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JICA

APPLICATION FORM FOR JAPAN'S TECHNICAL COOPERATION

1. Date of Entry : Day 19 Month 02 Year 2007

2. Applicant : The Government of the Republic of Indonesia

3. Project Title : Tsunami Early Warning System Development Project

4. Implementing Agency : Meteorological and Geophysical Agency (BMG: Badan Meteorologi dan Geofisika) of Indonesia

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5. Background of the Project

(Current condition of the sector, Government's development policy for the sector, issues and problems to be solved, existing development activities in the sector etc)

(1) Current condition of the sector

Indonesia lies on an active geotectonic region, converging three plates; Pacific, Indo-Australia, and Eurasia Plates, where intense seismic belts extend along the archipelago. In addition to direct damage by earthquakes, Indonesia frequently suffered from catastrophic tsunami disasters generated by earthquakes as listed below.

Recent Major Tsunami affected Indonesia

Year	Origin	Death Toll
1977	Nusa Tenggara Islands, Indonesia	107
1992	Flores Sea, Indonesia	1,952
1994	Indian Ocean, East Java, Indonesia	230
1996	Biak Island, Indonesia	96
1998	Papua New Guinea, Bismarck Sea	2,200
2004	Indian Ocean, Indonesia	>200,000
2006	Pangandaran, Indonesia	650

Among the tsunami disasters, the Indian Ocean Tsunami on 26th December 2004 caused the most tragedy damages (more than 200,000 killed or missing, and more than 500,000 evacuated), mostly to Indonesia. The world recognized that tsunami is a natural disaster which can not be controlled efficiently by means of structural measures, while quick evacuation is the most effective and realistic measure to mitigate the damage. For the evacuation of people, tsunami early warning is essential.

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(2) Government's development policy for the sector

After the 2004 Indian Ocean Tsunami disaster, the ASEAN leaders' Special Summit, chaired by the President of Indonesia, agreed to establish early warning system on the Indian Ocean and the Southeast Asia region on 6th January 2005.

On 2 June 2005, the Prime Minister of Japan and the President of the Republic of Indonesia made joint announcement on natural disaster reduction, and decided to establish a joint committee on disaster reduction. In the report of the joint committee, establishment of Tsunami Early Warning System was identified as one of four major components to be promoted.

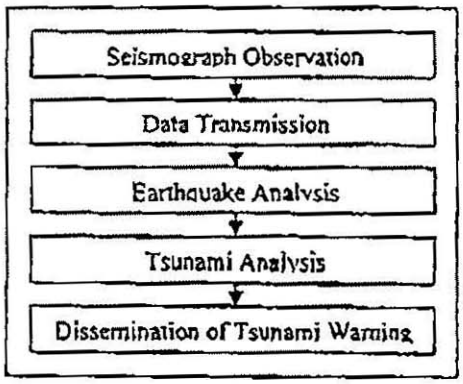
Early in 2005, fourteen (14) Indonesian official agencies concerned, including BMG, prepared "Grand Scenario of Indonesian Tsunami Early Warning System", mentioning "the proposed Tsunami Early Warning System should be able to issue tsunami warning within 5 minutes after the earthquake occurrence.

On 26 September 2006, the Coordinating Minister for people welfare fixed official agencies responsible for each issue on establishment of Tsunami Early Warning System as Executive Chairman of BAKORNAS PB in Decree No.21/KEP/MENKO/KESRA/IX/2006. On the Decree, BMG was appointed as the responsible agency of operational component for seismic monitoring, operational center (earthquake and tsunami) as well as dissemination system.

(3) Issue and problems to be solved

As mentioned in the previous section, BMG should establish the operational component of Tsunami Early Warning System able to issue warning within 5 minutes after an earthquake.

In order to meet the requirement for issuing proper tsunami warning, BMG should enhance its capability in seismograph observation to dissemination of Tsunami Warning as shown in the right table.



