

## **FRESHWATER COUNTRY PROFILE**

### **JAPAN**

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**Decision-Making:** *Water resources management.* At the national level, several governmental bodies are in charge of the issues related to water and sanitation. The Ministry of the Environment coordinates water quality conservation, including groundwater. The Ministry of Land, Infrastructure and Transport (MLIT) is responsible for water resources, management and river management such as flood control, sediment control, river environment conservation and restoration, and water use including drought coordination. At the sub national level, prefectural or municipal government has the responsibility for coordinating resource management and development at the local level. MLIT has branch offices to implement its task at the river basin level.

There is no general law encompassing all aspects of water resources management. Rather, specific aspects are regulated by legislation as follows: the Water Pollution Control Law (updated as of 1996) controls water quality; the River Law (Updated as of 1997) touches upon the river management such as flood control, water use and environment. The Water Resources Development Law (Updated as of 1983) covers newly developed water resources; the Land Improvement Law (Update as of 2001), the Waterworks Law (Updated as of 1996), and both the Industrial Water Law (Updated as of 1993) and the Industrial Water Supply Business Law (Updated as of 1993) and respectively regulate the water usage in agriculture, households, and industry. For the management of water quality in agriculture and rural areas, the Government enforces regulations on agricultural chemicals in accordance with the Agricultural Chemicals Regulation Law.

In order to prevent pollution of freshwater supplies, the Government strictly regulates effluent from industries and public sectors according to their types and sizes and promotes the construction of sewage treatment facilities for household waste water. In addition, plans for the conservation of water quality for selected lakes have been established including such measures as dredging contaminated sediment. As a guideline for development, conservation and utilization, the New National Comprehensive Water Resources Plan (Water Plan 21), which adopted 2010 and 2015 as rough target years, was compiled in June 1999. Standards have also been developed for the registration of agricultural chemicals with respect to their residue in crops and water pollution.

There are a number of mechanisms to enable all major stakeholders to participate in decision-making process. Under the Environmental Impact Assessment Law, parties concerned may submit their opinions to specific water resources development such as dam construction. Under the River Law which was amended in June 1997, opinions of local government and the regional people are reflected in the River Management Plan which includes flood control, water use and environment. Irrigation projects are implemented under the following conditions: 1) request for the project is made by representatives of farmers; 2) most of participating farmers agree on the project; 3) project planning goes through public notification process required by the Land Improvement Law, in which not only people concerned about the project but also local residents can have opportunities to comment; and 4) the bodies to implement the project take into consideration the balance between environment and development with regard to the project planning.

Water use is adjusted and coordinated within Land Improvement Districts among farmers and through Conference of Drought among relevant sectors and according to the River Law and Specified-Multipurpose Dam Law. Under the Forest Law, municipalities in upstream areas can request those in the downstream areas to conclude an agreement to enhance and conserve headwater forests collaboratively. The law also provides municipalities for seeking the Minister of Agriculture, Forestry and Fisheries initiative to mediate between related municipalities in concluding such agreements.

To adopt a comprehensive approach to establish sound hydrological cycle via various fields such as forests, agricultural land, rivers, water-supply and sewerage systems, etc., five ministries (Ministry of Health, Labor and Welfare; Ministry of Agriculture, Forestry and Fisheries; Ministry of Economy, Trade

and Industry; Ministry of Land, Infrastructure and Transport, and Ministry of the Environment) have been engaging in consultative meetings in order to share related information and promote deliberation on comprehensive measures, etc. The Guideline for Establishment of Sound Water Cycle (2003) has been developed to clarify the basic direction of identifying the factors that cause water-related issues by evaluating the overall water cycle, and dealing with the problem.

