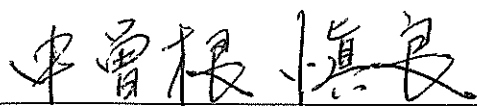


MINUTES OF MEETINGS
BETWEEN
JAPANESE TERMINAL EVALUATION TEAM
AND
AUTHORITIES CONCERNED OF THE GOVERNMENT OF
REPUBLIC OF INDONESIA
ON
JAPANESE TECHNICAL COOPERATION PROJECT
FOR
INTEGRATED DISASTER MITIGATION MANAGEMENT PROJECT
FOR
“BANJIR BANDANG”

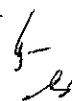
Jakarta, June 22, 2011



Mr. Shiro Nakasone
Leader
The Terminal Evaluation Team
Japan International Cooperation Agency



Dr. Ir. Mochammad AMRON, M. SC
Director General of Water Resources
Ministry of Public Works
Republic of Indonesia



The Japanese Terminal Evaluation Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), headed by Mr. Shiro Nakasone, visited the Republic of Indonesia from May 30 to June 22, 2011, for the purpose of conducting terminal evaluation of Integrated Disaster Mitigation Management Project for "BANJIR BANDANG" (hereinafter referred to as "the Project").

During its stay, the Team and the Indonesian side formulated the Joint Evaluation Team, conducted a field survey, exchanged views and had series of discussions with the Indonesian authorities concerned.

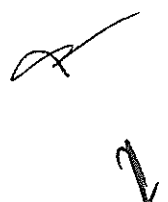
As a result of the discussions, The Team explained the contents of the Terminal Evaluation Report (hereinafter referred to as "the Report") to the Indonesian authorities concerned at the Project Supporting Committee held on 21st June, 2011.

The Team submitted the Report as attached Attachment 1 and both side agreed upon the descriptions of the Report.

Looking back over forty(40) year Sabo technical cooperation conducted by Japanese Government, although the dispatch of the Japanese Sabo experts terminates at the completion of the Project, it was confirmed that best efforts shall be made by the Indonesian side in order to sustain and utilize the assets obtained through the cooperation ie. human resources, facilities, Sabo spirits and friendship etc., and also that the necessary cooperation might be considered in different manner in the future.

Attachment 1: TERMINAL EVALUATION REPORT

Attachment 2: ATTENDANT LIST

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ATTACHEMENT 1

JOINT TERMINAL EVALUATION REPORT
ON
INTEGRATED DISASTER MITIGATION MANAGEMENT PROJECT
FOR
“BANJIR BANDANG”
IN
THE REPUBLIC OF INDONESIA

Jakarta, Indonesia
21st June, 2011

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List of Abbreviation and Acronyms Used

C/P	Counterparts
BAKOSURTANAL	Badan Koordinasi Survei dan Pemetaan Nasional (National Coordinating Agency for Surveys and Mapping)
BMKG	Badan Meteorologi, Klimatologi, dan GEOFISICA (Meteorological, Climatological and Geophysical Agency)
BNPB	Badan Nasional Penanggulangan Bencana (National Agency for Disaster Management)
BPBD	Badan Penanggulangan Bencana Daerah (Local Disaster Management Agency)
EWS	Early Warning System
DG	Director General
ESDM	Kementerian Energi Dan Sumber Daya Mineral (Ministry of Energy and Natural Resources, Republic of Indonesia)
JCC	Joint Coordination Committee
JICA	Japan International Cooperation Agency
LAPAN	Lembaga Penerbangan Dan Antariksa Nasional (National Institute of Aviation and Space)
M/M	Minutes of Meetings
MPBA	Magister Pengelolaan Bencana Alam (Natural Disaster Management)
ODA	Official Development Assistance
OJT	On the Job Training
PDM	Project Design Matrix
PMI	Palang Merah Indonesia (Red Cross Indonesia)
PO	Plan of Operations
R/D	Record of Discussions
SATLAK	Satuan Pelaksana (Disaster Countermeasure and Refugee Handling Unit)
STC	SABO Technical Center
YPM	Yayasan Pengabdian Masyarakat (Public Dedication Foundation)

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- Annexes -

1. PDM 0
2. PDM for the evaluation (PDME)
3. List of procured equipment
4. Operational cost of Japanese side
5. List of Counterparts and stakeholders
6. List of conducted field surveys
7. List of seminars, workshops, and activities participated by the Project team
8. Evaluation Grid

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1. Introduction

1-1 Purpose of the Terminal Evaluation

The terminal evaluation activities were performed with the following objectives;

- 1) To conduct a comprehensive assessment of the achievements and implementation process of the Project.
- 2) To analyze the achievement of the Project in terms of the Development Assistance Committee (DAC) five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact and Sustainability).
- 3) To make recommendations on the Project regarding the measures to be taken for further improvements and securing sustainability of the Project.
- 4) To draw the lessons learned from the Project implementation.
- 5) To participate in the Project Supporting Committee to share the results of the terminal evaluation, contribute to the better understanding of the improvement as well as ensuring the sustainability of the Project.

1-2. Members of the Evaluation

1-2-1. Indonesian Side

Mr. Widagdo	Adviser to Director General of Water Resources
Mr. Sudarsono	Chief of Sub-Directorate of Disaster Mitigation, Directorate of Operational Management & Maintenance, PU

1-2-2. Japanese Side

Mr. Shiro NAKASONE	Japanese Team Leader / Director, Disaster Management Division 1, JICA, HQ
Dr. Hitoshi BABA	Technical Advisor for SABO / Senior Advisor, JICA, HQ
Mr. Kenji TANAKA	Mission Planning / JICA Disaster Management Division 1, JICA HQ
Ms. Tamahi YAMAUCHI	Project Evaluation / IC Net Limited

1-3. Schedule of the Evaluation

A series of meetings and discussions were held from 30th May to 20th June among Indonesian governmental authorities and institutions relevant to execution of the Project, Project team, and Terminal Evaluation Team.

1-4. Methodology of the Evaluation

The Project was evaluated based on the Project Design Matrix for Evaluation (PDME)¹ of the Project, which is a summary table describing the outline of the Project and partially modified from PDM0² for evaluation.

The evaluation took the following steps.

(1) Verification of project performance

The degree of project achievements, such as Input, Activities, Outputs, and Project Purpose, were assessed with reference to Objectively Verifiable Indicators stated in the PDME. To carry out this, various methods were applied including questionnaire, interviews, site observation and discussion with relevant stakeholders.

(2) Examination of Project Implementation Process

The process of the project implementation was assessed from the various points.

(3) Evaluation by Five Evaluation Criteria

The following five evaluation criteria are applied to the project evaluation.

Relevance: Relevance of the Project was considered from a viewpoint of the validity of the Project Purpose and Overall Goal in connection with the development policy of the Government of Indonesia and the needs of beneficiaries of the Project.

Effectiveness: Effectiveness whether the Project has actually benefited the target group and whether the project is effective. It also assesses whether the Project Purpose is being achieved as expected and whether that is in the result of the project's Outputs.

Efficiency: Efficiency verifies whether the project was efficient in terms of effective use of resources. The relationship between Inputs and Outputs is reviewed. In essence, Efficiency examines whether the input cost is appropriate for the degree of achievement on the Outputs and the Project Purpose.

Impact: Impact examines direct effects extended by the project in the long run and indirect effects. The analysis also includes the positive and negative impacts that were not expected when the project was planned.

Sustainability: Sustainability of the Project is focused on institutional, financial and technical aspects by examining the current extent to what the achievement of the Project is sustained or expanded.

¹ Annex 2

² Annex 1

(4) Recommendations and Lessons Learned

The Joint Evaluation Team made the recommendations and drew the lessons learnt based on the results of the evaluation.

2. Outline of the Project

2-1. Background

The natural damage such as the earthquake, the tsunami, volcanoes, and floods happens frequently in Indonesia in recent years, and a lot of lives and the properties are lost. "Banjir Bandang" which is an object of the Project is one of such the natural disasters, too.

"Banjir Bandang" occurs in the various forms of flood and sediment disasters, and in particular, the one accompanied with a formation of a natural dam causes the great deal of harm especially. "Banjir Bandang" accompanied with a formation of a natural dam closes the river channel by the hillside collapse that occurs in the narrowed area in the river, and interrupts the stream water. As a results, the water level and hydraulic pressure rise in short, causes the downstream a large-scale flood and the mud flow.

Large-scale "Banjir Bangdang" has occurred continuously in recent years and a lot of lives and the properties were lost in an Indonesia.

Under this situation, the importance of the counter measures for "Banjir Bangdang" was recognized in "Joint committee on disaster prevention between Indonesia and Japan" in 2006. the Government of Indonesia requested the technical cooperation project to the Government of Japan for enhancing ability of the counter measures for "Banjir Bangdang".

2-2. Summary of the Project

The outline of the project described in PDME is as follows;

(1) Overall Goal

Early warning and emergency measures for Banjir Bandang is established at the hazardous areas all over Indonesia.

(2) Project Purpose

Capability for Banjir Bandang disaster mitigation of PU and local organization concerned in the main hazardous area is strengthened.

(3) Outputs

1. The method for researching Banjir Bandang hazardous area is established at the model site.
2. Early warning and emergency measures for Banjir Bandang is improved at the model site.
3. Capability for researching Banjir Bandang hazardous area is strengthened in the main hazardous areas in Indonesia.

2-3. Administration of the Project

(1) Project Director

Director General of Water Resources, Ministry of Public Works

(2) Project Manager

Director of River, Lake and Reserver, Directorate General of Water Resources, Ministry of Public Works

(3) Coordination with related organizations

Directorate General of Water Resources, Ministry of Public Works is responsible for the coordination with related activities by other organizations

3. Achievement of the Project

3-1. Inputs

3-1-1. Japanese side

(1) Experts

It is planned that a total of seven Experts in four areas of expertise would be assigned for a total of 73.3 months by the end of the Project. The table below shows the details of the dispatch of the Experts.

Table 3-1: Dispatch of Experts

Name	Area of Expertise	Dispatch Period
Mr. Toshiyasu Ueno	Banjir Bandang Disaster Mitigation	Nov. 24, 2008~ Nov. 30, 2011
Mr. Shusaku Shiiba	Banjir Bandang Disaster Mitigation	Nov. 24, 2008~ Dec. 1, 2010
Mr. Keiji Yoshida	Banjir Bandang Disaster Mitigation	Nov. 25, 2010~Nov. 30, 2011
Mr. Taro Uchida	Extracting Deep Collapse Hazardous Streams	Nov. 5, 2009~ Nov. 14, 2009
Mr. Shigetaka Takiguchi	Hazard Mapping	Nov. 5, 2009~ Nov. 14, 2009
Mr. Koji Morita	Emergency Evacuation	Oct. 14, 2010~ Oct. 23, 2010
Mr. Shinichiro Hayashi	Hazard Mapping	Oct. 14, 2010~ Oct. 23, 2010

(2) Provision of Machinery and Equipment

The equipment procured so far in Indonesia by the project is shown in the Annex 3. The expenses for procurement amounted to 542,112,880 Indonesia Rupiah and 14,466 US dollars, as shown in Annex 3. The total operational costs of the Japanese side including the costs for procurement amounted to 6,388,568,396.00 Indonesia Rupiah by March 2011, 423,086,655.00 Indonesia Rupiah in the Japanese fiscal year 2008, 3,108,055,522.50 in 2009, and 2,857,426,218.5 in 2010, respectively, as is shown in Annex 4. This includes the costs for personnel, equipments, the operation and maintenance of equipment, rental vehicles, etc.

