions of international bird-watching festival have been held in Dongting Lakes, which has become a famous brand for the ecological conservation in Yueyang, where East Dongting Lake is situated, with the wetland conservation efforts set as the top priority of the local government. Three sessions of China Bird-Watching Festival, sponsored by Charles Darwin Foundation and supported by Birdlife International and Hong Kong Bird Watching Society, have been held in Estuary Wetland of Minjiang River, and Xiamen. In addition, such activities have also been organized in Caohai wetland in Guizhou Province, Daqing wetland in Heilongjiang Province and other wetland areas, achieving satisfactory results on wetland-related publicity.

(d) Wetland festival

The Wetland Festival is used to promote the local culture, undertake education activities on environmental protection, expand the local wetland tourism and help facilitate the local economic development through various cultural, recreational and commemorative activities based on the wetland areas. So far, many wetland areas in China, including Daqing wetland(Heilongjiang), Xixi(Zhejiang), Qinhu Lake(Jiangsu), the Yellow River Estuary(Shandong), Hequan Lake (Ningxia) , have hosted such events, involving many people and winning the recognition of the local governments and the general public.

2) Education activities

The education activities on wetland conservation cover the further education for the practitioners, as well as those for the schools at various levels. While the further education for the practitioners include professional training, national and international workshops, study tours and fellowships, the education

for the schools at different levels consists of the use of textbooks in primary and middle schools, the establishment of wetland education schools, the organization of summer camps in the wetland areas, and the selective courses on wetland conservation and the major on wetland conservation research at the institutions of higher learning, among others.

(a) Training at Mai Po Marshes in Hong Kong

SFA and WWF have established a long-term partnership with Mai Po Marshes in Hong Kong. So far, many groups of the staff from forestry authorities at various levels and the practitioners on wetland conservation have visited Mai Po wetland for training workshops or study tours to learn the best practices and experiences on wetland management and address the approaches on wetland conservation in China. Most of them benefited a lot in this process, which has brought about new ideas and significantly promoted the wetland conservation efforts in China.

(b) Wetland schools

Wetland schools mainly conduct outdoors ecological and environmental education activities for the primary and middle school students, teachers and the general public. They also serve as the platforms for the undergraduates to conduct scientific research and extracurricular scientific activities for the middle school students. Many wetland schools have emerged across China with the public awareness on wetland conservation being increased. For example, on September 10, 2003, Beijing Wetland School, the first school dedicated to environmental education in the capital city, was set up in No. 1 Middle School of Yangzhen in Shunyi District. In March 2005, Wetland Experimental School named after WI China was established in Dafeng, the hometown of David's Deer. On August 1, 2005, another **Wetland Experimental School** was founded in Zhalong Middle School. On September 8 the same year, Jinghu Lake National City Wetland School was set up in Shaoxing New Area, Zhejiang. Other examples include Shuicheyuan (Water Wheel Park) Wetland School set up in Lanzhou in July 2006; and the Wetland Education Base founded in the High School Affiliated to South China Normal University, the first of its kind in Guangdong, on March 3, 2007.

3) Communication and sharing

The knowledge and information on wetland conservation can be communicated and shared through various means, including Internet, feature films, books, periodicals, newsletters and workshops. The website (www.wetland.gov.cn), sponsored by the Office of Wetland Conservation and Management of SFA/the Office of Implementing Ramsar Convention of the People's Republic of China, serves as the official website for national wetland conservation in China, which offers up-to-date data and information on the wetland-related laws, regulations, the major outputs, as well as the major events regarding wetland conservation and management both at home and abroad. Since the website was put into operation, preferable feedbacks have been obtained from the society, and high click-through rate and ranking achieved in comparison with other governmental websites.

In addition, many wetland-related NGOs, **international donation projects** and nature reserves have opened their websites on wetland publicity, while publishing wetland-related books, newsletters and periodicals to make the information on wetland conservation easily accessible to the general public.

3.2.3 . Topics

With a full name of “Convention on Wetlands of International Importance especially as Waterfowl Habitat”, Ramsar Convention originally focused its wetland-related publicity on the water birds protection, and has gradually evolved to cover the concept of wetland ecosystem-based conservation over the recent years. Although the topics on wetland conservation publicity and education in China cover the definition, functions, process, values and conservation measures, it is focusing more on the definition and functions of wetlands, but needs to shift its focus onto the wetland values and conservation measures in the future.