The Basic Environment Plan formulated in December 2000 provides the direction for developing measures to maintain a sound water cycle from the viewpoint of environmental conservation in accordance with the characteristics of the regions as well as the concerns that deserve special attention. The Japanese government has also made revisions to the relevant policies that regulate specific fields of water management. The revision of the Rivers Law (1997) that provides a legal instrument for the “improvement and conservation of the river environment” established a comprehensive river management system that integrated flood control, water use, and environmental harmony. Japan also enacted the Basic Law on Food, Agriculture and Rural Areas and other related laws (1999), which uphold the basic principles of performing the multifunctionality of agriculture such as land conservation, cultivation of water sources, nature conservation, as well as ensuring the continuous growth of agriculture. To put these principles into practice, Japan enacted the “Law for Promoting the Introduction of Sustainable Agricultural Production Practices” and adopted a production method that combines soil cultivation using compost and other methods, as well as reduction in the use of chemical fertilizers and agricultural chemicals.

The Japanese Government hosted the Ministerial Conference, on the occasion of the 3<sup>rd</sup> World Water Forum, in March 2003. The Ministerial Conference considered possible international cooperation on water issues, in coordination with civil society and the private sector, for implementation of necessary actions. As one of the outcomes, the Ministerial Conference announced the Portfolio of Water Actions (PWA), a compilation of concrete actions submitted voluntarily by governments and international organizations either individually or collectively with their partners. A total of 501 actions were presented by 43 countries and 18 international organizations by March 2003. The Ministerial Declaration adopted at the Ministerial Conference clearly states the following as to follow-ups to the PWA: “We welcome the proposal to establish a new network of website to follow up the Portfolio of Water Actions that will publicize actions planned and taken on water-related issues by countries and international organizations in order to share information and promote cooperation.” Japan volunteered to manage this network during the initial stage in cooperation with relevant international organizations as the host of the Ministerial Conference. The PWA entries and list of actions were made available on the provisional website from May 2003, and the website was redesigned in November 2003 for greater ease to modify or update current water actions and monitor the state of progress.

### **Programmes and Projects:**

A. Integrated Water Resources Development and Management: Based on the Water Resources Development Promotion Law (1961), water resources development basic plan is created and comprehensive development and efficient use of water resources are advanced for selected seven river systems (Tone River, Ara River, Toyo River, Kiso River, Yodo River, Yoshino River, Chikugo River), where wide area water supply measures have become necessary in response to the development of industry and increase in urban population.

In order to maintain rich forest resources in mountain regions for future and secure safe and comfortable livelihood of people, the Forestry Agency takes measures to prevent mountainous disaster and improve water head forests through maintaining and expanding healthy forests by promoting afforestation and land conservation projects. It also promotes conservation of forest ecosystem and, through promoting forestry, encourages tending and management of forests. However, in order to develop mountain regions where

forestry workers or those who are managing forests are living, the Forestry Agency promotes 1) securing employment opportunity through the development of forestry and forest industry, 2) improving living environment which is far behind to that of cities, and 3) improved communication and exchanges between cities and mountain villages.

To manage and mitigate flood disaster, MLIT or other river administrators make river works such as widening, dredging, flood way, retarding basin etc based on River Management Plan. They also provide river information to the public, improve flood warning system and make flood hazard maps as non-structural measures. The Flood Fighting Law was revised in June 2001. The revision added publication of estimated area of inundation and flood hazard map. In June 2003, Designated Urban River Inundation Prevention Law was formed, whose purpose is to prevent inundation damage in urban river basin,

**B. Water Resources Assessment:** The Ministry of Land, Infrastructure and Transport launched an extensive study on nationwide water resources assessment in 2003 to develop and apply new indicators capable of measuring hydrological and environmental status in terms of water cycle.

