



# GEOSS Asian Water Cycle Initiative

## Country Activities



# INDONESIA

### Country Report

Kusuma, MSB, et.al. Water Res Eng, FCEE, ITB



### ▶ **Drought in Indonesia**

- ▶ Long period of dry season in Indonesia has been considered to be caused by the effect of climate change. BMKG (Indonesia Meteorological Agency) predicted that dry season will occur until October. Normally, it occurs until September.
- ▶ Based on the information from BNPB (National Disaster Management Agency,) about 127,788 ha of rice fields were in drought condition.
- ▶ There are 10 reservoirs (8 in Central Java, 1 in East Java, and 1 in Bali) in drought condition, 19 reservoirs in normal condition, and 42 reservoirs in alert warning includes three large reservoirs in West Java (Saguling, Cirata and Jatiluhur).



Jatiluhur, Citarum River, West Java



Pacal, West Java



Gajah Mungkur, Solo River, West Java



# Current Event in 2012

 INDONESIA

**Forest Fire in 2012**

- ▶ **Wildfires**
- ▶ In Indonesia, 77% of hotspots and wildfire occurred on farms and plantations, while the rest of 23% occurred in forests. Land and forest fires are generally caused by human activity, mostly from activities in land preparation for cultivation, agriculture by burning.
- ▶ Long period of drought such occurred in this year results in the **increase of wildfires** event.
- ▶ Data from Ministry of Forestry shows that from period of **1 January 2012 to 23 September 2012**, **29,675** number of hotspots have been observed in Indonesia, mostly in Sumatera, Kalimantan, and Sulawesi (92.4%).
- ▶ Data in the in same observation period in **2011** shows **23,852** number of hotspots, which mean that there is an increase of **5,824** number of hotspot event (**24%**)



Ciremai West Java



Papandayan, West  
Java



Sindoro, Central  
Java



Rokan Hulu, Sumatera, tv one



Agung, Bali island, detik.com



Rinjani, Lombok Island, detik.com



- ▶ **Anomaly in Current Climate Condition**
- ▶ Flood in dry season period occurred in some areas such as the one that occurred at Batang Kuranji River, Padang, West Sumatera in the beginning of September 2012. It was reported that the flood flow generated 2 m inundation depth and caused 4 people died.
- ▶ Adaptation of climate change must be applied to tackle this flood anomaly. Structural mitigation such as new design of flood control, updated methodology and development of flood index could be applied. Furthermore, non structural mitigation such as early warning system and validation of new law and policy for river basin are also important.



Kuranji River Flash Flood, September 12, 2012, 2 m inundation depth in 4 subdistrict and 4 people died,

[detik.com](http://detik.com).

Kuranji River Flash Flood, July 24th, 2012, in 5 subdistrict, 8 people missing and 272 people evacuated,

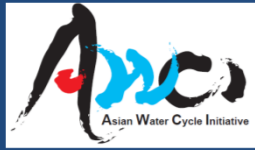
[Kompas.com](http://Kompas.com) and [Jakarta Globe](http://JakartaGlobe.com).





## ▶ Government Policy

- ▶ Government policy is developed based on the **13th Conference of the Parties to the UNFCCC** in Bali, which created the Bali Action Plan.
- ▶ On February 5th 2007 the Indonesian Government issued Law No. 17 of 2007 on the **National Long-Term Development Plan (RPJPN) for Years 2005-2025**. To achieve the mission statement of the document, Government of Indonesia concluded that "the long term sustainability of development will face the challenges of **climate change** and **global warming** which **affect activities and livelihood**".
  - ▶ *"To make Indonesia wonderful and preserved by keeping the balance between utilization, sustainability, existence, and usefulness of natural resources and the environment, by protecting the function, capacity and the comfort of living in the present and the future, through balanced land use for settlement, social economic activities and conservation; augmenting the economic utilization of natural resources and environment sustainably; improving the management of natural resources and the environment to support the quality of life; providing the wonder and comfort of life; and enhancing the preservation and utilization of biodiversity as basic capital of development"*.