3.3 Outcomes and existing problems in wetland-related publicity and education activities

3.3.1. Outcomes achieved

Through nearly ten years of publicity and education activities related to wetland conservation, great achievements have been made in this arena, with the public awareness on wetland and its functions being significantly improved and an increasing number of people focusing on and providing support to wetland conservation efforts in China.

1) A large number of wetland-related publicity and education materials and methods produced, a team trained and many bases on wetland conservation publicity and education established

During the process of publicity and education activities, a considerable number of posters (brochures), books, audio and video products, and text books have been produced. At the same time, a team of competent staff from the wetland-related management authorities and the general public have been trained. In addition, many wetland publicity and education bases have been built in the wetland nature reserves, wetland parks and schools, providing the sites to undertake ongoing publicity and education activities on wetland conservation.

2) The public awareness on wetland conservation significantly increased

While few people understood the concept and functions of wetland more than ten years ago, the survey on the public awareness of wetland in China suggests that most of the Chinese people have begun to understand the concept of wetland, with the public awareness on wetland conservation being substantially increased.

3 Top priority placed on wetland conservation) by government policy-making agencies at various levels

In the past, as the government policy-making sectors at different levels only focused on economic development, paying little attention to wetland conservation, which caused a series of problems such as conversion, water pollution and over-exploitation of wetland areas, and, in turn, led to the reduced wetland areas and severely degraded wetland areas in China. Through the implementation of

wetland-related publicity and education activities, the awareness of the government agencies at various levels has been improved. The government agencies are increasingly placing top priority on wetland conservation, and have been implementing many measures such as restoring farmland to lakes, restoring grazing land to grassland, and restoring farmland to wetland. In addition, wetland conservation efforts have been included in the National 11th Five-Year Plan, during which special budget is earmarked for wetland conservation programmes to conserve and restore wetland ecosystems in the country.

4) Many professionals on wetland conservation trained

The ongoing implementation of various types of wetland-related publicity and education activities has trained many professionals on wetland conservation in China over the past decade. In the forestry sector, the training consists of training course, study tours and workshops, covering basic knowledge on wetland, the interactions between wetland and climate change, as well as the professional technologies and tools on wetland survey and restoration.

3.3. 2. Existing problems

1) Lack of unified plans

Wetland-related publicity and education is a systematic project, involving a cyclical process of planning, mobilization, implementation, assessment, feedback and improvement. It is associated with many factors and requires close coordination of various social groups and sectors. At present, the wetland-related publicity and education in China is still at an infant stage. Many activities are undertaken on a sporadic and voluntary basis, lacking systematic planning, effective organization and scientific support. This can be evidenced by the fact that the specific activities do not match the capacity and needs of wetland-related publicity and education: Some wetland areas cannot accommodate the needs, while other large-scale publicity and education facilities are poorly used. Furthermore, the relationship between/among the government agencies (e.g. forestry, environmental protection, agricultural, marine, and education sectors) and NGOs, enterprises, and individuals has not been well coordinated, lacking institutional support in terms of relevant responsibilities and obligations.

2) Insufficient funding in wetland-related publicity and education

With the ecological conservation efforts focusing the public attention, the financial input in this area is steadily rising, which is mainly due to the increased financial support of the governments, the donation from the social community and the fund-raising of nature reserves. However, the relative and absolute shortage of funding in ecological conservation still exists, with a small proportion of funding of the government agencies, international collaborative projects and relevant enterprises and institutions used for publicity and education activities on ecological conservation. This is particularly true for most of the wetland-related nature reserves, which are constrained by the insufficient funding, especially for publicity and education activities.

3) Poor capacity and lack of professionals on wetland-related publicity and education

The effects of wetland-related publicity not only depend on the publicity materials and facilities, but also on the professional skills of the staff who undertake the activities, particularly when conducting publicity

activities on the site. However, these activities have been largely constrained by the lack of professionals and poor skills in this area. At present, some wetland-related nature reserves have recruited full-time or part-time **commentators** and provided them with professional trainings on ecological publicity. This proves to be very useful.

