

## **L03**

### **Sustainable river management**

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#### **Abstract**

The 3.11 Earthquake occurred on Friday, 11 March 2011 in East Japan. It was the most powerful known earthquake ever to have hit Japan, and one of the five most powerful earthquakes in the world since modern record-keeping. The earthquake triggered powerful tsunami waves that reached heights of up to 40.5 meters. The tsunami caused nuclear accidents.

The directional movement of river management seemed to be changing. I would like to introduce some movements of water managements after 3.11.

#### **1. Response to super-giant disaster**

The 3.11 earthquake was very huge and the tsunami and the nuclear power explosions continuously occurred. Central Disaster Prevention Council decided 2 defense levels to the tsunami disaster. Level 1 is once a century tsunami and Level 2 is once a 1000 years disaster. We can response to Level 1 to make defense facilities, sea defense levee or gates, but cannot protect to Level 2 using facilities. When level 2 disasters will occur, residential people have no alternative but to escape at high place.

In the area of river management, rainfall strength have been stronger than before and floods of over planning discharge have been happened frequently. Because of floods discharge are so big, they cannot response to disaster recovery with river facilities. Disaster prevention has been moved to new stage.

#### **2. Environmental care of disaster prevention**

It is a matter of course that disaster preventions are environmental friendly methods even sea defense in Tohoku after 3.11.

#### **3. Micro-hydro power rooted in community**

Japanese people have been interesting in distributed and natural energy after the explosions

of Fukushima nuclear power. Micro-hydro power is one of natural energy and attract rising attention. I expect to use micro-hydro power rooted in community. River management issues are simplifying a procedure of water right and clarification of effects of ecosystem by taking water from mountainous streams.

#### **4. Water storage for prevention of floods**

Concentrated torrential rains of 100 millimeters have not been uncommon in recent years. Floods by smaller rivers in urban areas have caused a rapid increase in damage costs. Change of water cycle, diminishing of water storage area, infiltration ability and heavy rainfall are caused of floods. It is necessary to retain the rainwater to prevent a flood. Japan architectural Institute made guidelines to store rainwater in a house. In addition, Japanese government made the new law to promote utilization of the rainwater.

We started water control through citizens' collaboration" in Fukuoka city. The measures are to be taken in all the basin areas, water outflow is controlled through various measures including water retention, impoundment, and infiltration.

These approaches need citizens' collaboration and powers of private sectors. The past bureaucrat-led water managements are changing



into private sector initiatives.

## **5. River restorations develop into regional construction**

Disaster correspondence becomes the social big problem, but, on the other hand, the action of the nature restoration is developing into regional construction by initiative of local residents.

## **6. Conclusion**

Rice cultivation is fundamentals of river management in Asia. Monsoon. They have made effort to achieve a balance of risks and benefits. The problems facing us today is how to achieve a balance of risks and benefits from historic standpoint.

The keywords of solution are acceptance of risk, distributed technology and citizen participation.