(3) Training in Japan

A total of two C/Ps were accepted for training on Banjir Bandang disaster mitigation.

Table 3-2: C/P training in Japan

Name of Trainees	Title	Total Man Month
Mr. Hariyono Utomo	Assistant Chief of Sub-directorate of Implementation of the Western Region/Head of SABO Technical Centre	0.43
Mr. Edy Budi Sushilo	Head of Bakesbang, Pol-Limas, Jember District	0.43
Total		0.86

3-1-2. Indonesian side

The Indonesian side provided 27 CPs as shown in Annex 5. Office space for the Experts was also provided.

3-2. Achievement of Outputs

In order to measure the achievement of the Outputs, Project Purpose, and Overall, the Evaluation team identified the adequate indicators for them in consultation with Experts, C/Ps and stakeholders, by considering what and to what extent the Project originally aimed, and utilized these indicators for Evaluation. The achievement of the Outputs, Project Purpose and Overall Goal was evaluated by five levels: high, relatively high, moderate, relatively low and low.

3-2-1. Output 1

Output 1 is 'The method for researching Banjir Bandang hazardous areas is established at the model site'. In order for the disaster mitigation to be effective, it is necessary first to identify the Banjir Bandang hazardous areas based on topographic and geological features and the area's disaster history. Based on this information, hazard maps are prepared.

For measuring the achievement of this Output, the Evaluation team sets the following indicators for evaluation:

- 1-1. Banjir Bandang hazard maps in the model site are prepared.
- 1-2. Manuals (draft) for researching Banjir Bandang hazardous areas' are prepared in the model site.
- 1-3. Research on Banjir Bandang hazardous areas is made at the model site based on the manual

Based on these indicators the achievement of Output 1 is relatively high as shown below.

Table 3-3: Achievement of Output 1

Indicator	Achievement Status
1-1. Banjir Bandang hazard maps in the model site are prepared.	The indicator has been achieved. But the Research method employs GIS software, of which the C/Ps in Dinas

	PU in Jember have not yet acquired the technique. The Evaluation team was informed that among the trainees on the research method, most people could not properly understand how to analyze the data, since there are no staffs who have enough knowledge on geology. Capacity strengthening on this issue should be conducted. On this situation, the Project team is developing simpler version of the manual so that most people could understand. Hazard map for Bondowoso district was also developed.
1-2. 'Manuals (draft) for researching Banjir Bandang hazardous areas' are prepared in the model site.	The indicator has been achieved. The draft manual was developed in March 2011.
1-3. Research on Banjir Bandang hazardous areas is made at the model site based on the manual.	The indicator has been achieved to some extent. The manual has just been developed. As mentioned in 1-1, capacity strengthening is required for C/Ps to conduct research and develop hazard maps. Also the budget for the necessary data needs to be secured.

Concerning the Indicator 1-1, many staff members at Dinas PU in Jember are currently unable to analyze the data necessary for developing hazard maps. Thus, PU should develop a training system for them. Ideally, the Dinas PU district level should be responsible for developing hazard maps with necessary budget allocation, however, the capacity of budget and human resources is limited at the district level. It is expected that PU at the national level and Balai SABO would support them. Since Bondowoso district was so interested in the hazard maps for Banjir Bandang, the Project team supported to develop hazard map for the area. The training on how to develop hazard maps is expected to be made to the Dinas PU officials at Bondowoso.

On the Indicator 1-2, in order to make effort to incorporate the characteristics of various areas into the manual, the Project made field surveys in the 15 main hazardous areas of Banjir Bandang as in the Annex 6 and utilized these results for developing manual.

3-2-2. Output 2

The Output 2 is 'Early warning and emergency measures for Banjir Bandang are improved at the model site'. For the purpose of disaster mitigation of Banjir Bandang, which occurs very quickly after the indication of disaster appears, the development and implementation of an early warning and evacuation system is very important. Since Banjir Bandang is caused by torrential rainfall over a certain period of time, rainfall observations in the hazardous areas identified in the Output 1 are needed to know about the danger. For the effective evacuation, to determine the person responsible for warning and the communication routes to warn the people are also needed.

For measuring the achievement of this Output the Evaluation team sets the following indicators for evaluation:

- 2-1. Early warning announcement system is in place at the model site.
- 2-2. Early evacuation system is in place at the model site.
- 2-3. 'Manuals for emergency evacuation for Banjir Bandang' are prepared at the model site.
- 2-4. Awareness on evacuation from Banjir Bandang is improved at the model site.
- Based on these indicators the achievement of the Output 2 is high as shown below.**

Table 3-4: Achievement of Output 2

Indicator	Achievement Status
2-1. Early warning announcement system is in place at the model site.	The indicator has been achieved. The rainfall warning system and Water level warning system equipment have been installed in Kalijompo and are being monitored by the monitoring person, who is a volunteer. Standard Operating Procedure (SOP) was developed, based on that the warning announcement is made by the monitoring person if the rainfall and water level surpass the danger levels determined by the SOP. The design of the early warning system equipment that can be produced by the Indonesian manufacturers is under finalization, to be finalized by the termination of the Project.
2-2. Early evacuation system is in place at the model site.	The indicator has almost been achieved. With the support of Yayasan Pengabdian Masyarakat (YPM, NGO) ³ evacuation drills were conducted in October 2010 with the participation of around 40 people from municipalities and villages both upstream and downstream of the Jompo River ('Kalijompo' in Indonesian Language). The local leaders, police representatives, universities, and NGOs worked together to develop the Standard Operating Procedure (SOP) supported by YPM, in March 2011. When the small Banjir Bandang occurred in Kalipakis in March 2011 the people could be evacuated according to the SOP. An evacuation simulation based on the SOP should be conducted to examine whether the system can work and for the people to practice evacuation.
2-3. 'Manuals for emergency evacuation for Banjir Bandang' are prepared at the model site.	The indicator has been achieved. The early warning and evacuation manual for Jember district was developed in March 2011 with the support of YPM. This manual describes the actions to be taken for developing SOP.
2-4. Awareness on evacuation from Banjir Bandang is improved at the model site.	The indicator has been achieved. The Project conducted the activities for raising awareness of Banjir Bandang actively, by producing brochures, posters and banners, and organizing and participating to various seminars and workshops, and coordinating activities with PMI. These activities helped the people in Jember district become aware of the threat of Banjir Bandang disasters and also the evacuation from them.

The Indicator 2-1 has been achieved. The Early warning system is one of the important component in disaster mitigation effort. The rainfall warning system and water level warning system equipment

³ YPM is an NGO working towards community development as well as disaster mitigation, whose staff members are comprised of the Jember university lecturers.

have been installed and are being monitored by the monitoring person. In addition, the alert communications system has been established. It took some time to determine proper locations and to secure the management and security system in coordination with the communities. As to the alert communication, it has been decided that the warning announcement will be made when the rainfall level and water level are surpassed the danger levels according to the SOP. The design of the early warning system equipment which can be produced by Indonesian manufacturers is under finalization. The design of the early warning system equipment should be finalized before the termination of the Project. Once the design of the early warning system equipment is finalized, two more sets are to be installed in Jember district to practice the establishment of the early warning and evacuation system.

The Indicator 2-2 has almost been achieved. With the support of YPM and in cooperation with SATLAK members, evacuation drills with community participation and the researches on the local consciousness about this disaster, on the evacuation system, and on the natural conditions were conducted. Based on the result of this information, the SOP for Kalijompo has been developed. When the small Banjir Bandang occurred in Kalipakis in March 2011 the people could be evacuated according to the SOP. With the review of this time of evacuation experience, an evacuation simulation based on the SOP should be conducted to examine whether the system works and for the people to practice evacuation. However, SATLAK is to be replaced by BPBD in the near future. When BPBD Jember is established, since it is the coordinating body for early warning and evacuations, the system developed by the Project should be coordinated and reorganized by BPBD accordingly. The procedure of the early warning and evacuation manual and SOP should be transferred later to the new BPBD in Jember once it has been established. For smoothly handing over to the BPBD, preparation of the SOP and other resource material & manuals should be conducted and compiled into one set of the integrated document.

Table 3-5: SATLAK members in Jember district invited by the Project team

No.	Institution
1.	Bakesbangpol Linmas (Nation Unity Board and Public Protection)
2.	Bappekab (Development Planning Board)
3.	KODIM (District Military Command)
4.	POLRES (Resort Police)
5.	PMI (Red Cross Indonesia)
6.	Public Relation Office
7.	RRI (Radio Republic of Indonesia)
8.	PU Pengairan (Irrigation) Agency
9.	Plantation and Forestry Agency
10.	PDP (Regional Plantation Company)
11.	Social Agency
12.	Transportation Agency
13.	PU Bina Marga (Highways) Agency
14.	PU Cipta Karya (Human Settlement) Agency

15	Public Welfare Agency (Kesra)
16	Agricultural Agency
17	Environmental Life Office
18	Agency of Fishery and Naval
19	Board of Natural Resources Conservation (BKSDA)
20	Organization of Amateur Radio of Indonesia (ORARI)
21	Jember University (Disaster Research Center)

Source: Project record

The Indicator 2-4 has been achieved. Research on the local people's and local government's consciousness was conducted in June 2010, and found a low level of awareness on Banjir Bandang disaster in the villages which have not experienced this disaster. In contrast, there is relatively high level of awareness in the villages which have had experience with this kind of disaster. Hence the Project actively conducted and coordinated activities with PMI for raising awareness. As a result, the Terminal Evaluation Team has heard from various stakeholders that the local people's awareness of Banjir Bandang and the evacuation for it in Jember district has increased.

3-2-3. Output 3

The Output 3 is 'Capability for researching Banjir Bandang hazardous areas is strengthened in the main hazardous areas in Indonesia'. Throughout Indonesia, there are Banjir Bandang hazardous areas. By selecting a few hazardous areas, and utilizing the research methods for Banjir Bandang hazardous areas as established in the Output1, researches for hazardous areas were made and hazard maps were developed for those areas. Manuals for researching hazardous areas in those areas are now being developed. Capacity development of the staff members at those areas is to be made based on these manuals. Capacity for Banjir Bandang disaster mitigation all over Indonesia is expected to be developed through preparing the Action plan. Dissemination of these manuals is to be made through holding workshops and seminars.