4) The publicity approaches needing to be improved

The on-site experience and education at the wetland areas is the most effective way of publicity for the tourists. Most of the organized groups are students. Few tourists are involved in the wetland-related education activities as most of them visit the wetland areas just for sightseeing or recreation. In many wetland-related nature reserves and parks, no effective approaches are available for disseminating the knowledge on wetland conservation to the tourists.

5) Topics on wetland-related publicity being too general

At present, most of the publicity and education activities on wetland conservation are focused on the basic definition and functions of wetland, without addressing the detailed needs and issues at the specific wetland areas, in different regions and for different groups.

Chapter IV Action Plan of CEPA on Wetland Conservation in China

Effective conservation and wise use of wetland resources in China depends, to a large extent, on the improvement of the awareness and understanding of the public and decision makers on the importance of wetlands. The traditional ideas and understanding formed over the past long period of time are extremely detrimental to wetlands conservation and sustainable use. As a result, a series of effective measures for publicity, education and training must be taken to improve the public's awareness on wetlands conservation, particularly, on wetlands' various functions and benefits so that a good social environment for conserving wetlands could be created.

In order to further conserve wetlands well and realize sustainable use of wetland resources in China, an action plan of CEPA on wetland conservation must be formulated and implemented in a scientific way so as to do a good job in publicity and education and in improvement of the public's awareness on wetland conservation.

4.1 Guiding principle and objectives of CEPA on wetland conservation in China

4.1.1 . Guiding principle

The guiding principle is to gradually establish a sound system of CEPA on wetland conservation to facilitate the development of wetland conservation and management efforts by integrating the current status of publicity and education and local conditions on wetland conservation and management in China, and on the basis of the concepts of maintaining the ecological balance of wetland ecosystems, conserving the wetland functions and biodiversity and achieving the sustainable use of wetland resources.

4.1.2 . Principles of preparing the Action Plan of CEPA on Wetland Conservation in China

The following principles should be observed for preparing the action plan:

- 1) Follow the national wetland-related laws and regulations, comply with the existing national policies on wetland conservation and use, in particular the prioritized actions in the Action Plan of Wetland Conservation in China;
- 2) Implement the actions at different stages and according to local conditions; focus on the priorities in

line with the current status of the overall development in China, wetland conservation and management and CEPA in particular;

- 3) Follow the relevant regulations of Ramsar Convention and seriously implement the due international responsibilities and liabilities;
- 4) Integrate the international best practices with the actual situation in China.

4.1.3 . Long-term objective

The long-term objective is to develop a relatively sound and standard system of CEPA on wetland conservation, raise the public awareness on wetland conservation, and engage the general public in providing financial, technical and other support in terms of wetland conservation so as to advance the wetland conservation and sustainable use in China.

4.1.4 . Immediate objectives (by 2020)

- 1) Develop the CEPA plans that target different levels, geographic locations and groups;
- 2) Improve and enrich the components and tools on wetland-related CEPA.
- 3) Create a professional team on wetland-related CEPA;
- 4) Develop and improve the infrastructure and facilities on wetland-related CEPA;
- 5) Establish a mechanism on financial input and support of CEPA on wetland conservation;
- 6) Set up a wetland-related CEPA assessment mechanism.

4.2 CEPA on wetland conservation in China

To follow and implement the principles and obligations of the International Convention on Wetlands, to deal with the present status and existing problems of CEPA on wetland conservation in China and to meet the requirements of realizing the targets of CEPA on wetland conservation, the following actions are set to be adopted:

Target 1: Develop the education and publicity plans on wetland conservation focusing on different levels, geographic locations and groups.

Action 1.1: Each province (autonomous region/municipality should, on the basis of the analysis of the present status of wetland conservation and in compliance with the national Action Plan of CEPA on Wetland Conservation, develop its own education and publicity plan on wetland conservation

Action 1.2 : Organize Wetlands of International Importance, national wetland-type nature reserves and national wetland parks to develop their individual CEPA plans on wetland conservation focusing on different target groups in accordance with the national CEPA plan and the CEPA plans of the province (autonomous region/municipality) where they are located.

Target 2: Improve and enrich the wetland-related CEPA components and tools

Action 2.1: Develop a series of special, thematic CEPA programs covering wetland functions, values, fauna and flora, types, threats, conservation actions etc., to be broadcast on central, provincial and local TVs.