The Ministry of the Environment collects and publishes the data on water quality. MLIT collects and publishes the data on water quality as well as various data such as precipitation, water level and water discharge in rivers and dams, and sends them promptly to local government and other related organization. MLIT also collects and publishes the state of water resources development. The Ministry of Agriculture, Forestry and Fishery collects information on the amount of water supplied from big dams for agricultural use. The Ministry of Health, Labour and Welfare collects data on the drinking water supply directly or through prefectures. Municipalities manage information on their own waterworks such as water demand/supply, monitoring and management of water quality, and cost. The Ministry of Economy, Trade and Industry collects data on the state of water supply for industrial use. The Ministry of the Environment distributes the data it collects through the “Report of Water Quality in Public Water Area”. MLIT distributes its data which MLIT collects through “Annual Report on Water Quality in Rivers”. MLIT sends data such as precipitation and water level through Foundation of River and Basin Integrated Communications, Japan (FRICS). MLIT periodically conducts surveys on the state of ecosystem in rivers, “National Survey on River Environment” and publishes its outcome. See also under *Capacity-Building, Education, Training and Awareness-Raising and Information*.

**C. Protection of Water Resources, Water Quality and Aquatic Ecosystems:** Efficient use of river waters is facilitated by MLIT or other river administrators whose permission must be obtained for using river water. Land improvement districts manage irrigation based on the principle of participatory irrigation management to ensure efficiency and equity in allocating water.

Water pollution control project which is being implemented aims to conserve and improve coastal waters by removing contaminated sludge. MLIT is formulating projects to conserve and restore river environment in rivers and lakes.

Programmes and campaigns for educating the public about issues of water conservation have been implemented, including: National Water Day (Aug.1st), National Water Week; selected 100 exquisite waters; the annual Forum on the Water Environment; Monthly event such as “River conservation Month” (July), “Seashore conservation Month” (July) and “Ten- days for Forest and Lake” (last ten days of July); Waterside School Project, etc.

**D. Drinking Water Supply and Sanitation:** The targets are to expand sewerage construction so that the percentage of population connected to public sewerage increases to 72% and the proportion of population served with advanced waste water treatment up to 17% by the end of FY2007. Japan also promotes the

improvement of *Johkasou* (on-site treatment systems of domestic waste-water) in towns and villages to treat both night soil and gray water.

The ministries and agencies related to water have been conducting reviews in regard to the basic policy direction for building a sound water cycle. In October 1999, an interim report was compiled, summarizing the basic issues regarding the collaboration and cooperation of ministries and agencies in the future. It emphasizes the need for clarifying and monitoring the water cycle mechanism of river basins, and undertaking measures that target at the specific problems of each basin based on its natural and social conditions. The report also pointed out that since the water cycle may differ substantially according to the conditions of the basins' natural environment, the social economic activities conducted there, and their water-related historical background, etc., it is important to carry out measures with the understanding that each river has a different aspect, address the unique characteristics of each river, cooperate with the various stakeholders in the basin including local authorities, residents, and business operators, and encourage each stakeholder to undertake self-initiated and independent actions. The report called for stepping up collaboration and cooperation to facilitate the effective implementation of policies. In October 2003, the ministries and agencies compiled another report, "The Guideline for Establishment of Sound Water Cycle." The guideline clarified the basic direction of identifying the factors that cause water-related issues by evaluating the overall water cycle, and dealing with the problem.

E. Water and Sustainable Urban Development: The Japanese Government has established "The 7th Housing Construction Five-Year Programme" as a measure for dealing with housing-related problems. Many of the targets are concerned with more environmentally-sound housing, taking into water circulation, amongst others.

F. Water for Sustainable Food Production and Rural Development: The Agricultural and Rural Development Project has introduced such measures as the arrangement of irrigation and drainage and the improvement of infrastructure in rural areas. The budget allocated to rural sewerage projects has been increasing in order to enable these areas to catch up with medium-sized cities with regard to the sewerage penetration ratio. Based on the Land Improvement Law established in 1949, the government has been carrying out Land Improvement Projects which in turn lead to stable agricultural productivity. Land Improvement Projects are implemented based on the policy that agricultural land and water should be managed together. Agricultural water resources have been developed as part of these projects in coordination with comprehensive planning for water use.