For measuring the achievement of this Output the Evaluation team sets the following indicators for evaluation:

- 3-1. Hazard Maps of Banjir Bandang are prepared in the main hazardous areas in the country.
- 3-2. Manuals (final) for researching Banjir Bandang hazardous areas are prepared in the main hazardous areas in the country.
- 3-3. Research on Banjir Bandang hazardous areas is made based on the manual in the main hazardous areas in the country.
- 3-4. Action plan on researching Banjir Bandang hazardous areas are prepared in the main hazardous areas in the country.

Based on these indicators the achievement status of Output 3 is relatively low as shown below.

Table 3-5: Achievement of Output 3

Indicator	Achievement Status
3-1. Hazard Maps of Banjir Bandang are prepared in the main hazardous areas in the country.	The indicator has been achieved. Hazard maps in Mt. Marapi (West Sumatra), Palu (Central Sulawesi), and Sinjai (South Sulawesi) have been prepared by PU at the national level and the Experts. But technical transfer for researching hazardous areas and developing hazard maps in those areas has not been made. The progress of achieving the Indicator was delayed. Project team should make best possible effort for developing capacities in the main hazardous areas.
3-2. Manuals (final) for researching Banjir Bandang hazardous areas are prepared in the main hazardous areas in the country.	This indicator is expected to achieve. The draft Manuals developed for Jember are now being simplified so that the Dinas PU staff members could understand and utilize them.
3-3. Researching Banjir Bandang hazardous areas is made based on the manual in the main hazardous areas in the country.	The indicator has not been achieved. Once the manual for Research method is finalized, PU is to train Dinas PU staffs first on the three areas where the hazard maps were developed by the Project team. The Project team should make best possible effort for this research in those areas during the Project period.
3-4. Action plan on researching Banjir Bandang hazardous areas are prepared in the main hazardous areas in the country.	The indicator has not been achieved. Action plan which determine the roles, functions, and the key actions to be taken by each stakeholder for improving the capability for Banjir Bandang disaster mitigation all over the Indonesia, are going to be prepared by the end of the Project.

The Indicator 3-1 has been achieved. Hazard maps in Mt. Marapi (West Sumatra), Palu (Central Sulawesi), and Sinjai (South Sulawesi) have been prepared by PU at the national level with the support of JICA Experts, utilizing topographic maps, aerial photographs and implementing topographic researches. However, technical transfer for researching hazardous areas and developing hazard maps has not been made. The Project team should make best possible effort for developing capacities first in the above three areas by the end of the Project.

On the Indicator 3-3, the manual for researching Banjir Bandang hazardous areas is very much needed not only consisting the methodology of research, but also in the identification of the hazard potential area. It is appreciated that the manual be developed in 'user-friendly method', using cartoon approach.

The Indicator 3-4 has not been achieved. Based on the activities from the Output 1 through the Output 3 so far, the Project is going to identify capacity gaps and prepare Action plan for improving capability for Banjir Bandang disaster mitigation all over the Indonesia, which is coordinated by PU as well as BNPB, by the end of the Project. The Action plan include the roles and functions of PU, BNPB, BPBD and other related organizations at the national, regional and district levels for Banjir

Bandang disaster mitigation, and the key actions that each institution should take. The plans consist of technical matter and also deal with the improvement of knowledge and know-how of the human resources concerned (capacity building program).

3-2-4. Project Purpose

The Project Purpose is ‘Capability for Banjir Bandang disaster mitigation of PU and provincial organizations concerned in the main hazardous areas is strengthened’. Based on the activities of the Output 1 through 3 the manuals and Action plan are to be developed, which is important for disseminating the practices developed by the Project in Jember district to other main hazardous areas. Capacity development of PU and related institutions in the main hazardous areas is to be made.

For measuring the achievement of the Project purpose the Evaluation team sets the following indicators for evaluation:

1. Manuals with Actions Plans for improving capabilities of Banjir Bandang disaster mitigation all over Indonesia are approved by the concerned authorities.
2. Evacuation simulation is made based on the manual in the model site.
3. Capacity of developing hazard maps for Banjir Bandang in the main hazardous areas is strengthened.

Based on these indicators the achievement status and prospects of Project purpose during the Project period is moderate to relatively high as shown below.

Table 3-6: Achievement Status and Prospects of Project Purpose during the Project period

Indicator	Achievement Status and prospects during the Project period
1. Manuals with Actions Plans for improving capabilities of Banjir Bandang disaster mitigation all over Indonesia are approved by the concerned authorities.	The indicator has not been achieved and is expected to be achieved. The manuals and Action plan would be finalized soon, and are expected to be approved by the concerned authorities by the end of the Project.
2. Evacuation simulation is made based on the manual in the model site.	The indicator has not been achieved and is expected to be achieved. Since the early warning and evacuation manual for Jember district and the SOP for Kalijompo have been developed, the evacuation simulation is expected to be made based on the manual and the SOP in Kalijompo for practicing evacuation.
3. Capacity of developing hazard maps for Banjir Bandang in the main hazardous areas is strengthened.	The indicator has been achieved in Jember district, but not in other areas. The progress of the indicator is delayed. The Project team should make best effort possible to develop capacity in those areas.

3-2-5. Overall Goal

The Overall Goal is ‘Early warning and emergency measures for Banjir Bandang is established at the hazardous areas all over Indonesia’. The indicator for the Overall Goal in PDM is ‘The number



of victims by Banjir Bandang all over the Indonesia'. However, this is not an appropriate indicator for evaluation of the achievement of the Overall Goal, because the number of victims can not be assumed since it depends largely on the occurrence of disasters and the size and type of the disasters which occur. Even after the early warning and evacuation measures are established it could not be assured that the number of victims be reduced since it would increase if the big disaster occurs. Therefore, the evaluation on the achievement of Overall goal based on this indicator is omitted from the Terminal Evaluation.

For measuring the achievement of the Overall Goal the Evaluation team sets the following indicator for evaluation:

1. All the provinces in the Banjir Bandang hazardous areas establish their early warning and emergency measures.

Based on the indicator above, the prospects of achievement of Overall Goal are uncertain with uncertainty in number of conditions being fulfilled, as shown below.

Table 3-7: Prospects of Overall Goal

Indicator	Prospects of achievement of Overall Goal
1. All the provinces in the Banjir Bandang hazardous areas establish their early warning and emergency measures.	The indicator is expected to be achieved to some extent, but not fully. In order to establish early warning and emergency measures the provinces need to develop hazard maps and SOPs. There are many conditions to be fulfilled to achieve the indicator.

The indicator is expected to be achieved to some extent, but not fully. In order to establish early warning and emergency measures the provinces need to develop hazard maps and SOPs. There are many conditions to be fulfilled to achieve this indicator, which currently are not certain to be fulfilled, such as BPBDs would be established at district level, dissemination and training for Banjir Bandang disaster mitigation would be conducted among PU, BNPB and BPBD, budget would be allocated for Banjir Bandang disaster mitigation at BPBD, BNPB and BPBD would establish the disaster management framework, etc.

3-3. Issues on the Implementation Process

3-3-1. Communication, Decision making and Implementation System

On the whole, communication, decision making and implementation system are good, but face several issues.

Communication among the Experts and C/Ps and decision making are mostly smooth while facing a few issues. Although the C/Ps come from various institutions from across the country,

communication between the Experts and each C/P is frequent, both one on one, and through Project Supporting Committee and SATLAK coordination committee. Decisions were made on the Project Supporting Committees, which were held three times so far. The C/Ps are identified in the three Sectional Meetings (the Manuals for researching Banjir Bandang hazardous areas, the Manuals for emergency evacuation for Banjir Bandang, and the Action plan for improving the capability for Banjir Bandang disaster mitigation all over Indonesia), respectively, but meetings were held individually due to the distant places among the stakeholders. Since BNPB has been recently established, as the key institution for managing all disaster including Banjir Bandang, communication between BNPB and PU should be conducted frequently.

The implementation system of the Project is mostly good, with a few concerns. Good points are as follows.

- The C/Ps are selected adequately for the achievement of the Project purpose, with the key institution PU as the implementing agency.
- Despite various stakeholders involved, the Project team made effort to have good communication and cooperation with them, including cooperation with SATLAK members.
- The Project was implemented upon the long history of various assistance of the SABO area same as the Project. Therefore the Project could obtain good cooperation of various stakeholders with good technical knowledge, which enabled it the smooth and effective operation.
- The Project team participated and shared Project information in number of seminars and workshops⁴ conducted by PU, stakeholders (STC, PMI, etc.) and other JICA Projects⁵, through which the team made socialization and awareness raising effectively.
- The Project team conducted number of field visits⁶ from which the team could develop the effective and proper research method and the team also contributed to other disasters such as the earthquakes off the coast of Padan in 2009 and the eruption of Mt. Merapi in 2010.
- This year the new Directorate of Operation Management and Maintenance was established, which included a Sub-directorate of Disaster Mitigation, because of the reorganization of Directorate General of Water resources according to the Water Act 2004. Since this Sub-directorate covers all the areas of disaster mitigation related to Water Resources, the Project would better be implemented also by this Directorate in coordination with Directorate of River & Coastal.

⁴ Refer to Annex 7

⁵ 1) Project for River basin organization in practical water resource management and technology in the Republic of Indonesia, 2) Project for Multidisciplinary hazard reduction from earthquakes and volcanos, 3) Urgent Disaster Reduction project for Mt. Merapi and Progo River basin

⁶ Refer to Annex 6

Meanwhile, there are a few following concerns.

- Since PU had reorganization during the Project period, some of the C/Ps were changed, including the Project manager, with some C/Ps posts being absent for a while⁷, which made it difficult to implement the Project smoothly.
- Due to that the Directorate of River & Coastal, which is the main C/P institution, has many issues to undertake, the Project sometimes has difficulty asserting itself a top priority, which made it difficult for the implementation of the Project to go smoothly.
- Although the Project had cooperation of SATLAK members, being SATLAK a temporal organization created for post-disaster management. Without BPBD being established, it is difficult to establish the early warning and evacuation system. Instead, however, the Bakesbang supported the implementation of the Project.

3-3-2. Technical Transfer

As mentioned above, some of the C/Ps who had been originally assigned were replaced, and some were absent for some period. This made it difficult to implement the technical and knowledge transfer to them.

4. Evaluation Results by Five Evaluation Criteria

Evaluation based on the five criteria is made on five levels: high, relatively high, moderate, relatively low and low.

4-1. Relevance

The relevance of the Project is relatively high.