Action 2.2: Develop an Internet-based CEPA network system on wetland conservation

- Make full use of the existent wetland network resources, improve and enrich the contents of such wetland websites as “Wetland China”;
- The sectors and organizations relevant to wetland conservation develop their individual websites or web pages;
- Wetland websites of different types shall increase contents on wetland conservation and management and release newest news on dynamic wetland conservation development in a timely fashion.

Action 2.3: Make full use of the planar media resources such as periodicals, magazines, newspapers, and picture albums to carry out extensively CEPA activities.

Action 2.4: Organize experts and professionals to write books and teaching materials needed for science popularity, basic education and staff training to popularize extensively scientific knowledge on wetland conservation.

Action 2.5: Develop the quarterly newsletters of China National Committee to Implement Ramsar Convention on Wetlands to be disseminated to a larger scope, i.e., to the member sectors at the provincial level.

Action 2.6: Include the contents on wetland biodiversity conservation into the teaching plans of the primary and middle schools, particularly strengthen the education of the primary and middle school students on wetland conservation and for important wetland sites , and write teaching materials suitable for the locals.

Action 2.7: Relevant institutions of higher learning and scientific research agencies shall, according to the realistic situation, set up curriculums and specialties related to wetland conservation and send students and scholars abroad in a planned way for further study to train high-level professionals for wetland conservation and management.

Action 2.8: Set up national and regional training centers for wetland management staff.

Action 2.9: Make use of regular and irregular activities such as “World Wetland Day”, “Bird Loving Week”, “Publicity Month for Wildlife Conservation”, “Fishing Ban Period”, “Hunting Ban Period”, “Bird Watching Festival” and “Wetland Culture Festival” to carry out CEPA activities.

Action 2.10: Apply the newest results of publicity value achieved in scientific research on wetlands to publicity activities on wetland conservation.

Action 2.11: Strengthen international exchanges and cooperation to introduce China’s overall efforts in wetland conservation and introduce advanced ideas and experience from other countries in CEPA on wetland conservation:

- Develop the English version of the website “Wetlands China”,
- Organize and hold international seminars on wetland conservation and,
- Make English-version CDs, leaflets and picture posters introducing China’s efforts in wetland conservation.

Action 2.12: Design special wetland conservation-related logos and slogans for different locations, target groups and activities.

Target 3: Set up part-time CEPA teams on wetland conservation.

Action 3.1: Wetland conservation and management agencies and organizations at different levels/of different types shall be staffed with CEPA personnel and set up their individual CEPA teams.

Action 3.2: Carry out training needs analysis for CEPA personnel, design training courses and materials according to the needs, develop training plans and organize/recruit teachers/trainers to conduct on-the-job training of the CEPA staff.

Action 3.3: If conditions permit, hold training classes/courses in some colleges/universities and scientific research institutions on a regular or irregular basis for CEPA personnel from different locations.

Action 3.4: To improve the national level of wetland-related CEPA work in China, strengthen the exchanges in training of CEPA staff among different sectors, particularly reinforce the assistance of the advanced units to the units that are relatively weak in wetland-related CEPA work.

Action 3.5: Strengthen the exchanges between China’s wetland conservation agencies and international agencies/organizations such as Wetlands International to learn about the new development of wetland conservation and research, carry out extensively international exchanges in training to improve the technical level of China’s CEPA teams.

Target 4: Develop and improve the wetland-related CEPA infrastructure and facilities

Action 4.1: Investigate the present state of wetland-related CEPA infrastructure and facilities in China to make a comprehensive survey of the distribution, development status and existing problems of those wetland-related CEPA infrastructure and facilities.

Action 4.2: Formulate the national development plan for wetland-related CEPA centers and make a rational development layout of building regional and provincial (autonomous region/municipality) wetland-related CEPA centers.

Action 4.3: Each province (autonomous region/municipality) shall, according to their local specific conditions, work out their individual plans to develop and improve their own wetland-related CEPA centers/ infrastructure and facilities.

Action 4.4: Develop the wetland-related CEPA centers with local characteristics on the basis of important wetlands, wetland nature reserves and wetland parks.