On the occasion of the 3rd world water forum, in March 2003, the Ministry of Agriculture, Forestry and Fisheries and Food and Agriculture Organization of the United Nations co-organized the Ministerial Meeting on "Water for Food and Agriculture". The meeting came up with a Ministerial Recommendation based on three challenges( {Food Security and Poverty Alleviation}, {Sustainable Water Use} and {Partnership} ).

In order to address these challenges, the MAFF set up the International Network for Water and Ecosystem in Paddy Field (INWEPF) which is a flexible platform for exchanging information and fostering partnership regarding water and ecosystem in rice-based systems. Everyone will be invited to attend it at international, national, civil societies and individuals.

G. Impacts of Climate Change on Water Resources: The Frontier Research System for Global Change, which is a joint program of Japan Marine Science and Technology Center and Japan Aerospace Exploration Agency, is conducting researches in the field of climate variations, hydrological cycle, global warming, atmospheric composition and others under the supervision of the Ministry of Education, Culture, Sports, Science and Technology.

Various global research programmes on climate, climate change and El Niño events have been promoted in Japan including international joint research programmes. Though the regional impacts of ENSO on the Far East including Japan are being studied, the assessment of impacts has yet to be clarified due to the complexities and uncertainties of the various regional features.

Japan actively participates in worldwide research projects on climate change, including the International Geosphere-Biosphere Programme (IGBP), the World Climate Research Programme (WCRP) and the Human Dimensions of Global Environmental Change Programme (HDP), and the Technology Renaissance for Environment and Energy, as well as in such scientific assessment activities as those of the Intergovernmental Panel on Climate Change (IPCC). It also carries out related interdisciplinary research. Furthermore, Japan contributes to regional development, including the construction of a research network for the promotion of effective research in the Asia-Pacific region. Promotion of observation and scientific research is beneficial to developing countries in their efforts to improve the prediction of climate change and to mitigate the impact of natural disasters. With this in mind, Japan is co-operating with various countries and international organizations in the following fields; i) ocean observation, including the North East Asia Region GOOS, the ARGO project, deployment of the TRITON buoys and Ocean Drilling, ii) terrestrial observation, including observations of the Asian monsoon jointly with meteorological communities in other countries; iii) observation of the environment from Space.

Japanese institutions are conducting a variety of study and research activities. For example, the Ministry of the Environment of Japan conducts research on measure to combat desertification and also provides the Global Environment Research Fund to promote research on desertification. Also, Japan's Ministry of Agriculture, Forestry and Fisheries, together with relevant institutions, conducts studies, for example, a study for combating desertification in Asia and a study for preventing soil erosion in Latin America, and research on prospects of utilizing desert areas for agriculture in Mongolia.

**Status:** *Socio-economic aspects:* Poverty is not an issue in Japan. The population in Japan has remained the same since 1994, at 125 million. There has been a national debate on population/environment linkages both in parliament and at the government level. Among the activities that Japan attaches importance to in this area are the following: (1) promotion of the settlement of population in rural areas through the development of those areas, and (2) continuing research, begun in 1993, into the relationship between demographic trends and socio-economic conditions and their effects on environmental problems in the region of Asia and the Pacific.

With brisk industrial and commercial activities in urban areas, there is concern over the deterioration of various aspects of the living environment, including the air and water, which accompany concentrations in population. Japan is therefore currently devising a variety of pollution prevention and clean-up measures to promote public health. In addition, Japan is making an effort to compensate sufferers of pollution-related health damage. In rural areas, Japan has established Rural Medical Examination Centers to compensate for the lack of sufficient medical institutions. Japan continues to promote measures to deal with contagious diseases and protection of vulnerable groups.