The major issues of BMG to establish the system are;

- improving calculation method of magnitude in Earthquake Processing and Analyzing Method,
- installing Empirical Tsunami Analyzing Method into existing Tsunami Analyzing System,
- installing Quantitative Tsunami Analyzing Method into existing Tsunami Analyzing System, and

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- preparing a standard operation manual, in addition to the installed facilities as mentioned in the next section .

Although several kinds of tsunami early warning systems have been introduced to many other countries, a few systems such as Japanese one can issue the warning within 5 minutes after an earthquake.

The Government of Indonesia believes that Japanese assistance is indispensable to deal with the above mentioned issues properly.

(4) Existing development activities in the sector

In addition to the activities mentioned in the previous section, BMG should fulfill the following activities to establish the complete Tsunami Early Warning System.

- Installing enough number of seismographs with data transmitting facilities,
- Establishing Earthquake Processing and Analyzing System, which determines the hypocenter, magnitude, and other necessary parameters for tsunami analysis, and
- Tsunami simulation for the Quantitative Tsunami Analyzing Method.

The above-mentioned necessary activities are on-going with assistance of JICA, German and other donors as mentioned in section "9.Related activities".

6. Outline of the Project

(1) Overall Goal
(Development effect expected as a result of achievement of the Project Purpose in several years after the end of the project period)

To mitigate the damages to human and properties caused by tsunami disaster in the Republic of Indonesia.

(2) Project Purpose
(Objective expected to be achieved by the end of the Project period, elaborate with quantitative indicators if possible)

A system able to issue more accurate Tsunami Early Warning within 5 minutes after the earthquake occurrence, by means of Empirical Tsunami Analyzing Method (for entire area of Indonesia) and Quantitative Tsunami Analyzing Method (for five pilot areas; that are Southern Java, Western Sumatera, Makassar Strait, Flores Sea, and Sulawesi Sea) is established in BMG.

(3) Outputs
(Objectives to be realized by the Project Activities in order to achieve the Project Purpose)

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a) Tsunami in entire area of Indonesia is forecasted by means of Empirical Tsunami Analyzing Method
b) Tsunami in the five pilot areas is forecasted by means of Quantitative Tsunami Analyzing Method
c) Capability of BMG and its staffs on operating Tsunami Early Warning System is enhanced

(4) Project Activities
(Specific actions intended to produce each output of the project by effective use of the input)

0-1) Holding a technical seminar to introduce Japanese Tsunami Early Warning System and also to share the understanding on the Tsunami Early Warning System to be established in the Project
0-2) Determining criteria on issuance of Tsunami Early Warning and Partitioning of Tsunami forecast area in Indonesia
0-3) Improving calculation method of magnitude in Seismic data Processing and Analyzing System
0-4) Establishing Tsunami Analyzing System in the BMG head office
1-1) Installing Empirical Tsunami Analyzing Method into the Tsunami Analyzing System, and checking its proper operation
1-2) Advising on operation of Empirical Tsunami Analyzing Method
2-1) Assisting ITB for formulation of Tsunami Simulation Database
2-2) Installing the Tsunami Simulation Database into Quantitative Tsunami Analyzing System and checking its proper operation.
2-3) Advising on operation of Quantitative Tsunami Analyzing System
2-4) Advising on the maintenance and improvement (expanding coverage regions) of the system
3-1) Assisting preparation of standard operation procedure of the Tsunami Early Warning System
3-2) Promoting daily operational exercises by making use of standard operational procedure.
3-3) Implementing counterpart training in Japan to enhance capacity of BMG personnel involved in operation of the Tsunami Early Warning System
3-4) Coordinating relevant agencies to development the Tsunami Early Warning System

(5) Input from the Recipient Government
(Counterpart personnel - identify the name and position of the project manager – support staff, office space, running expenses, vehicle, equipment, etc.)

a) Counterpart personnel

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