The political surroundings of the Project remain almost the same as the beginning of the Project, except for the development of the National Mid-term Development Plan (2010 - 2014) and National Disaster Management Plan (2010 - 2014). The Project is in line with the National Mid-term Development Plan (2010 - 2014), which puts the capacity development on disaster management as a priority for all levels of government institutions. The Project is also in line with the Japanese ODA Policy for Indonesia (2004), which stipulates 'Environmental conservation and Disaster management' as a priority for the 'Development of the Democratic society with Equity'. However, as for the sector policy, the National Disaster Management Plan (2010 - 2014) does not mention Banjir Bandang. Socialization activities should also be made to the sector policy makers.

The Project targets the needs of the Indonesian people. While the occurrence of Banjir Bandang is

⁷ Refer to Annex 5

frequent which results in many victims and large amounts of damages, hence is of high concern of the people, the mechanism of its occurrence have not been solved. Thus the analysis on the mechanism and the subsequent countermeasures to reduce the disaster have not been undertaken. Since the Project clarifies the mechanism of the disaster and the risk reduction measures, it is expected that the disaster risk by Banjir Bandang be reduced.

The selection of the model site and the target area of the Output 3 were selected based on the recent occurrence of Banjir Bandang. The target site in Sumatra is also a model area of STC for researching Banjir Bandang.

Japan has a technical advantage in sediment-related disaster management, which can be adapted to the disaster mitigation in Indonesia, due to its similar geographic, topographic, and meteorological conditions, and has forty years of assistance in 'SABO' area to Indonesia. This enabled effective assistance of the Project by having good cooperation of various stakeholders with technical knowledge. Japan also has excellent training facilities on 'SABO'.

4-2. Effectiveness

The effectiveness of the Project is moderate.

The Project purpose will be achieved to some extent. The capacity for Banjir Bandang disaster mitigation of PU and related organizations at the national level and at the model site was strengthened by establishing research method for Banjir Bandang hazardous areas and the early warning and evacuation system and SOP, and through various activities aimed at socialization and raising awareness. The staff members of the Dinas PU in Jember were able to conduct research and develop Banjir Bandang hazard maps, though with some difficulty in analyzing data and the use of GIS. Capacity strengthening on the issue is to be conducted. As for the SOP for the early warning and evacuation, by referring to the SOP developed for Kalijompo the SOP for other areas in Jember can be developed in future, because the geographical and social conditions are similar.

However, although the Project aims to develop the capacity of PU and the provincial organizations in the main hazardous areas, without having a clear shared understanding among the stakeholders on the role of each stakeholder for achieving the Output 3, the capacity development in the main hazardous areas has not been realized except for Jember. The Project team should make the best effort possible to develop capacity for these areas.

For diffusion of the practice of researching hazardous areas and the early warning and evacuation system developed in Jember to the main hazardous areas in Indonesia, developing manuals is

important. Hence, it is expected that the manuals with Action plan for improving capabilities of Banjir Bandang disaster mitigation all over Indonesia be approved by the concerned authority by the end of the Project.

It is expected that once the manuals developed by the Project are approved, the training systems for Dinas PU officials all over Indonesia will be established for disseminating the practice. It is also vital that budget be allocated to each local government for obtaining the necessary data and facilities (software, PCs, etc.) for the research. PU at the national level should support Dinas PU in the analysis of data if necessary.

The followings are factors contributing to the effectiveness of the Project:

- Since the Project involves various C/Ps, and the manuals have already been considered carefully among them, the process for approval of the manual would be more prompt.
- The new Directorate of Operation Management and Maintenance has been established, with Sub-directorate of Disaster Mitigation. The Project could be more effectively implemented with involvement of this Directorate.

4-3. Efficiency

The efficiency of the Project is moderate.

The Outputs 1 and 2 were mostly achieved. The Output 3 was achieved to a lower extent. The research methods and the early warning and evacuation system were established to develop manuals at the model site. The OJT and lectures were conducted to Dinas PU officials in Jember and UPT Lumajang to master the research method. However, since there are no staffs who have enough knowledge on geology in the section in charge, it is difficult for them to understand the technique. On this situation the Project team is developing simpler version of the manual so that most people could understand. The training on GIS software to Dinas PU officials in Jember is also to be made. Ideally, the Dinas PU district level should be responsible for developing hazard maps with necessary budget allocation, however, the capacity of budget and human resources is limited at the district level. PU at the national level and Balai SABO should support them. Evacuation drills and several researches were conducted. Additionally, the early warning and evacuation manuals and the SOP were developed. To establish the early warning and evacuation system, coordination between PU and BPBD is necessary. However, since BPBD in Jember has not been established yet, the Project team made considerable efforts to organize and coordinate with the SATLAK members. The Project also made various activities for awareness raising and socialization, in coordination with PMI, which helped the people, the local government and the related organizations become aware of the potential disaster and the evacuation procedures.

While hazard maps were developed for the three other areas, capacity development of the Dinas PU officials in those areas for researching hazardous areas has not yet been conducted. The simpler manual is under development supported by Nusantara Secom InfoTech (a consulting company) so that the Dinas PU officials can understand and utilize it. Due to not clear shared understanding among the stakeholders on the roles of each stakeholder and how to achieve the Output 3, the progress of the Output 3 was delayed. Action plan, stipulating the roles and responsibilities of each institution and the key necessary actions to be taken for improving the capability for Banjir Bandang disaster mitigation all over Indonesia, are expected to be developed, agreed upon among the stakeholders and approved by the concerned authorities by the end of the Project.

The Project made various efforts to make efficient use of resources, such as participating in the seminars conducted by PU and STC, and cooperation with PMI activities. The early warning system equipment (rainfall gauge and water level gauge) developed by the Project team is of low cost and can be produced by Indonesian manufacturers. However, the installation of these equipment was delayed, because it took time to coordinate with communities, secure the proper management and the security systems for the equipment. This delayed the setting of alert water levels. Two more sets are planned to be installed in Jember district to practice establishment of the early warning and evacuation system in other areas.

Regarding the C/Ps and stakeholders, collaboration with the Water Resources Research and Development and Gadjah Mada University was obtained, which enable the effective and efficient Project implementation. In Jember district the Project was implemented efficiently with the participation of the Second assistant of the District government, the Bakesbang, Pol-Linmas, and the Dinas PU, in cooperation with SATLAK members. However, the PDME added the important assumptions to achieve the Outputs: 'Counterparts who received technology transfer continue to stay in the present position', which was not fulfilled as mentioned in 3-3-1, and affected the smooth implementation of some of the Project activities.

The followings are the factors contributing to the efficiency of the Project.

- Collaboration with PMI was positive, also the support of YPM made the effective achievement of the Output 2.
- The Project team conducted several field surveys of the 15 main hazardous areas. The findings of these researches were used to develop the research method for Banjir Bandang hazardous areas for the model site.

The following factors impeded the efficiency of the Project.

- Due to the reorganization of the Directorate General of Water Resources, PU in 2009, some of the C/Ps including Project Manager left the office, without a replacement of C/P for some time, which hampered the progress of the Project.
- Even in Jember, in the communities where recent major disasters have not occurred, the people are not aware of the disaster and evacuation. Thus, it took time to raise their awareness of the disaster and obtain their cooperation with the evacuation exercises.
- It is difficult to obtain commitment from the District governments. All the things needed by the Project must be approved by the decision of the 2nd Assistant of the District, which it took some time to obtain.
- In order to establish the early warning and evacuation system coordination between Dinas PU and BPBD is important. However, in Jember district BPBD has not yet been established. Hence the Project had to organize cooperation with members of SATLAK, the temporally-established organization for post-disaster operations. The technical transfer of establishing early warning and evacuation systems could have been more effective if the BPBD had been established. The evaluation team was informed that the regulation for the BPBD Jember is now under study and BPBD is expected to be established within this year or next year. The evaluation team expects that the work and capacity developed by the Project be transferred to the BPBD Jember once it is established. The evaluation team also expects the number of BPBDs at district level in the country increase with adequate budget and personnel.

As for collaboration with other JICA Projects, the followings helped make the efficient operation of the Project run smoothly.

- By sharing information with the JICA Expert on the disaster management policy for BNPB the Project was able to produce manuals and Action plan which reflected the needs of BNPB, the key institution for making the effects of the Project sustainable.
- By referring to the practice of developing early warning and evacuation system for the Yen-loan Project for the Progo River and Mt. Bawakaraeng, and by participating in the Early Warning and Evacuation seminar conducted by the Capacity Building Project for River Basin Management, an Expert used these examples as references for the developing the system of the model site.

4-4. Impact

The expected impact of the Project is uncertain due to uncertainty in fulfilling so many necessary factors.

Although the capacity for Banjir Bandang disaster mitigation of PU and the related organizations in

Jember and possibly other a few areas would have been strengthened by the end of the Project, the practices developed by the Project need to be disseminated to the main hazardous areas all over Indonesia in order to achieve the Overall Goal. With socialization within BNPB and BPBD, it is expected that BPBD in Banjir Bandang hazardous areas would develop the early warning and evacuation system by referring to the SOP for Kalijompo, in cooperation with PU and by coordinating various stakeholders, once Dinas PUs develop hazard maps for these areas. And various social and ethnic conditions should be taken into consideration in developing the early warning and evacuation system, because they may affect the system.

The important assumptions to achieve the Overall Goal were 'Policy of disaster management in Indonesia is not fundamentally changed', 'The budget and personnel are appropriately distributed to Directorate General of Water Resources and the local disaster management organization', and 'No rapid change in natural environment occur'. Most of these assumptions would likely to be fulfilled. However, many of BPBDs at district level, i.e., 370 out of 520 districts in total, have not been established, which are being arranged by the district governments. Awareness raising and socialization on disaster mitigation needs to be conducted by the top officials of the district governments.

Here are other factors that need to be fulfilled in order to achieve the Overall Goal.

- To establish the early warning and emergency measures for Banjir Bandang it is necessary to strengthen the relationships between PU and BNPB, which is currently weak.
- The directors who pertain to disaster mitigation in PU should have high awareness and strong commitment, because they decide how disaster mitigation countermeasures are executed.
- In order for Dinas PU and BPBD to address Banjir Bandang disaster mitigation as an important among their work, awareness raising and socialization about Banjir Bandang disaster mitigation within PU and BPBD are necessary.
- In order for the Dinas PU officials to master the research methods for identifying hazardous areas, training of Dinas PU officials all over the country needs to be conducted.
- Sufficient budgetary funds should be allocated for the Dinas PU to obtain the necessary data and research facilities.
- BPBDs at the district level should work for establishing early warning and evacuation measures, with budget allocation and personnel. BNPB should conduct trainings to BPBD officials on the techniques for developing the early warning and evacuation system and SOP, such as the one owned by YPM. In these exercises various social and geographical characteristics need to be taken into consideration.

There is a long way after the achievement of the Project purpose and the Overall Goal, since there are so many issues to be fulfilled as mentioned above. Moreover, the Overall Goal aims to establish the early warning system in hazardous areas of all over the country, while the Project's goal is only to develop the system for Jember, and not in other areas. Since the development of the early warning and evacuation system requires the collaboration of various stakeholders and consideration for the social and geographic conditions, it takes time and practice in several areas to disseminate the practice throughout the country.

