

# **“Integrated Water Resource Management addressing climate change and other risks”**

**(Interim report)**

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**Study Group on “Integrated Water Resource Management  
addressing climate change and other risks”**

**Ministry of Land, Infrastructure, Transport and Tourism,  
JAPAN**

# (Summary)

## 1. Issues regarding water resources policy

### (Background)

#### - Quantitative catch-up by improving facilities mostly achieved -

Today, Japan's national water demand is slightly decreasing. The divergence between water demand and supply has narrowed as water resource development facilities have improved, and Japan's water supply now largely meets demand.

### (Actual state and issues)

#### - Potential issues and climate change risk and their effects on water resources -

But Japan's approach to solving other water issues such as effective use of water resources, countermeasures to flood and landslide damage, demand for safe and tasty water, consideration of a rich environment, and a decline in the water supply function at times of disaster, is not sufficient. Japan must properly deal with these issues, which the public is realizing.

In addition, recent climate change has caused changes in rainfall patterns and increasing precipitation fluctuations. The fourth assessment report (2007) of the Intergovernmental Panel on Climate Change (IPCC) clarified that global warming is taking place at an accelerated pace. The effect of climate change appears mostly through "water," and climate change is forecast to exert a stronger influence on water resources in the future.

### (Necessity for countermeasures)

#### - Shifting to integrated water resource management -

Japan must secure stable, good-quality water resources in any future social circumstances by solving potential issues and eliminating new risks associated with climate change. To do so, we should move from conventional water management, which stresses quantitative water supply by developing water resources, to integrated water resource management, which includes effective use of water resources, comprehensive control of water quality and quantity, and risk management.

## 2. New risks due to climate change and countermeasures

### (New risks due to climate change in Japan)

The IPCC's fourth assessment report points out that social change such as increased water demand caused by regional population increase and economic development, enlarges the

effects of climate change.

Due to the temperature rise caused by climate change, irrigation timing will change and the amount of water evaporation from paddies will increase. According to a rough trial calculation made by assuming the change of water utilization and the change of social circumstances (population decrease in each region when food production is assumed to maintain the status quo), drought risk will be mitigated by changing the irrigation timing in 50 years or 100 years in the Ishikari River basin and the Tone River basin. However, drought risk in general may increase in the future.

In the Matsubara/Shimouke dam area of the Chikugo River basin, drought risk may increase in 50 to 100 years. In such areas as the Egawa/Terauchi dam, where the ratio of municipal water use is relatively large compared to other water uses, drought risk may be mitigated.

There is also growing concern about declining water quality, negative impact on ecosystems such as undermining biodiversity, groundwater salination accelerated by sea-level rises, frequent occurrence of floods caused by strong rainfall and tidal waves and their damage, and increased defective function of water supply facilities.

#### **(Measures against new risks caused by climate change in Japan)**

Adaptation measures such as the promotion of integrated water resource management in addition to new water resource development are needed. It is necessary to establish necessary measures in adaptive manner from the early stage based on a long-term assumption that climate change will grow.

Building a society that use water efficiently is an effective adaptation measure. It is also a mitigation measure by reducing water and wastewater treatment energy and CO2 emission. Therefore, building a society that uses water efficiently should be promoted and treated as a basis of countermeasures.

### **3. Promotion of integrated water resource management**

Toward achieving the under-mentioned principle and purpose, we should recognize the water cycle as an important resource for conducting social activities. Water should be used and controlled in a manner whereby the proper quality and quantity can be secured, and optimal water distribution should be promoted by combining and coordinating social activities based on their purposes.

Principle: “Establishment of a lasting water-using society and a healthy water circulation system”

Basic purpose: “All the people can enjoy safe, untroubled, and rich water blessings”

**(Basic point of view)**

**a. Effective use of water resources**

From the viewpoint of effective use of water resources, measures should be taken from both the demand and the supply sides. In terms of demand, building a society that uses water more effectively should be promoted by changing the basic social structure. In terms of supply, existing stocks (existing facilities) should be used optimally and the necessary water resources secured. Comprehensive management of surface water and groundwater should also proceed.

**b. Quantity/quality comprehensive management**

New comprehensive water quantity/quality management (unlike the former approach that stresses water quality only) should be conducted, which considers that the quality of water greatly affects people’s lives and health, the taste of water, the relationship between people and water, and the survivability base of animate beings.

**c. Viewpoint of risk management**

Risk management should work to minimize the risk to people by guaranteeing security against declines in the water supply function caused by large earthquakes, facility damage by aging, harmful substances mixed in by terrorists, etc.

**d. Measures against new risks due to climate change**

For new risks due to climate change, non-traditional adaptive management should be conducted at an early stage.

**(Measures to promote integrated water resource management)**

Based on the relationship between the national government and the local government in controlling the basin, not only conventional institutional frameworks to catch up with demand stressing water resource development but also other institutional frameworks or organizations to promote above-mentioned integrated water resource management should be studied.

After the basic demand and supply balance is secured upon the completion of building water resource development facilities based on the full plan in the future, a framework for integrated water resource management to eliminate new risks associated with climate change should be established and a consensus on this framework obtained.