*Topography:* Forests cover about 25 million hectares or about 70% of Japan's national land area. Of the entire forested area, planted forests make up 10 million hectares accounting for 41% and natural forests and others make up 15 million hectares accounting for 59%. The current growing stock is about 3.8 billion m<sup>3</sup> with an average annual growth of 80 million m<sup>3</sup> consisting mainly of planted forest, which mostly require further tending and thinning. The national forests cover 7.6 million hectares, approximately 20% of Japan's land area or about 30% of the entire forest area. A large portion of the national forests is located in the backbone mountain ranges or upstream water reservoir areas, including pristine natural forests. The recent policy reform resulted in an increase in the area of the national forests

managed primarily for social objectives, from 50% to 80% of total forest areas. These objectives include water resource management, soil conservation, recreational use and environment protection.

There are no deserts or areas in danger of becoming deserts in Japan. Water induced disaster such as floods, debris flow, drought, and landslides are serious problems for Japan. About 50% of the population and about 75% of the real estate of Japan is concentrated in alluvial plains, which account for only 10% of the total land area. The number of hazardous spots of mountainous disasters due to slope failure, landslide, and debris flow and land creep increased from 131,000 in 1978, to 205,000 in 1992.

Business and industry deal not only with traditional types of industrial pollution concerning air and water, but also with a wide range of environmental problems, including those of global warming and waste. They play a major role in economic activities, and are expected to play a bigger role in regards to the construction of a sustainable socio-economic system with reduced environmental load. In addition to the measures adopted thus far, Japan also provides economic and institutional assistance to the private sector for the development of technology, facilities and equipment which contribute to the rationalized use of energy in manufacturing processes; promotes various measures in accordance with the Action Program to Arrest Global Warming, the Law concerning the Protection of the Ozone Layer, and the Automobile NOx Reduction Law; develops a system to stimulate the Project for Innovation and Development of Environment and Energy Technologies, which is based on The New Earth 21 Programme; promotes the transfer of technology which contributes to environmental conservation and the creation of a new framework by which recycling can permeate into the existing socio-economic system; participates actively in the creation of internationally harmonized standards of environmental audits; and promotes the development of methods for the objective assessment of the environmental burden imposed on business and industry by environmentally-friendly production processes and products.

*Water:* The precipitation in Japan greatly differs from year to year, season to season, and region to region, with floods and water shortages occurring in many areas. The demand for water is estimated to increase. At the same time, the time required for the construction of dams and other water resource infrastructure tends to be prolonged, and there are problems of over-pumping of groundwater. Conserving the quality of drinking water is also a growing challenge. Industry is not a main user of freshwater. Its consumption accounts for about 16.5% (FY1994) of total usage of fresh water, but it is one of the major sources of organic pollution.

With regard to the involvement of the private sector, water allocation and recovery of cost for agricultural use have been managed by Land Improvement Districts composed of farmers in the respective areas. The role of the Government is therefore very limited. On the other hand, for industrial use, the majority of industrial water is supplied by local government, as is 99.5% of the drinking water supply. The rest is supplied by the union composed of residents in each area. In Japan, 13 billion m<sup>3</sup> wastewater was treated at sewerage treatment plants in FY2002. The percentage of population connected to public sewerage was 65% in FY2002.

The major constraint faced in the area of water resources development in Japan has to do with the increasing difficulty in finding suitable areas for dam construction. With regard to the household water supply, technical and financial problems for the small water supplier need to be resolved to cope with increased demand for safe drinking water supply.

*Water pollution:* EQSs for surface water (23 substances) are satisfied in most areas. However, it is imperative to take measures of other hazardous water pollutants.

**Capacity-Building, Education, Training and Awareness-Raising:** Environmental NGOs and civil groups carry out the environmental housekeeping book and simple activities to monitor the rain, and

rivers, in order to raise consumers' awareness of their lifestyles and the local environment. See also under C. Protection of Water Resources, Water Quality and Aquatic Ecosystems on *Programmes and Projects*.

