

## **Water Allocation In Jeneberang River Basin in Indonesia**

### **1. Jeneberang River Basin Development.**

The prime reason for developing Jeneberang River Basin was to overcome flood in the city of Makassar and the vicinity. The large flood ever before the development was in 1976, where 2/3 of the Makassar City was inundated. First development was to construct dyke along Jeneberang River for the protection. Since then, the Makassar City has been protected from flood of 25 year return period.

The development was continued, after quite large area had been released from routine flood problem, especially the paddy fields. There have been some free intakes diverting water from Jeneberang for irrigation. In order to increase the productivity of the land by increasing the cropping intensity Bili-Bili dam was developed. The dam was completed in 1998. The irrigation system for 23,650 ha has just completed in 2004. The trial irrigation for the overall system is being implemented this year, 2005.

The development of Makassar city and the vicinity is going relatively fast now, since flood problem is largely solved. The population increase also intensifies economic activities. Some industries also develop. Consequently, water demand is increasing.

Hydrologic data of 1972 – 1997 in Jeneberang River Basin shows annual water availability of 1.2 billion m<sup>3</sup>. The requirement in 2005 is assessed as 489 million m<sup>3</sup>. The utilization, therefore is only 40%. Still, based on the simulated Bili-Bili reservoir operation during those years, there are 3 drought year encountered. The probability of drought is around 10%. Considering increase of population and development in the basin, the water requirement in 2020 is 577 million m<sup>3</sup>. Using the same data, there would be 8 drought years, around 40% probability.

### **2. The watershed is changing.**

The erosion rate in the Jeneberang watershed was assessed during the design stage of Bili-Bili Dam development. The limited forest and the young volcanic areas contribute to the relatively high erosion rate. In order to minimize sedimentation rate into the reservoir, three sabo dams and five sand pockets have been built.

Unfortunately Bawakareng Caldera collapse in 26 March 2004. More than 200 millions cubic meter of sediment is ready to flow downstream to the reservoir. The river is relatively short, only 80 km from the head water to the estuary. The morphology of the river has changed.

Jeneberang watershed is one out of 69 critical watersheds in Indonesia as stated by the Minister of Public Works in the year 2005. There has been a national movement on greening forest in Indonesia including Jeneberang. However, we may anticipate worsening of water availability due to the collapse of Bawakaraeng caldera walls and population activities in the forest areas.

As part of the development of Bili-Bili Dam, an integrated telemetry system was established. The system comprises some water level recorder and rainfall recorder. With the latest situation we plan to install some more rain gauges stations. Besides the integrated systems, there are also some existing manual rain gauges which have been in existence even prior the development of Bili-Bili Dam. We wish this system and equipment could support the sustainable water management including water allocation.

### **3. The necessity of water allocation**

It is now become the concerns of many stakeholders, because with the presence of the reservoir, the regulated water makes the water in the river is not as much as before during rainy season. The water is kept in the reservoir for dry season uses, and for multi uses as planned. By making the inventory of people's activities, we can plan the allocation of water for the followings; irrigation water use, municipal and domestic water use with Water Treatment Plant (WTP), municipal and domestic water use without WTP, industrial water use, fishpond, fishing, plantation, flushing, hydropower generation, navigation, recreation, and water sport; in total 12 uses.

There has been no complaint from water supply Company, but they now perceive the shortage of water after most of water was diverted for irrigation during the irrigation operation trial in 2005. In short, water allocation was not too important before the development of Bili-Bili Dam. And now, we have to think of proper allocation of water for the above 12 uses to minimize water conflicts. Moreover, based on the reservoir operation simulation mentioned above, there are great possibilities for drought to occur.

### **4. Legal basis.**

Indonesian Water Resources Law, Law no 7 year 2004, had been prepared since 1990s, to renew the previous Water Law no 11 year 2004. The preparation included draft of some Government Regulations (GR), including draft of GR for Water Use Right and guidance for water allocation. The draft of the GR and the guidance which is dated 2001 is being discussed currently. Of course, we have to make slight changes to meet the New Water Law. I wish that we can have some inputs from this workshop.

### **5. Water allocation procedure.**

The scope of the Water Allocation Guidance (the Guidance) covers the institution responsible for determining the allocation, the management, the coordination and the reporting system.

#### **5.1. The Institution**

The negotiation on water allocation shall be done through Water Council. Water Allocation planning (calculation) in the province is done by the Balai for Water Resources Management, and by the Water Resources Management Service in the District. The Balai shall cooperate with the Public Cooperation for Water Resources Management if any.

#### **5.2. The Management**

The water allocation management comprises the following activities; planning (calculation), implementation, monitoring, evaluation, and follow up actions. The planning shall integrate water related problems that refer to regional/local spatial planning, allocation requirements, water availability during drought/normal/ flood and also consider water quality.

The Water allocation is computed using relevant computer software, predicting water availability based on hydrologic data and predicted coming season, water requirement, priorities and other related aspects. The priorities are discussed in the Water Council.

### **5.3. Output**

Water Allocation is presented into General Allocation for the coming whole one year, and detail water allocation based on assumed water shortages; 0 – 20%, 21 – 40%, and >40%.

### **6. Monitoring and reporting.**

These activities include inspection, feedback, law enforcement, and revision.

### **7. Implementation**

The trial practice for water allocation is being designed for Jeneberang River Basin, despite the hard work for overcoming sediment flow from Bawakareng. The effort is also part of the preparation for establishment of Jeneberang River Basin Public Corporation for its water management.

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