

The Water Resources of Northeast Asia

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Abstract: Though there are several definitions for the Northeast Asia, in this paper Northeast Asia is defined as the geographical sphere including five countries. Those five countries are China, the Democratic People's Republic of Korea, Japan, Mongolia and the Republic of Korea. For the announcement of regional preparatory process at the 4th World Water Forum (4WWF), basic characteristics and main water-related issues were surveyed in the Northeast Asian countries. This paper is mainly composed of basic characteristics of each country, main water challenges, implemented strategies, successful experiences and local actions, etc. The five countries provided one's country report on the Government basis in 2004 to Korea Water Forum (KWF) as the coordinator of Northeast Asia for the 4WWF. KWF summarized the report of each country very briefly as follows.

1. INTRODUCTION

The basic characteristics of the appropriate countries are as follows. China possesses 2800 billion m³ of water resources; the water resource per capita in China is only 2200m³, no more than 1/3 of world average, which means low water resources per capita. In the Democratic People's Republic of Korea, most of rivers have mountainous river characteristics. It rains a lot from June to September, including tropical cyclone and typhoon. Japan has generally moderate climate. The average annual precipitation is approximately 1,700mm, nearly double the world's average. The per capita potential quantity of water resources of Japan is 3,300m³. The precipitation concentrates in the typhoon season and rainy season, June, September and October. In Mongolia, the annual mean precipitation is 224mm. About 85-90% of total precipitation falls in summer months as rain. The climate is harsh continental, high annual and diurnal fluctuations, and low rainfall. The annual average precipitation of the Republic of Korea is 1,283mm. The precipitation per capita is 2,705m³ and the time distribution of precipitation concentrates in summer season, from June to September.

2. MAIN CHALLENGES REGARDING WATER ISSUES

The main challenges regarding water issues commonly appear in this region as follows. They were mainly recognized as water shortages, frequent flooding, water quality issues and administration. Also as important issues, there were pointed out soil erosion and water pollution, increasing of disasters by floods and landslides from heavy rainfall, decreasing of forest resources, dwindling of water resources due to the effect of "greenhouse" and increasing of water demands for the irrigation system.

3. IMPLEMENTED STRATEGIES FOR WATER ISSUES AT THE PRESENT

3.1 CHINA

Since 1998, China has put forward new development strategies in two major categories. The first thing was the increase input to water projects construction and it was managed through large-scale development and construction. Also China raised the capability of the water infrastructures for disaster mitigation. Secondly, China has been promoting the sustainable use of water resources. The government attached great importance to water resources management, especially emphasizing allocation, saving and protection of water resources.

3.2 DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA (DPRK)

The DPRK strategies to face the water issues were making and implementing the education and research plans for the establishment of an operation system for flood and drought forecasting and capacity building. The DPRK constructed the large, medium and small-scale power stations, reservoirs and irrigation systems and expanded their capacity building. The DPRK implemented the establishment of flood and drought early warning system, the decision making system and the water resource information service system.

3.3 JAPAN

The five ministries involved in water administration formed an inter-ministerial commission which defined and the established a sound hydrological cycle system. Comprehensive flood control measures have been implemented since the 1980's and forests are properly improved and protected to enable them to perform their diverse functions continuously. Concerning food and agriculture, the new master plan specifies the need of establishing measures for appropriate protection of properties.

3.4 MONGOLIA

Since the 1990's water resources management has been fragmented among different institutions and ministries. The Water Law was adopted initially in 1995 and then newly amended in 2004. The Mongolian Government ratified National Action Plan on Water in 1999. Later on, the National Government and Parliament of Mongolia have approved 23 laws for regulating environmental protection and management of nature resources.

3.5 REPUBLIC OF KOREA (ROK)

Since 1960's, Korea constructed a number of multipurpose dams and reservoirs. Flood forecasting and early warning systems were established in 1974 and major river channels have been improved by straightening the embankment works along the shorelines. Irrigation water development is expanded to develop integrated agriculture and rural water development and irrigation water management measures are strengthened.

4. SUCCESSFUL EXPERIENCES AND LOCAL ACTIONS CARRIED OUT IN THE COUNTRY

4.1 CHINA

Two big actions were carried out. First was the water project construction accomplished by intensifying water management planning and by increasing investment. Secondly, the water resources management plan was implemented. The establishment of a water project construction fund and the exploration of new mechanism completed regional river basin planning would be recognized as the progress achieved local areas in China.

4.2 DPRK

The DPRK constructed many lock gates, reservoirs, dikes and measures for water control and preventing of disaster. The policy for planting trees was implemented. Concerning the flood disaster, improvement of flood and drought forecasting operation system has been made. In SRI, flood hazard mapping, flood warning and decision making system has been established by using GIS.

4.3 JAPAN

As Japan's big actions, there were mainly exposed public involvement, public-private partnership, networks and the foundation of JWF (Japan water forum). Public involvement included the Environmental Impact Assessment Law, the participatory irrigation management and the reflection of public opinions in river improvement plans. The Networks were formed with the Japanese government serving as the secretariat following the 3rd World Water Forum.

4.4 MONGOLIA

The first hydropower project was realized in 1959. Today has 6 hydropower plants small size (150-2000 KW). Terkhiiin Tsagaan and Ugii lakes were registered in "The International Network of the Northeastern Asia to Protect the Birds of Goose and Duck Families". Concerning the monitoring system, there are 56 bio-monitoring stations and 142 of water quality monitoring stations.

4.5 ROK

As the experiences and local actions in Korea, there were carried out the establishment of flood free land, stable supply of clean water, formulation of eco-friendly water environment, comprehensive long-term water resources plan, water information system and new dam policy.

5. CONCLUSIONS, LEARNED LESSONS AND FUTURE PERSPECTIVES.

5.1 CHINA

China will continue to emphasize dam construction, reinforce risk reservoirs and speed up the construction of flood storage and detention basins to improve flood-control capacity. The government will accelerate hydraulic

facilities construction and rural residents will continue to promote the construction of a water-saving society and will strive to clarify water rights. More effort will be put on the water resources protection and water environment construction.

5.2 DPRK

Water management projects which has been implemented were by all for providing water demand of one or two parts of economy and reducing disaster in special region. It is important to institute and introduce aspects and approaches of integrated water resource management, establish integrated water resource management plan, and solve the issues on several categories related to water.

5.3 JAPAN

Japan makes efforts to promote sound hydrological cycle system to implement Integrated Water Resource Management. In Japan, disaster prevention must be regarded as a core national policy and must be promoted jointly with the residents and development of water supply systems contributed to the improvement of public health conditions. Recently, needs for “safer and more good-tasting water” have been rising and advanced water treatment has been actively introduced.

5.4 MONGOLIA

Development of Integrated River Basin Management Principles in selected river basins, proper Coordination between existing institutions is needed. Extension of surface and groundwater monitoring network is important and Environmental Impact Assessment studies and use of modern techniques for water resources studies and management will be provided. Lastly, the country’s important research directions are water balance study and isotope hydrology.

5.5 ROK

The sustainable development and management of water resources in Korea is still given on the securing plentiful and clean water resources to meet the future demand. More sustainable multipurpose dams are under planning stage. Integrated agriculture and rural water development and Management measures should be strengthened. To support IWRM, Government of the ROK launched 10 years National Water Resources Research Program in near 2001 and also has a plan to start new big research project.

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