The Ministry of the Environment prepares and provides various materials and programmes to help people understand the current state of the environment and to give them incentives to participate in environmental conservation in their daily lives. Furthermore, the Ministry provides various opportunities such as Junior Eco Club to help children voluntarily participate in environmental conservation activities for their communities. To promote activities for communication with nature, the Ministry also establishes networks among the many nature lovers and institution/organizations that offer a wide range of opportunities to communicate with nature, and provides information on their events ("Nature Loves Club"). The Ministry of Land, Infrastructure and Transport also provides opportunities to utilize rivers as play fields in cooperation with local communities.

There are a number of programmes or campaigns geared toward raising the awareness of the public with regard to issues of sustainable consumption and production patterns. Some of these are: The Eco Mark Programme: Since 1989, and under the authority of the Ministry of the Environment, the Japan Environment Association has implemented the Eco Mark Programme to raise public awareness. The Eco Mark is a label which is given to products that play leading roles in reducing environmental burdens. As of 31 July, 1997, 2,045 products in 71 categories were permitted to use this Mark; The Green Purchasing Network: This network was established in February 1996. Its objectives include promoting the concept and the practice of green purchasing at all levels of government, and among companies and consumers; providing useful information about green purchasing in practice and venues for exchanges of experience and information among GPN members. It is intended to assist consumers, enterprises, the National Government, local governments, and other organizations to give more serious considerations on environment when purchasing goods and services (not just price, function, and quality) and to assign a higher priority to such goods and services as are helpful in reducing environmental burdens. As of the end of October 1997, 964 organizations had joined the GPN.

The Ministry of the Environment of Japan proposed "Water Environment Partnership in Asia (WEPA)" at the Third World Water Forum as a new initiative in developing a platform for strengthening water governance and capacity building to solve water environmental problems in the region. The main activities of WEPA is the development of databases that will serve as a common information platform on water environment. The databases will be made public through Internet among the relevant stakeholders including government officials and NGOs as a common asset.

**Information:** The Japan Industrial Water Association distributes water data through its newsletter. The Ministry of Agriculture, Forestry and Fisheries analyzes data on almost all dams for agricultural use such as real time reservoir capacities. The information is available electronically, although the data format is not standardized See also under B. Water Resources Assessment on *Programmes and Projects*.

The Geographical Survey Institute of Japan receives remote sensing data every day to monitor the state of national land. Every month it produces Normalized Difference Vegetation Index (NDVI) images in graphic form from the data it receives. The NDVI images are accessible at: [http://www1.gsi.go.jp/ch3www/EODAS/ndvi-download\\_e.html](http://www1.gsi.go.jp/ch3www/EODAS/ndvi-download_e.html).

The Japanese Government has 1) connected local networks of ministries and agencies to the Internet; 2) provided every official at headquarters of ministries and agency with an Internet connected computer; and 3) established websites of each ministry/agency. These programmes have improved the government officials' literacy on electric information and the condition of access to the information by general public including sustainable development information.



Japan conducts systematic environmental surveys and monitoring to measure the state of chemical residue in the environment, and acts accordingly. The Government collects and publishes the data on water quality, air quality and the discharge of chemicals from facilities into water. The Government has established database for information of chemical substances and makes it available to the public. Several activities about endocrine disrupting chemicals such as development of screening test methods and risk assessment have been promoted in collaboration with relevant ministries. The Ministry of the Environment has announced the “Strategic Programs on Environment Endocrine Disrupters'98” (SPEED'98) (Established in 1998 and revised in the year 2000).

Japan will continue to promote the development and improvement of an indicator system in which environmental factors are appropriately evaluated, and to coordinate this work with the indicators of sustainable development developed under the auspices of the Commission on Sustainable Development. Japan has developed a System of National Accounts (SNA) that includes the Satellite System for Integrated Environmental and Economic Accounting (SEEA), drawing upon the standards contained in the SNA Handbook on Integrated Environmental and Economic Accounting of the United Nations. Particular importance is being given to quantitative and qualitative changes in Japan's forest and agricultural resources in this regard.