The followings are the unexpected positive impacts of the Project.

- Banjir Bandang disaster mitigation and evacuation are included in the programs of the primary schools through high schools which announce themselves to be disaster preparedness schools in Jember. This was enabled in collaboration with PMI activities.
- A lecture on Banjir Bandang is being given in the MPBA course in Gadjau Mada University. The lecture also plans to include the products of the Project. PU plans to increase the scholarships to 30 students enrolled in this course from the next year.
- By knowing the development of the hazard maps for Banjir Bandang in Jember district, Bondowoso district was interested in developing hazard maps. Therefore the Project team supported to develop hazard maps for the district.
- The Evaluation team was informed that illegal logging stopped in the hazardous areas in Jember after the socialization and awareness raising were carried out, according to the representative from the Plantation and forestry agency of Jember district government. Elimination of illegal logging also helps conserve the environment.

There were also unexpected positive impacts to other JICA projects. They occurred through various field researches after disasters, and participating and sharing information of the Project to various seminars. Some of them are as follows.

- The Project team conducted field research onto the affected areas surrounding the Mt. Merapi eruption and suggested the proper hazardous areas to the JICA Project team of Urgent disaster reduction project for Mt. Merapi/ Progo River basin and Mt. Bawakaraeng, by utilizing the result of the field researches for Banjir Bandang of the Project.
- The Project team conducted field research in Padan area just after the earthquake and developed sediment-related hazard map.

4-5. Sustainability

The expected sustainability of the Project is moderate.

With regard to the political and institutional aspects, the disaster management policy is not

expected to change, because BNPB has recently been established and BPBD is still under establishment in many areas. However, the current National Disaster Management Plan (2010 - 2014) does not mention about Banjir Bandang as a priority disaster. It is expected that socialization is made to the stakeholders so that the new National Disaster Management Plan refers to Banjir Bandang as a priority disaster, for it is the frequent disaster throughout the country incurring many victims and a great deal of damages. As for the early warning and evacuation systems for Banjir Bandang, the related policies and regulations which stipulates the responsible person for warning need to be put in place by BNPB.

As for the organizational and financial aspects, the new Directorate of Operational Management and Maintenance was established with a Sub-directorate of Disaster Mitigation, which has the power to implement the Project with the Directorate of River & Coastal. Since BNPB was established recently, the organizational system for disaster mitigation at the national level should be sustained for several years. In Jember, SATLAK is to be replaced by BPBD in the near future. When BPBD is established, because it is the coordinating body for early warning and evacuation, the system developed by the Project should be coordinated and reorganized by BPBD accordingly.

In order to disseminate the practices of the Project to other areas in the country, it is necessary to strengthen the institutional capacity of PU for disaster mitigation and coordination capacity of BNPB, and increase communication between PU and BNPB. To achieve this objective, it is necessary to develop Action plan with roles, functions and key actions to be taken for improving capacity for Banjir Bandang disaster mitigation by each institution, and then secure the commitments of the stakeholders. It is important to establish the system for disseminating the practices developed by the Project to Dinas PUs including budget allocation for acquisition of the data and facilities, and training for their officials throughout the country. However, it is not certain which institution of PU is in charge of training on this issue, and whether and how much training would be conducted to Dinas PU officials, since the number of STC personnel decreased dramatically from 33 in 2010 to 5 in 2011.

Concerning the coordination efforts with BNPB, a new JICA project for capacity development of BNPB and BPBDs is under consideration, which aims to strengthen capacity of BNPB and BPBDs. The project may include development and training on hazard maps and early warning and evacuation system, which would make use of the products of the Project.

In the technical aspects the research for hazardous areas can be done by Dinas PU officials if trainings on the manual as well as on the use of GIS are conducted to them. As for the early warning

and evacuation system for Banjir Bandang the system is simple and can be applied in other places. However, since the system and SOP were developed with the support of YPM, without BPBD being set up, the techniques should be transferred later to the new BPBD in Jember once it is established. In addition, BPBD officials in other hazardous areas should be trained of the participatory approach with the involvement of communities and consideration for social and ethnic aspects.

On maintenance of the supplied equipment technical transfer has been made for Kalijompo site. It is expected to train on maintenance of the future supplied EWS equipment at other sites in Jember.

Social, cultural and environmental aspects are also important. In order to develop an early warning and evacuation system, it is necessary first to understand the disaster mitigation-related customs of the people in the communities. As mentioned above, the social and ethnic conditions should be considered. However, the Evaluation team was informed that each community has a key person to handle communication with the residents. If a survey on social conditions is conducted prior to developing a system, then the system can be developed adequately.

As for considerations for women, the poor and other vulnerable people, the early warning and evacuation manual and SOP need to take them into consideration in a concrete manner. However, in order for all of them to evacuate themselves, periodical evacuation simulations and socialization are essential.

5. Conclusion

The conclusion of this Evaluation is as follows.

- The achievement status and prospects of the Project purpose during the Project period are moderate to relatively high.
- The achievement of the Overall goal is uncertain at this moment due to uncertainty in many necessary conditions being fulfilled.
- Regarding the five evaluation criteria the evaluation results of the Project are moderate in general.
 - The relevance of the Project is high.
 - The effectiveness, efficiency and sustainability of the Project are moderate.
 - The impact of the Project is uncertain at this moment.
 - The implementation process is mostly good with some issues of concern.
- The Project developed capacity for Banjir Bandang disaster mitigation of PU and the related organizations at the national level as well as at the model site. The Project team should make best effort possible to develop capacity for other areas.

- To disseminate the practices to other hazardous areas, the following issues are to be made.
 - Socialization and the training are to be made utilizing the dissemination tools and manuals,
 - Strengthening of coordination between PU and BNPB,
 - Positive participation of all the stakeholders according to the Action plan.

6. Comments, Recommendations and Lessons learnt

6-1. General Comments

- (1) The overall goal is not only achieved by the implementation of the program but is continuously developing and improving the systems and mechanism of the disaster mitigation effort throughout Indonesia. The achievement of the Project purpose is a trigger, which should be continuously followed up by all of the related stakeholders.

The suggestion and recommendation of the Project is highly needed. All of the source of materials resulted from the Project should be prepared as a basic reference for the next program (manuals, guidelines, references for the survey, investigation, evaluation, etc.)

- (2) All of the drafts of the manuals and guidelines should be followed up by processing and legalizing to be issued by the Director General of PU, so that these references can be used for other areas (national level).
- (3) The process and the implementation of the Jember program could be documented as 'a success story', which can also be replicated for other areas. To socialize and disseminate program, the mechanism of Training of Trainers (ToT) can be adopted. It would be better if the technical assistance during remaining period could prepare 'the guideline' for these purposes.
- (4) The evaluation is not only related to the achievement of the output, but also how far the effort of the process in transferring the knowledge and in teaching the C/P (including overcoming all of the constraints, due to the level of understanding of the C/P, the local conditions, the conditions of the present institutions concern before the Project, etc.) The achievement of the Project comparing to the 'benchmark' conditions before the Project, will show how far the improvement is achieved.
- (5) The problems encountered during the Project, could be evaluated for justifying and modifying the forming system program (the implementation program) for improving the next program for other areas.

- (6) The approach through considering the local wisdom and also through the system and mechanism of 'user-friendly method' would be appreciated.

6-2. Recommendations

The Evaluation team recommends that the Indonesian side and JICA consider taking the following concrete actions before the termination of the Project, and after the Project, respectively:

6-2-1. Recommendations before the termination of the Project

(1) Finalization of the Manuals

Manuals for researching Banjir Bandang hazardous areas and for early warning and evacuation systems should be finalized according to the capacities of the users. It is expected that they would be approved by the concerned authorities for their diffusion. The process should be expedited.

(2) Close coordination between Directorate of River & Coastal and Directorate of Operational Management and Maintenance

Since the new Directorate of Operational Management and Maintenance which has a Sub-directorate of Disaster Mitigation has been established, the Project should be implemented in coordination between the Directorate of River & Coastal and the new Directorate.

(3) Development of Action plan

It is necessary to develop Action plan which stipulate roles, functions and key actions to be taken by each stakeholder for improving the capability of Banjir Bandang disaster mitigation all over Indonesia.

(4) Setting up institutional framework for Banjir Bandang disaster mitigation

In order for the knowledge of Banjir Bandang disaster mitigation to be disseminated to other areas and for each stakeholder to follow the key actions mentioned on the Action plan, the institutional framework with PU and BNPB as the two key institutions, should be set up in coordination with C/Ps and Stakeholders of the Project as well as other institutions such as the agencies in charge of necessary data for researching of the hazardous areas, i.e. BMKG, BAKOSURTANAL, LAPAN, and Badan Geology under ESDM.

(5) More communication between PU and BNPB

In order to develop the capacity for Banjir Bandang disaster mitigation collaboration between PU and BNPB is necessary. So is more frequent communication between them.

(6) Development of the training system within PU

In order to disseminate the products of the Project into other areas once the manuals are finalized the training system should be established for researching hazardous areas and the early warning and evacuation system for Dinas PU officials all over Indonesia. PU at the national level should support Dinas PU in the analysis of data if needed. Ideally, the Dinas PU district level should be responsible for developing hazard maps with necessary budget allocation, however, the capacity of budget and human resources is still limited at the district level. PU at the national level and Balai SABO should support them.

(7) Sharing the practices for Banjir Bandang disaster mitigation among PU, BNPB and BPBD

To disseminate the practices of the Project, socialization and training on Banjir Bandang disaster mitigation should be conducted among PU, BNPB and BPBD.

(8) Capacity development of research method for hazardous areas in other areas

In order to achieve the Output 3 once the manuals are finalized, Project team should make best effort possible for developing capacity in the main hazardous areas within the Project period. PU should take action continuously on this issue after the termination of the Project. Palu in Sulawesi, which is under PU at the national level through BBWS Brantas, could be the target.

(9) Training on GIS software to Dinas PU officials

Although the research method for hazardous areas utilizes GIS, Dinas PU Jember staffs do not have enough knowledge to utilize it. Training on GIS should be conducted for them to develop hazard maps.

(10) Evacuation simulation in Kalijompo

With the review of the evacuation experience in March 2011, an evacuation simulation based on the SOP should be conducted to examine whether the system works and for the people to practice evacuation. How to develop this system should be transferred to BPBD in Jember when it is established.

(11) Operation and maintenance of the EWS equipment

Manual for the operation and maintenance of the early warning and evacuation system equipment is to be developed by the termination of the Project. Ideally the subsequent budget for operation and maintenance should be allocated at the district level. PU at the national level should support them on this if necessary.

6-2-2. Recommendations after completion of the Project

(1) Implementation of the Action plan

Action plan should be implemented by each stakeholder for improving the capacity for Banjir Bandang mitigation.