- ▶ In November 2007, the Indonesian Government published the **National Action Plan on Climate Change (RAN-PI)**, which contains initial guidance for a multi-sectoral coordination effort designed to address jointly the challenges of mitigation and adaptation to climate change
- ▶ In December 2007, Bappenas (the National Development Planning Agency) published a document titled "**National Development Planning: Indonesian Responses to Climate Change<sup>1</sup>**". The document is intended to strengthen and reinforce the RPJMN (National Medium-Term Development Plan) 2004-2009 as well as to include inputs that can guide the integration of considerations of climate change into the preparation of RPJMN 2010-2014



- ▶ In 2010, Bappenas issues **ICCSR (Indonesia Climate Change Sectoral Roadmap)** that serves as a detailed policy guidance and mainstreaming tool for the sectoral and cross-sectoral development programs in order to take up considerations of climate change into all aspects of development planning.
- ▶ Currently most of the sectors under ministry or agency has been developing **National Action Plan of Climate Change Adaptation** (and Mitigation) within The Roadmap guideline.
- ▶ Longterm Pilot Project of MP3EI (*Masterplan Percepatan dan Perluasan Pembangunan Ekonomi Indonesia –Masterplan of Acceleration and Expansion of Indonesian Economic Development*) (2011-2015) :
  - ▶ IWRM for Citarum River Basin supported by International Funding Resources
  - ▶ Several priority river of other region for the next incoming year
  - ▶ Local Government should begin to develop program related to the

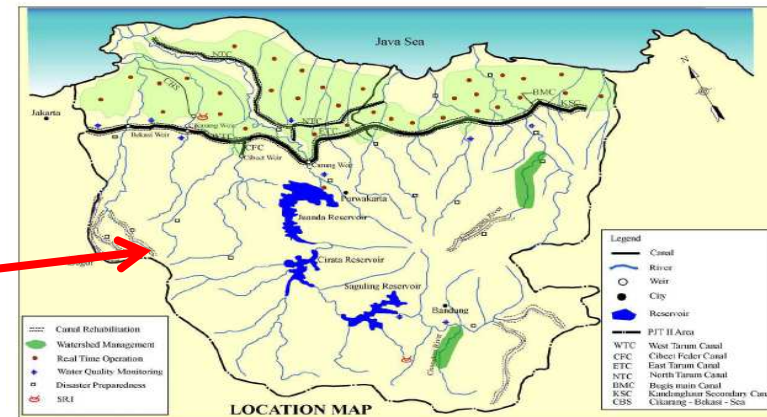
above policy



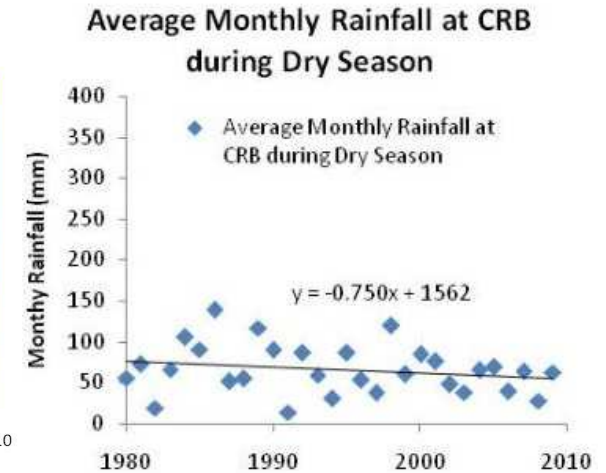
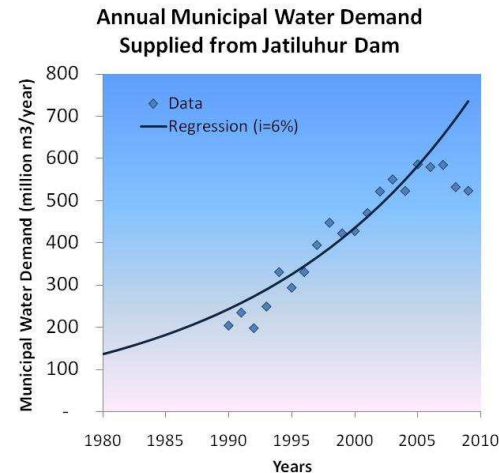
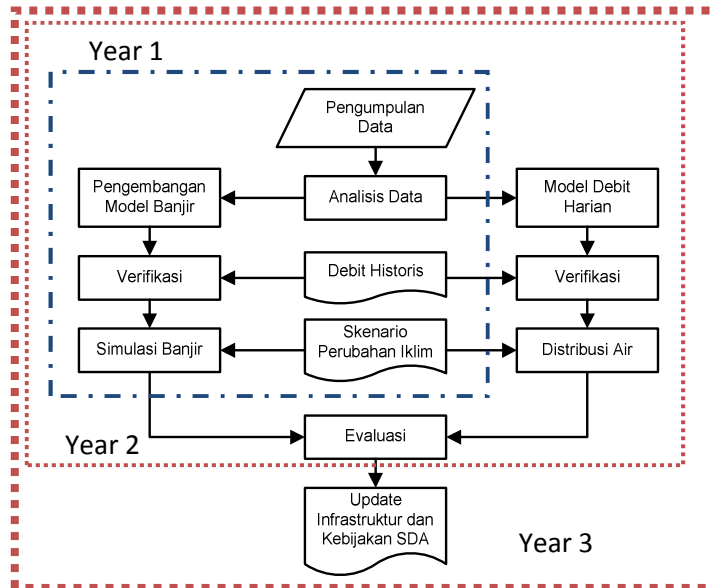
- **Research and Development**
  - Self funding
  - Government and private support
- **Network development : National and International**
  - Conferences
  - Data sharing
  - Joint research
  - Education
- **Education and training**
  - New undergraduate study program related to climate change concern