**Research and Technologies:** The Japanese Government is conducting scientific research on predicting and monitoring the global water cycle, including the effect of climate change, and developing information systems that will enable the sharing of such valuable data worldwide. Since demand for water for other uses is increasing, the efficient use of agricultural water via measures such as the improvement of irrigation canals for agriculture becomes the priority. In this connection, Japan is developing techniques for water use management correlated with planting pattern, and designing subsystems for irrigation and drainage which correspond to changes in demand for agricultural water. For aspect related to impact of climate change, see under the subsection on this topic. Various research programmes on combating desertification have been promoted in Japan based on “Basic Environment Law” and “Agenda 21 action plan”.

In the area of crops, Japan is working to increase productivity by developing varieties which are highly productive or resistant to disease and pest, as well as to develop crops that are resistant to salinity, cold and drought. In the field of the environment, biotechnology is used in technology to reduce environmental pollutants which come from various sources, technology for cleaning up and removal of pollutants in the environment (environmental purification technology), technology for measuring and assessing conditions of environmental pollution (environmental measurement technology), and technology for products and manufacturing which do not cause pollution or which impose less environmental load (environmentally sound technologies).

Biotechnology is being widely used in such areas of wastewater treatment, and there are new wastewater treatment systems in operation which make use of bioreactors of enzymes and microorganisms. A wastewater treatment system was developed by an application of a new methane fermentation method, i.e. Up flow anaerobic sludge blanket (UASB) method for the waste water from animal barn. The system requires only half electricity in comparison with a conventional method. The technological needs for wastewater treatment include the establishment of advanced sewage treatment technology including denitrification and dephosphorization and of low-cost and multi-purpose waste water treatment technology for small enterprises. For water purification, the needs include the establishment of advanced water treatment technology to cope with recent water pollution problems including cryptosporidium and trihalomethanes.

Government research institutes, universities and the business sector carry out Research and development of environmentally-sound technology.

MLIT, Public Works Research Institute (PWRI) and related institutions research the water-related risk management, such as the case in establishing the UNESCO IHP Tsukuba Center (tentative), whose target is research, training and information network of the water-related risk management, inside PWRI is being promoted.

**Financing:** The estimated cost for achieving universal coverage of water supply for household use is 1900 billion yen per year. All costs for water resource management and development are covered domestically. All water users in Japan shall pay for the appropriate cost depending upon the volume, or area irrigated in the case of agricultural use, and the type of water provided. Some municipal waterworks bodies have a discount water rate for the poor.

The estimated cost for sanitation, it is 23.8 trillion yen to increase the coverage of the sewage treatment plant from 54% to 66%. Public sources are principal for activities aiming at the reduction of dioxins emission from waste incinerators.

**Cooperation:** On the occasion of the Third World Water Forum held on March 2003 in Kyoto, Japan launched an Initiative for Japan's ODA on Water. For drinking water and sanitation, for which the targets were set by the Millennium Development Goals and at the World Summit on Sustainable Development (WSSD), Japan has been by far the top donor among the bilateral donors and international institutions, providing about US\$1 billion, a third of the average (about US\$3 billion) of the total ODA financial flow from during the period between 1999 and 2001. Japan will continue these efforts and, in particular, focus on the following 3 salient measures.

- (a) Japan plans to provide assistance for safe drinking water and basic sanitation to poor countries and regions including Africa, which are suffering from shortages. For this purpose, Japan has established the "Grant Aid for Water Security," and 16 billion yen was earmarked in the FY2003 budget for this scheme.
- (b) In FY 2002 Japan started to apply loan aid with the lowest concessional condition ever made (the current interest rate is 0.75% as a general rule) to projects such as the water supply systems, water pollution control facilities.
- (c) Japan plans to provide assistance for capacity-building to approximately 1,nn000 people over the next five years from FY 2003 in order to improve the developing countries' capacity for planning, management, and control in the field of water supply system and sewage system.