(2) Sharing practices of the Project

Based on the products of the Project socialization and training should be done within PU, BNPB, BPBD and other related institutions.

(3) Strengthening of institutional framework for disaster management

For diffusion of the practice of the Project strengthening of the institutional framework for disaster management (prevention, mitigation, and emergency response) is required at all the levels of the government. It is expected that BNPB would take the lead on this. In Jember district, once the BPBD is established, it is expected to coordinate all the stages of the disaster management. Governor should follow up for the effects of the Project being sustainable, until BPBD is established.

(4) Increasing resilience of the infrastructure

Evaluation team found on the field visit that some of the infrastructure such as bridges does not have sufficient resilience against flush flood. This made second disaster and could further cause negative spiral of re-construction and damages repeatedly. All PU institutions should take necessary measures for increasing resilience of infrastructure.

(5) Collection of data necessary for researching hazardous areas

In order to research hazardous areas Dinas PU requires various kinds of data such as meteorological data, topographic maps, and satellite photos, etc. It is necessary to secure the appropriate budget of either PU or Dinas PUs for this. In addition, the agencies in charge of this data, i.e. BPKG, BAKOSURTANAL, LAPAN, Badan Geology under ESDM, BNPB, and Ministry of Agriculture are expected to cooperate to provide smoothly as well as at reasonable cost.

(6) Maintenance of equipment

EWS equipment should be properly maintained based on the manual with necessary budget allocation.

(7) Development of laws and regulations on the early warning and evacuation system

In Indonesia there are some laws and regulations that concern the importance of early warning and evacuation systems but no one of them is stipulating who is responsible for the warning. Laws and

regulations on this issue should be developed.

(8) Upgrading the training system on 'SABO'

By making use of the existing human resources and facilities established under the framework of 'SABO' cooperation between Indonesia and Japan, function of the training center is expected to be developed further in any institutional reform.

6-3. Lessons learnt

(1) Multiplier effects by sharing information among JICA Projects

Sharing information among JICA Projects through participating into seminars and workshops and joining the research of other projects are means of mutual learning and creating effective solutions, such that the Project team made advice to the Yen-loan Project for Mt. Merapi utilizing the research method for identifying hazardous areas developed for the Output 1 of the Project.

(2) Effective use of local resources

The Project team did its best to make effective use of its local resources by coordinating seminars and awareness raising activities with various institutions, by developing simple early warning equipment which could be produced in Indonesia, and being supported by existing local institutions such as Gadjah Mada University, Jember University, PMI, YPM, etc. These activities were effective and can readily be adapted to the local conditions. This kind of effort for effective use of local resources should be sought in any development project.

(3) Participatory approach for developing early warning and evacuation system based on the local knowledge and culture

The SOP for Kalijompo was developed in participatory way with community involvement and utilizing local knowledge and culture, including knowledge and perceptions of local institutions, through various focus group discussions, and teaching how to read hazard maps, etc. Since the early warning and evacuation system is for the benefit of community, a participatory approach should be taken to emphasize community involvement. This is a good example of community-based disaster management system.

Annex 1 PDMD
 Project Name: Integrated Disaster Mitigation Management for "Banjir Bandung"
 Implementing Agency: Directorate General of Water Resources, Ministry of Public Works
 Duration: From November 2008 to October 2011
 Prepared on: June 2008

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>(Overall Goal) Early warning and emergency measures for Banjir Bandung is established at the hazardous areas all over Indonesia</p>	<p>The number of victims by Banjir Bandung all over the Indonesia.</p>	<p>• DG of Water Resources' Reports</p>	
<p>(Project Purpose) Capability for Banjir Bandung disaster mitigation of PU and provincial organization concerned in the main hazardous area is strengthened</p>		<p>Project Reports</p>	<ul style="list-style-type: none"> • Policy of disaster management in Indonesia is not fundamentally changed. • The budget and personnel are appropriately distributed to DG of Water Resources and the local disaster management organization. • No rapid change in natural environment occur.
<p>Outputs)</p> <p>1. The method for researching Banjir Bandung hazardous area is established at the model site</p> <p>2. 2. Early warning and emergency measures for Banjir Bandung is improved at the model site</p> <p>3. Capability for researching Banjir Bandung hazardous area is strengthened in the main hazardous areas in Indonesia</p>	<p>1-1 Prepared Banjir Bandung hazard maps</p> <p>1-2 Prepared "manuals (draft) for researching Banjir Bandung hazardous area "</p> <p>2-1 Prepared "manuals for emergency evacuation for Banjir Bandung "</p> <p>2-2. Results of interviewing to disaster management organization staffs and residences at model site</p> <p>2-3. Results of evacuation drills</p> <p>3-1 Prepared hazard maps of Banjir Bandung</p> <p>3-2 Prepared manuals (final) for researching Banjir Bandung hazardous area</p>	<p>1-1 Project Reports</p> <p>1-2 Project Reports</p> <p>2-1 Project Reports</p> <p>2-2 Project Reports</p> <p>2-3 Project Reports</p> <p>3-1 Project Reports</p> <p>3-2 Project Reports</p>	<ul style="list-style-type: none"> • Counterparts who received technology transfer continue to stay in the present position.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>(Activities)</p> <p>1. Analyze the topographic maps and the aerial photographs and survey disaster history and geological features using existing resources at the model site</p> <p>1.2 Implement topographic and geologic researches and preparation of disaster history maps at the model sites</p> <p>1.3 Identify the Banjir Bandung hazardous area at the model site</p> <p>1.4 Prepare Banjir Bandung hazard maps at the model site</p> <p>1.5 Prepare "manuals (draft) for researching Banjir Bandung hazardous area" reflecting the results of "1.4"</p> <p>2. Compile advance indication detected in the past disasters</p> <p>2.2 Select the sites for rainfall observation according to the results of "1.1" and "1.2".</p> <p>2.3 Install gauges and start the observation</p> <p>2.4 Analyze the relation between rainfall and Banjir Bandung and establish the criteria for alert operation</p> <p>2.5 Determine the responsible person and rules of the intercommunication between local governments and residents</p> <p>2.6 Hold seminars and workshops for improving the residents' understanding about disaster management</p> <p>2.7 Implement evacuation drills</p> <p>2.8 Prepare "manuals for emergency evacuation for Banjir Bandung " reflecting the results above</p> <p>3.1 Analyze the topographic maps and the aerial photographs and survey disaster history and geological features using existing resources and identify the Banjir Bandung hazardous areas out of Indonesia</p> <p>3.2 Implement topographic researches and preparation of disaster history maps in several areas identified at "3.1"</p> <p>3.3 Prepare Banjir Bandung hazard maps at the areas</p> <p>3.4 Prepare manuals (final) for researching Banjir Bandung hazardous area reflecting the result of the activity "3.1" to "3.3" to the manual(draft) made in "1.5"</p> <p>3.5 Prepare the action plans for improving the capability for Banjir Bandung disaster mitigation all over the Indonesia</p> <p>3.6 Hold seminars and workshops to disseminate the above mentioned manuals and action</p>	<p>(Inputs)</p> <p>Japanese side</p> <ul style="list-style-type: none"> • Dispatch of long-term experts (Landslide disaster management, 2 persons, Jakarta and model site) • Procurement of the equipment (observation equipment etc) <p>Indonesia side</p> <ul style="list-style-type: none"> • Assignment of counterpart personnel • Provision of the office and facilities for the Japanese experts • Budget allocation for the operational expenses 		<p>(Pre-Conditions)</p> <ul style="list-style-type: none"> • Counterparts are assigned as planned and scheduled • Project budget is allocated as planned and scheduled.

Annex 2 PDM for Evaluation (PDME)
 Project Name: Integrated Disaster Mitigation Management for "Banjir Bandang"
 Implementing Agency: Directorate General of Water Resources, Ministry of Public Works
 Duration: From November 2008 to October 2011
 Prepared on: June 2008

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>(Overall Goal) Early warning and emergency measures for Banjir Bandang is established at the hazardous areas all over Indonesia</p> <p>(Project Purpose) Capability for Banjir Bandang disaster mitigation of PU and provincial organization concerned in the main hazardous area is strengthened</p>	<p>1. All the provinces in the Banjir Bandang hazardous areas establish their early warning and emergency measures.</p> <p>1. Manuals with Actions Plan for improving capabilities of Banjir Bandang disaster mitigation all over Indonesia are approved by the concerned authorities.</p> <p>2. Evacuation simulation is made based on the manual in the model site.</p> <p>3. Capacity of developing hazard maps for Banjir Bandang is strengthened.</p>	<p>• Reports of DG of Water Resources</p> <p>Approval document</p> <p>2. Project Reports</p> <p>3. Project Reports</p>	<p>• Policy of disaster management in Indonesia is not fundamentally changed.</p> <p>• The budget and personnel are appropriately distributed to DG of Water Resources and the local disaster management organization</p> <p>• No rapid change in natural environment occur.</p>
<p>Outputs)</p> <p>1. The method for researching Banjir Bandang hazardous area is established at the model site</p> <p>2. 2. Early warning and emergency measures for Banjir Bandang is improved at the model site</p> <p>3. Capability for researching Banjir Bandang hazardous area is strengthened in the main hazardous areas in Indonesia</p>	<p>1-1. Banjir Bandang hazard maps in the model site are prepared.</p> <p>1-2. "Manuals (draft) for researching Banjir Bandang hazardous area " are prepared in the model site.</p> <p>1-3. Reseaching Banjir Bandang hazardous areas is made at the model site based on the manual.</p> <p>2-1. Early warning announcement system is in place at the model site.</p> <p>2-2. Early warning and evetnition system is in place at the model site.</p> <p>2-3. "Manuals for emergency evacuation for Banjir Bandang " are prepared at the model site.</p> <p>2-4. Awareness on evacuation from Banjir Bandang is improved at the model site.</p> <p>3-1. Hazard maps of Banjir Bandang are prepared in the main hazardous areas in the country.</p> <p>3-2 Manuals (final) for researching Banjir Bandang hazardous areas are prepared in the main hazardous areas in the country.</p> <p>3-3. Reseaching Banjir Bandang hazardous areas is made based on the manual in the main hazardous areas in the country.</p> <p>3-4. Action plan for improving capability for Banjir Bandang disaster mitigation all over the Indonesia are prepared.</p>	<p>1-1 Project Reports</p> <p>1-2 Project Reports</p> <p>2-1 Project Reports</p> <p>2-2 Project Reports</p> <p>2-3 Project Reports</p> <p>2-4. Interview records</p> <p>3-1 Project Reports</p> <p>3-2 Project Reports</p> <p>3-3. Project Reports</p> <p>3-4. Project Reports</p>	