### Research under The Program of Acceleration and Expansion Indonesia Economic Development (MP3EI) 2011-2025:

“Evaluation of Water Resources Management System for Climate Change Adaptation in Citarum River Basin” (Ministry of Education, Min of Economic, Min of Public Work and Local Government)



- ▶ Accessibility of (secondary) data
- ▶ High demand from three cascade reservoir operator and users.
- ▶ One of the main source of clean water for Jabodetabek Area, the most important area for national development



- ▶ Preliminary Study
- ▶ Identification hydrological changes and existing WRM
- ▶ Evaluation the impact on water distribution

▶ Propose update on WRM

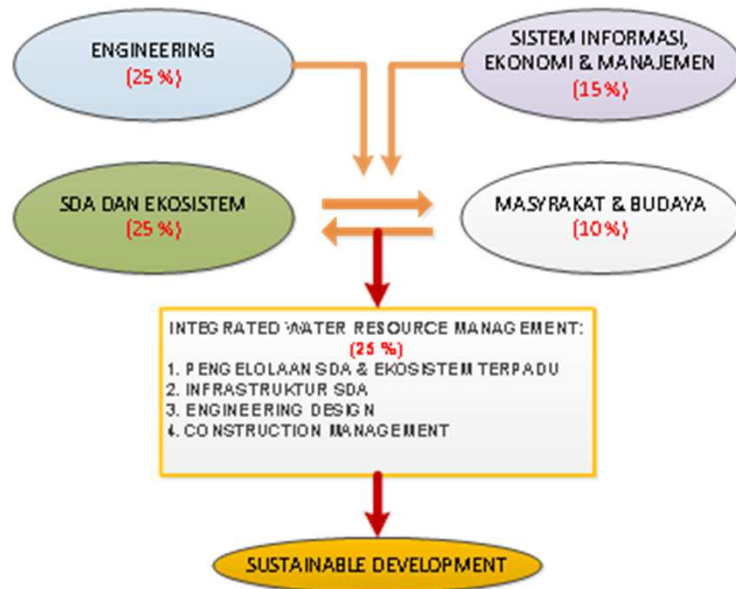


### **Research under The Program of Desentralization Program of Directorate General of Higher Education 2013**

**“Spatial Model of Risk Analysis in Determining Flood Control Criteria (Case study: Upper Citarum River Basin)”**

- ▶ Updating Flood Design Criteria
- ▶ Flood prediction become more difficult due the uncertainty of rainfall pattern.
- ▶ Basis for return period analysis for flood design is issued by Ministry of Public Works. Return period for river flood control is between 5 to 25 years for short term, and up to 100 years for the long term.
- ▶ To improve the reliability of flood design calculation method, system performance for flood control need to be analyzed not only based on structural failure, but also based on flood risk due to time and depth of inundation

### Establishment of new Undergraduate Program of Water Resources Management and Engineering in ITB



- ▶ Climate change adaptation effort is a long term effort.
- ▶ Lack of water resources engineering expert in water related Government and Private Institution
- ▶ The most appropriate systematic effort from university
- ▶ Supported by Ministry of Public Work, Min of Education and Local Government.





Current and Future short and medium term program

- ▶ Continuing Citarum and other climate change related on going Program
- ▶ Further step of new undergraduate program
  - ▶ International network/cooperation for education program
  - ▶ Improving proposed curricullae
  - ▶ Fist year of undergraduate running program 2014.
- ▶ Following up potential cooperation.



# Thank You