Target 5: Establish a mechanism on financial input and support of CEPA on wetland conservation

An effective financial input mechanism is an important guarantee for smooth and healthy development of wetland-related CEPA efforts. While, broadening sources of income and reducing expenditures and raising money through multi-channels are a fundamental measure for improving the financial input system. The major actions to be taken are as follows:

Action 5.1: Strengthen the publicity efforts in relevant governmental departments at different levels for their understanding and support so that the costs needed for wetland-related CEPA efforts are incorporated into the financial budgets of the governments at different levels.

Action 5.2: Include the costs needed for specific wetland-related CEPA activities into special budgetary expenses of relevant governmental sectors.

Action 5.3: Attract funds from all walks of life of the society through collection of social funds and donations of individuals.

Action 5.4: Make use of different ways to strive for financial assistance and grants from international society, international organizations and financial agencies for wetland-related CEPA projects.

Target 6: Set up a wetland-related CEPA assessment mechanism

Action 6.1: Make an investigation on domestic and overseas wetland-related CEPA assessment methodology and mechanism.

Action 6.2: Develop the wetland-related CEPA assessment methodology suitable for Chinese conditions and establish an assessment mechanism.

Action 6.3: Select important areas, typical wetland nature reserves, important wetland sites or wetland parks to carry out pilot assessment on their CEPA practices, contents and results to improve the CEPA assessment methodology and mechanism.

Action 6.4: Disseminate the CEPA assessment methodology and mechanism nationwide and apply the assessment results to practical work to improve wetland-related CEPA.

Chapter V Measures to support the implementation of the action plan

5.1. Fully recognize the importance of CEPA

At present, one of the best international practices on wetland conservation and ecological conservation is giving top priority on CEPA. It is an important way to fully leverage the social functions of wetland, a long-term strategy to conduct ecological conservation, as well as a fundamental approach to shift from passive to active conservation, and use active intervention in terms of awareness education to reduce the pressures on ecological conditions in the future. First and foremost, publicity and education efforts on wetland conservation must be regulated and highlighted at the policy and legal scales, defining the responsibilities and obligations of the governments at various levels, the sectors, and the general public in wetland-related publicity and education, and raising the public awareness on wise use of wetlands while prioritizing efforts in wetland conservation.

5.2. Highlight the development and implementation of publicity and education plan on wetland conservation

On one hand, the leading agency on wetland conservation is required to develop a sound wetland-related publicity and education plan, clarifying the responsibilities of each social group, and properly implementing the wetland-related publicity and education activities to mainstream these activities. On the other hand, the grassroots organizations on wetland conservation, including wetland nature reserves and wetland parks, should prepare their own wetland-related publicity and education plans according to their actual conditions. In addition, coordination between the public education plans on wetland conservation and other plans, such as nature reserve management plans, nature reserve demonstration site development plans and wetland park plans, should be enhanced to fully implement these specific plans.

5.3. Improve the development of the wetland conservation-related publicity and education system

To make the wetland-related publicity and education successful, efforts need to be undertaken in a wide range of areas including institution, personnel and facilities. Governments at various levels, relevant sectors and the grassroots organizations on wetland conservation are requested to strengthen the development of the wetland-related publicity and education system, providing sound institutions, sufficient personnel and complete facilities for the successful implementation of the publicity and education efforts.

5.4. Increase financial input and improve infrastructural development in wetland-related publicity and education

As wetland-related publicity and education is a social welfare service, the financial and wetland-related sectors under the national and local governments should increase their budget in wetland-related publicity and education to ensure the smooth implementation of these activities. At the grassroots level, publicity and education centers should be established at the wetland museums, nature reserves and parks according to their actual situations, where the signboards and other necessary facilities should be made available.

5.5. Enhance the capacity building of the institutions and personnel responsible for wetland-related publicity and education activities

The wetland-related publicity and education institutions and their staff are mainly accountable to these activities. Some other countries, including US, Singapore and Malaysia, put top priority on the training of these personnel and engaging the scientists and technicians in the publicity activities in nature reserves and communities. In the future system on wetland-related publicity and education in China, efforts should also be made to enhance the capacity building of these institutions and personnel, establish wetland publicity and education center if necessary, staff these institutions with appropriate personnel, strengthen the professional training and encourage the technicians to participate in the publicity and education activities at a regular basis. As for other personnel and activities that are beyond the jurisdiction of wetland conservation and management authorities, necessary support should also be provided for them to increase their capacity in this area.