Japan is also active in building and strengthening international partnerships with other donors. Japan and U.S. will cooperate in West Africa and Asia under the Clean Water for People Initiative launched at the WSSD in 2002. On the occasion of Third World Water Forum, Japan and France agreed to cooperate in supporting the Senegal River basin, Djibouti and Laos.

The Government is also involved in the establishment of the Asia-Pacific Network for Global Change Research to provide necessary governmental support to the scientific process of reducing uncertainties related to global change; and activities related to various bilateral environment or science and technology agreements. (As of November 1996, there were four bilateral environmental cooperation agreements and seventeen bilateral science and technology agreements). Having experienced serious pollution in the past, Japan has actively promoted scientific research to address the problems of domestic pollution. It actively participates in worldwide research projects, including the International Geosphere-Biosphere Programme (IGBP), the World Climate Research Programme (WCRP) and the Human Dimensions of Global Environmental Change Programme (HDP), and the Technology Renaissance for Environment and Energy, as well as in such scientific assessment activities as those of the Intergovernmental Panel on Climate Change (IPCC). It also carries out related interdisciplinary research. Furthermore, Japan contributes to regional development, including the construction of a research network for the promotion of effective research in the Asia-Pacific region.

Promotion of observation and scientific research is beneficial to developing countries in their efforts to improve the prediction of climate change and to mitigate the impact of natural disasters. The important role of Earth observation in solving global environmental issues and the importance of strengthening international cooperation in this area have been stressed in the Implementation Plan of the WSSD, the Ministerial Declaration of the Third World Water Forum held in March 2003, and the Action Plan of Evian G-8 Summit. As a result of the Earth Observation Summit (EOS) I on July 31, 2003, it was declared that a 10-year Implementation Plan for a comprehensive, coordinated, and sustained Earth observation system or systems will be prepared. Japan will host EOS II on April 25, 2004, which will become an important milestone in the process of strengthening international cooperation, by adopting the Framework of the Plan. Against these background, Japan is co-operating with various countries and international organizations in the following fields; i) ocean observation, including the North East Asia Region GOOS, the ARGO project, deployment of the TRITON buoys and Ocean Drilling, ii) terrestrial observation, including observations of the Asian monsoon jointly with meteorological communities in other countries; iii) observation of the environment from Space.

Japan provides assistance to developing countries to improve the water supply and sanitation systems. Japan has dispatched experts and provided training courses such as the “Water Supply Management Seminar” and the “Training Course in Solid Waste Management”. Japan has joined the Ramsar Convention. For aspect related to impact of climate change, see under the subsection on this topic.

The Network of Asian River Basin Organizations (NARBO) proposed at the 3<sup>rd</sup> World Water Forum was established in February 2004. Its purpose is to share respective countries’ experiences and information among river basin organizations and related organizations including governments and international organizations.

The International Flood Network (IFNet) was established at 3<sup>d</sup> World Water Forum in March 2003. IFNet aims to facilitate international cooperation in flood management through publishing new letters, information sharing, some projects.

Japan had been making substantial contributions to the implementation of the Convention to Combat Desertification in Countries Experiencing Drought and/or Desertification Particularly in Africa. Through its contributions, Japan has been supporting, for example; various regional meetings in Asia such as the ministerial meeting, focal point meetings, experts meetings and workshops; national awareness-raising seminars and regional activities in Latin American and the Caribbean; inter-regional workshop such as Asia-Africa Forum; and national report preparation by Asian, African, Latin America and Caribbean country parties. Furthermore, Japan hosted an ad hoc panel on early warning systems on June 2001 and an expert’s workshop (TPN1 workshop) on desertification monitoring and assessment with respect to the Thematic Program Networks (TPNs) in the context of the development of Asia's regional action program for UNCCD. The latest national report to the Secretariat of the Convention was prepared in 2000.

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