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>(Activities)</p> <p>1.1 Analyze the topographic maps and the aerial photographs and survey disaster history and geological features using existent resources at the model site</p> <p>1.2 Implement topographic and geologic researches and preparation of disaster history maps at the model sites</p> <p>1.3 Identify the Banjir Bandang hazardous area at the model site</p> <p>1.4 Prepare Banjir Bandang hazard maps at the model site</p> <p>1.5 Prepare "manuals (draft) for researching Banjir Bandang hazardous area" reflecting the results of "1.4"</p> <p>2.1 Compile advance indication detected in the past disasters</p> <p>2.2 Select the sites for rainfall observation according to the results of "1.1" and "1.2".</p> <p>2.3 Install gauges and start the observation</p> <p>2.4 Analyze the relation between rainfall and Banjir Bandang and establish the criteria for alert operation</p> <p>2.5 Determine the responsible person and rules of the intercommunication between local governments and residents</p> <p>2.6 Hold seminars and workshops for improving the residents' understanding about disaster mitigation</p> <p>2.7 Implement evacuation drills</p> <p>2.8 Prepare "manuals for emergency evacuation for Banjir Bandang " reflecting the results above</p> <p>3.1 Analyze the topographic maps and the aerial photographs and survey disaster history and geological features using existent resources and identify the Banjir Bandang hazardous areas out of Indonesia</p> <p>3.2 Implement topographic researches and preparation of disaster history maps in several areas identified at "3.1"</p> <p>3.3 Prepare Banjir Bandang hazard maps at the areas</p> <p>3.4 Prepare manuals (final) for researching Banjir Bandang hazardous area reflecting the result of the activity "3.1" to "3.3" to the manual(draft) made in "1.5"</p> <p>3.5 Prepare the Action plan for improving the capability for Banjir Bandang disaster mitigation all over the Indonesia</p> <p>3.6 Hold seminars and workshops to disseminate the above mentioned manuals and Action</p>	<p>(Inputs)</p> <p>Japanese side</p> <ul style="list-style-type: none"> • Dispatch of long-term experts (Landslide disaster management, 2 persons, Jakarta and model site) • Procurement of the equipment (observation equipment etc) <p>Indonesia side</p> <ul style="list-style-type: none"> • Assignment of counterpart personnel • Provision of the office and facilities for the Japanese experts • Budget allocation for the operational expenses 		<ul style="list-style-type: none"> • Counterparts who received technology transfer continue to stay in the present position. <p>(Pre-Conditions)</p> <ul style="list-style-type: none"> • Counterparts are assigned as planned and scheduled • Project budget is allocated as planned and scheduled.

Annex 3. List of Procured Equipment

Equipment Name	Product No.	Qty	Unit price	Currency	Cost	Sales agent
Planimeter	Placom KP-90N	1	8,580,000	Indonesian Rupiah	8,580,000	PT. Nusantara Secom InfoTech
Copy machine	SHARP AR-M258	1	58,000,000	Indonesian Rupiah	58,000,000	TRIJATA NUSA, PT
GIS software	Arc View 9.3 single ude-primary	1	23,657,920	Indonesian Rupiah	23,657,920	PT. Nusantara Secom InfoTech
GIS software	Arc View 9.3 single ude-secondary	1	21,266,960	Indonesian Rupiah	21,266,960	PT. Nusantara Secom InfoTech
PC	Dell Vastro 220 Mini Tower Desktop	1	1,393,000	US dollars	1,393,000	NUSANTARA SECOM INFOTECH, PT
A0 plotter	HP Designjet T1100 Postscript Printer	1	8,355,000	US dollars	8,355,000	NUSANTARA SECOM INFOTECH, PT
Uninterruptible Power Supply	APC Smart-UPS SUA 1000i	1	525,000	US dollars	525,000	NUSANTARA SECOM INFOTECH, PT
Hard disk drive (for back up)	Linksys NAS 200 with 2TB HDD	1	512,000	US dollars	512,000	NUSANTARA SECOM INFOTECH, PT
Color printer	HP Officejet Pro K7100	1	263,000	US dollars	263,000	NUSANTARA SECOM INFOTECH, PT
Copy machine	CANON iR-2018i	1	3,417,700	US dollars	3,417,700	PT SAMAFITRO
Transceiver	Motorola GP338	10	4,147,000	Indonesian Rupiah	41,470,000	NUSANTARA SECOM INFOTECH, PT
Satelite photo deta	orthorectified AVNIR-2 Data(Processed Data)	1	37,400,000	Indonesian Rupiah	37,400,000	NUSANTARA SECOM INFOTECH, PT
Water level warning system	Water Level Warning System Cable 20m, Pipe2m	1	7,920,000	Indonesian Rupiah	7,920,000	NUSANTARA SECOM INFOTECH, PT
Rainfall warning system	Rainfall Warning System Cable 20m	1	7,920,000	Indonesian Rupiah	7,920,000	NUSANTARA SECOM INFOTECH, PT
PC software	Microsoft Windows7Pro.JPN 32bit DVD-OEM	1	2,431,000	Indonesian Rupiah	2,431,000	NUSANTARA SECOM INFOTECH, PT
rainl gauge	Rainwise MKIII Wireless Solar Powerd Weather Station	3	48,500,000	Indonesian Rupiah	145,500,000	GPS Forestry Solusi
Pole	Flag Pole Mount for The MKIII Weather Station	1	8,500,000	Indonesian Rupiah	8,500,000	GPS Forestry Solusi
Current meter	JDC Flowatch Portable Flow Meter	1	14,350,000	Indonesian Rupiah	14,350,000	GPS Forestry Solusi
water gauge	Sollins Levelogger Gold 100	1	43,500,000	Indonesian Rupiah	43,500,000	GPS Forestry Solusi
PC switch	KVM Switch Round RPM-4N	1	28,600,000	Indonesian Rupiah	28,600,000	NUSANTARA SECOM INFOTECH, PT
Projector	LCD Projector Panasonic PT-LB78VE	1	12,705,000	Indonesian Rupiah	12,705,000	NUSANTARA SECOM INFOTECH, PT

Annex 3. List of Procured Equipment

Equipment Name	Product No.	Qty	Unit price	Currency	Cost	Sales agent
Screen	ALPHA Tripod Screen 96" *96"	1	3,102,000	Indonesian Rupiah	3,102,000	NUSANTARA SECOM INFOTECH, PT
Rain gauge	Wireless Weather Station La Crosse Technology WS2350	3	8,690,000	Indonesian Rupiah	26,070,000	NUSANTARA SECOM INFOTECH, PT
Water level warning system	Water Level Warning System Cable 20m, Pipe2m	1	6,820,000	Indonesian Rupiah	6,820,000	NUSANTARA SECOM INFOTECH, PT
Rainfall warning system	Rainfall Warning System Cable 20m	1	6,820,000	Indonesian Rupiah	6,820,000	NUSANTARA SECOM INFOTECH, PT
Satelite photo deta	IKONOS Bondowoso	1	37,500,000	Indonesian Rupiah	37,500,000	PT. Duta Informatika
Total					542,127,346	

Annex 4. Operational cost of Japanese side

(Currency : Rp)

Expense Category	FY2008			FY2009			FY2010			Total		
(P/I) Overseas Activities Cost	423,086,655.00	3,108,055,522.50	2,857,426,218.50	6,388,568,396.00								
(E/I) Miscellaneous	367,790,655.00	2,098,944,590.50	1,650,547,253.50	4,117,282,499.00								
Miscellaneous	66,580,000.00	581,715,444.00	37,500,000.00	685,795,444.00								
Air Fare	22,542,300.00	79,055,400.00	67,701,400.00	169,299,100.00								
Travel Allowance	20,685,000.00	142,905,000.00	98,215,000.00	261,805,000.00								
Fees and honorarium (non-staff)	8,218,600.00	267,994,532.00	196,020,065.00	472,233,197.00								
Contract with Local Based Consultant	0.00	449,900,000.00	740,000,000.00	1,189,900,000.00								
Contract with Local Based NGO	0.00	0.00	0.00	0.00								
Commission Contract (others)	0.00	0.00	0.00	0.00								
Refreshments	3,850,100.00	69,256,000.00	104,942,500.00	178,048,600.00								
Total	423,086,655.00	3,108,055,522.50	2,857,426,218.50	6,388,568,396.00								

Annex 5. List of Counterparts and Stakeholders

2011.05.25 15:00

Name	Title	Countersparts (C) / Stakeholders (S)	Position in the Project	Place	Period	Person in charge
1 Dr. Iwan Nursyirwan Diar, Dipl. HE	Director General of Water Resources, PU	C	Project Director	Jakarta	2008.11 ~ 2010.01	Ueno
DR. Ir. Moehammad Amron, M.Sc	Director of Directorate of River, lake and reservoir, PU				2010.04 ~ 2011.11	
2 Ir. Widagdo, Dipl. HE	Director of Directorate of River and coastal, PU	C	Project Manager	Jakarta	2008.11 ~ 2010.05	Ueno
3 Ir. Pitoyo Subandrio, Dipl. HE	Chief of Sub Directorate of Conservation and Sedimentation Infrastructure, PU	C		Jakarta	2010.07 ~ 2011.11	Ueno
4 Ir. Arung Samudro	Chief of Sub Directorate of Disaster Mitigation, PU	C		Jakarta	2011.01 ~ 2011.11	Ueno
Suhartono, ME	Chief of Sub Directorate of Disaster Mitigation, PU	C		Jakarta	2009.01 ~ 2009.12	Ueno
5 Sugeng Triutomo	Deputy of Prevention and Preparedness, BNPPB	C		Jakarta	2011.01 ~ 2011.11	Ueno
6 Budi Sunarso	Sub Directorate Head of early warning, Directorate of Preparedness, BNPPB	C		Jakarta	2008.11 ~ 2011.11	Ueno
7 Ir. Arie Setiadi Moerwanto, Ph.D	Head of Water Resources Research and Development, PU	C		Bandung	2008.11 ~ 2011.11	Ueno
8 Darmanto	Associate Professor, MPBA Course, Faculty of Civil Engineering, Gadjah Mada University	S		Yogyakarta	2008.11 ~ 2011.11	Ueno
9 Rahmat Jayadi	Associate Professor, MPBA Course, Faculty of Civil Engineering, Gadjah Mada University	S		Yogyakarta	2008.11 ~ 2011.11	Ueno
10 Ir. Joko Sutono, M. Eng., Ph. D	Associate Professor, MPBA Course, Faculty of Civil Engineering, Gadjah Mada University	S		Yogyakarta	2008.11 ~ 2011.11	Ueno
11 Hariyono Utomo, ST	Head of Sabo Technical Center, PU	C		Yogyakarta	2008.11 ~ 2011.11	Ueno
12 Ir. Chandra Hassan, Dip.I.I.E., M.Sc.	Head of Balai Sabo, PU	C		Yogyakarta	2008.11 ~ 2010.12	Ueno
13 Ir. Untung Budi Santoso	Head of Balai Sabo, PU	C		Yogyakarta	2011.01 ~ 2011.11	Ueno
14 Ir. Agus Soemaryono	Researcher of Balai Sabo, PU	C		Yogyakarta	2008.11 ~ 2011.11	Ueno
15 Ir. Eko Subekto, Dipl. HE	Head of BBWS Brantas, PU	C		Surabaya	2008.11 ~ 2011.11	Yoshida
16 Ir. Mustafa Chaimal Basya MM	Head of Irrigation Bureau, East Java Province	C		Surabaya	2008.11 ~ 2010.07	Yoshida
17 Ir. Supaat, D. MSi	Head of BPBD, East Java Province	C		Surabaya	2010.07 ~ 2011.11	Yoshida
18 Ir. Harryogi, SH, Msi	Head of UPTD of Irrigation, Lumajang, East Java Province	C		Surabaya	2008.11 ~ 2010.07	Yoshida
Drs. Siswanto, MM	Head of UPTD of Irrigation, Lumajang, East Java Province	C		Lumajang	2010.07 ~ 2011.11	Yoshida
19 Ir. Setyo Budi Utomo	Regent Head of Jember District	C		Jember	2008.11 ~ 2011.11	Yoshida
20 Drs. Zarkasi	2nd Assistant of Jember District	C		Jember	2008.11 ~ 2011.11	Yoshida
21 Eddy Budi Susilo	Head of Bakesbang, Pot-Linmas, Jember District	C		Jember	2010.12 ~ 2011.11	Yoshida
22 Drs. Slamet Urip Santoso	Head of Irrigation Bureau, Jember District	C		Jember	2008.11 ~ 2009.10	Yoshida
23 Ireni Setiawan	Natural Disaster Study Centre, Jember University	S		Jember	2009.10 ~ 2011.11	Yoshida
24 Eddy Budi Susilo	Head of Indonesia Red Cross, Jember Branch	S		Jember	2008.11 ~ 2009.10	Yoshida
25 Ireni Setiawan	Head of Indonesia Red Cross, Jember Branch	S		Jember	2008.11 ~ 2011.11	Yoshida
26 Ir. H. Rusyid Msc, MM	Head of Indonesia Red Cross, Jember Branch	S		Jember	2008.11 ~ 2011.11	Yoshida
27 Adhitya Wardono, Ph.D	Head of Indonesia Red Cross, Jember Branch	S		Jember	2008.11 ~ 2011.11	Yoshida
28 Sandi Suwardi Hसन, S.Ag, M.Si	Head of Indonesia Red Cross, Jember Branch	S		Jember	2008.11 ~ 2011.11	Yoshida