5.6. Strengthen wetland-related scientific research

Enhancing scientific research is one of the major approaches for people to understand wetland, and a key factor for ensuring wetland conservation and sustainable use. Fundamental and applied research can make it possible to have a full and in-depth understanding on the types, features, functions, values and dynamics of wetlands in China. This will not only expand the relevant knowledge on wetland, provide key materials for wetland-related publicity and education and enhance the scientific base for these activities, but also provide valuable human resources for these activities as the wetland conservation staff are involved in scientific research.

5.7. Improve the approaches and tools of wetland-related publicity and education

In essence, wetland-related publicity and education raises the public awareness on wetland conservation and helps disseminate the ecological culture. As a result, innovative tools and detailed education schemes should be developed according to the specific targets, locations, timing and the actual local conditions to achieve desirable results.

5.8. Focus on key target groups while raising the public awareness

The successful implementation of wetland conservation efforts, as a major component of ecological conservation, largely depends on raising the public awareness on ecological conservation. Therefore, wetland-related publicity and education should be undertaken against the broader context of ecological conservation. Greater efforts need to be made to shift from **an expedient focusing on partial secure** to a long-term, integrated model that engages the whole society in the ecological conservation.

The key targets of publicity and education should be those who can have direct or most significant impacts on wetland, including the policy-makers and relevant stakeholders in and around the wetland areas. At the same time, efforts should also be made to focus on the publicity and education for the students to lay a solid foundation for the future wetland conservation.

5.9. Develop an assessment and feedback mechanism

Establishing an effective mechanism on assessment and feedback of wetland-related publicity and education (including suggestions) is very useful for improving the relevant system and achieve the expected objectives on wetland-related publicity and education.

5.10. Further conduct international cooperation and communication

As wetland conservation has become a global concern, wetland-related publicity and education efforts have also attracted greater attention worldwide. Wetlands in China play an important role in the global biodiversity conservation, combating climate change and maintaining the hydrological regimes of cross-boundary river basins. While implementing Ramsar Convention and relevant international conventions, China needs to enhance international cooperation to publicize the wetland conservation efforts in China, learn the best practices from the foreign countries and substantially improve the publicity and education levels on wetland conservation in China.

Appendix : Questionnaire of Public Awareness on Wetland Conservation in China

Dear respondent,

This questionnaire is designed to understand the public awareness on wetland conservation and provide guidance for us to develop Action Plan on Wetland Conservation in China for achieving sustainable use of wetland resources. It will only take you five minutes to complete this questionnaire. Thank you for your time and support.

Filled in by the interviewer :

Address of the respondent: _____county, _____city, _____province

Sex: () male () female

Education degree: () above college () secondary technical school/high school () junior middle school () primary school () others

Age :() over 50 years old () between 30-50 years old () between 18-30 years old () between 10-18 years old () below 10 years old

Occupation :() public servants in the government agencies () employees in the enterprises and institutions () famers/fishermen () students () others _____

Role :() policy-making () scientific research and technical () general

Filled in by the interviewer after the following questions asked :

1. Have you ever heard of the term of 'wetland' ?

A. yes B. no

(if no, please go to question No.4)

2. How do you learn about wetland ?

A. on TV B.on Internet C.on newspaper D.on radio E.on posters
F. from the publicity campaigns (such as summer camp and World
Wetlands Day) G. from school H. from other sources_____

3. Which of the following do you think are wetlands ?

A. lakes B. marshes C. rivers D. coasts E. reservoirs F. paddy
fields G. fish ponds

4. Which of the following do you think are the functions of wetlands ?

A. water conservation B. removing pollution C. wildlife
protection D. climate regulation E. flood control F. provisioning
of aquatic products

5. Which of the following activities do you think could cause damage to
the wetlands?

A. discharge of waste water B. conversion C. urban expansion D.
building of roads and dams E. over-fishing F. application of pesticides
and chemical fertilizers G. hunting of water birds and collecting of
bird eggs H. artificial aquaculture

6. Which of the following ways do you think are most effective to raise

the public awareness on wetland conservation?

- A. TV and radio B. Internet C. newspaper and magazine D. school
education E. thematic campaigns and activities