Annex 6 List of conducted field surveys

Date	Place	Region	Objective
6-Apr-2009~7-Apr-2009	Tanah Datar	West Sumatra	Disaster field survey
27-Apr-2009~28-Apr-2009	Mt. Kelud		Sabo field surveys
23-Jun-09	Palu	Central Surawesi	Sabo field surveys
8-Sep-09	Cianjur	West Java	Disaster field survey
2-Oct-2009~5-Oct-2009	Padang Pariaman	West Sumatra	Disaster field survey
30-Nov-09	Purworejo	Central Java	Disaster field survey
10-Dec-2009~11-Dec-2009	Mt. Bawakaraeng	South Surawesi	Sabo field surveys
22-Dec-09	Mt. Papandayan	West Java	Sabo field surveys
11-Feb-10	Bondowoso, Situbondo	East Java	Sabo field surveys
24-Feb-10	Sinjai	South Surawesi	Sabo field surveys
24-Feb-10	Mt. Bawakaraeng	South Surawesi	Sabo field surveys
26-Feb-10	Bandung	West Java	Disaster field survey
11-Mar-10	Garut	West Java	Disaster field survey
12-Mar-10	Bandung	West Java	Disaster field survey
1-Nov-10	Sangihe	North Surawesi	Sabo field surveys
5-Dec-2010~7-Dec-2010	Mt. Merapi		Disaster field survey
10-Feb-11	Jember	East Java	Disaster field survey
10-Mar-11	Jember	East Java	Disaster field survey
12-May-11	Mt. Merapi		Disaster field survey

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Annex 7 List of seminars, workshops and activities participated by the Project team

Date	Activities	Place	Region
10-Feb-09	Presentation of planning for Sabo	PU meeting room	Jakarta
10-Mar-09	Project supporting committee	PU meeting room	Jakarta
10-Mar-09	Project kickoff seminar	PU meeting room	Jakarta
16-Apr-09	Project kickoff meeting	Jember city	Jember
4-Jun-09	Disaster prevention seminar	Jember University	Jember
24-Jun-09	Annual national campaign for Sabo	Palu city	Palu
16-Jul-09	Education activities to HIPPA	Harjomulyo	Jember
5-Aug-09~6-Aug-09	Sabo technical seminar	Hotel	Jakarta
13-Aug-09	Liaison and coordination meeting with SATLAK	District government office	Jember
7-Sep-09	Project supporting committee	PU meeting room	Jakarta
11-Sep-09	Seminar of PMI	PMI office	Jember
5-Nov-09	Workshop concerning earthquake disaster off the coast of	Bukittinggi	West
9-Nov-09	Training for interpretation of micro topography	Project office	Jember
11-Nov-2009~12-Nov-	National seminar for sediment disaster	Maglan	Central
15-Nov-09	Merapi festival	Gadjah Mada University	Jogjakarta
3-Dec-09	Training to educational activity volunteers	PMI office	Jember
3-Dec-09	Project sectional meeting	UPT Lumajan Office	East Java
3-Dec-09	Project sectional meeting	Forestry agency	Jember
3-Dec-09	Project sectional meeting	Dinas PU office	Jember
12-Dec-09	Educational activity	Pace	Jember
13-Dec-09	Disaster drill	Pace	Jember
21-Dec-09	Presentation of Sabo engineering	PU meeting room	Jakarta
23-Dec-09	Presentation of development sabo information system	PU meeting room	Jakarta
21-Jan-10	Liaison and coordination meeting with SATLAK	Jember city	Jember
1-Feb-10	Creating posters and banners		Jember
24-Feb-10	Community discussion	Kelungkung, Pace	Jember
8-Mar-2010~9-Mar-2010	International workshop on multimodal sediment disasters	Gadjah Mada University	Jogjakarta
30-Mar-10	Investigation debriefing session for disaster prevention	Jember city	Jember
14-Apr-10	Citizen participation workshop for water resources management	Bandung	West Java
20-Apr-10	Project sectional meeting	STC	Jogjakarta
20-Apr-10	Project sectional meeting	Gadjah Mada University	Jogjakarta
23-Apr-10	Project sectional meeting	Balai Sabo	Jogjakarta
6-May-2010~8-May-2010	Educational activity for junior and high school students by PMI	Jember city	Jember
10-May-10	Liaison and coordination meeting with SATLAK	Jember city	Jember
24-Jun-2010~25-Jun-2010	Seminar on socialization of sediment disaster management	Batam	Riau islands
30-Jun-10	Production of a comic introducing Banjir Bandang		Jakarta
9-Jul-10	Project sectional meeting	Gadjah Mada University	Jogjakarta
12-Jul-10	Project sectional meeting	Water Resources Research and Development	Bandung
13-Jul-10	Project sectional meeting	BNPB	Jakarta
21-Jul-10	Project supporting committee	PU meeting room	Jakarta
23-Jul-10	Community disaster management workshop	PU auditorium	Jakarta
28-Jul-10	Placed on the website of Jember		
25-Aug-10	Preparatory meeting for approval of Sabo declarative school	Jember district auditorium	Jember
28-Sep-2010~29-Sep-	Sabo technical development seminar	Jogjakarta	Jogjakarta
17-Oct-10	Table-top training	Kalijompo	Jember
20-Oct-2010~21-Oct-	National seminar for sediment disaster	Maglan	Central
29-Oct-10	Network for multimodal sediment disaster mitigation	Gadjah Mada University	Jogjakarta
18-Nov-10	Liaison and coordination meeting with SATLAK	Jember city	Jember
27-Nov-10	Annual national campaign for Sabo	Garut District	West Java
3-Dec-10	PMI disaster mitigation seminar	PMI office	Jember
21-Dec-10	Sabo training at Sabo technical center	STC	Jogjakarta
28-Jan-2011~30-Jan-2011	Poster competition	Jember city	Jember
21-Feb-11	Socialization in Pakis with PMI	Pakis village	Jember
7-Mar-11	Enhancing media contribution to disaster risk reduction	Jakarta city	
15-Mar-2011~17-Mar-	Field training exercise of disaster relief	Manado	North
24-Mar-11	Improving Banjir Bandang management through audio and video		
30-Mar-11	Socialization for Banjir Bandang disaster	Pakis village	Jember
25-Apr-11	Production of third edition of Sabo supplementary reader		Jakarta
27-Apr-11	Liaison and coordination meeting with SATLAK	Jember city	Jember
13-May-11	Project sectional meeting	Balai Sabo, Gadjah Mada Univ.	Jogjakarta
19-May-10	Project sectional meeting	Balai Sabo	Jogjakarta
28-May-11	Seminar Mandala university	Jember city	Jember

Annex 8. Evaluation Grid

		Evaluation questions		Findings
		Key questions	Sub-questions	
Implementation process				
	Were the activities implemented as planned?	Were the activities implemented as planned?		The activities were implemented as planned. But since it took time to procure and install the rainfall gauge and coordinate with the communities, the rainfall observation started just before the end of the rainy season, but without big delay in the progress implementation.
	Was there any problem of approach of the technical transfer?	Was there any problem of approach of the technical transfer?		Without being in place of the topographical and geological data of both the national level as well as the regional levels it takes time and costly to collect these data such as for obtaining the permission from the military. It is necessary to extract disaster history, analyze the various conditions, determine the method for detecting the risk levels it is necessary to establish the training system to the engineers at the national as well as the local levels.
	Was the communication done smoothly among the stakeholders of the project?	Is the communication done smoothly such as in the meetings?		Communication was made smoothly on the annual Project Supporting Committee and SATLAK coordination meetings to discuss the progress, the next plan and the challenges of the Project.
		Is the communication done smoothly in the daily work?		By identifying the stakeholders for each Sectional Meetings communication between Experts and the stakeholders is made one to one due to the distance between the stakeholders.
		Is the communication done appropriately with various stakeholders in various places?		More communication between PU and BNPB is necessary for strengthening capacity for disaster management.
	Was there any problem with the Project management?	Was there any problem of the management of JICA Ethiopia Office?		There are no major problems, but less communication with JICA Indonesia office. There are no Project Supporting Committee in Japan nor the Mid-term review. The thing that there were no original budget allocated in Japan made difficult to implement activities. Therefore, the Project team asked JICA Indonesia office for allocating budget to hire short-term Experts and local consultant, etc.
	Are the appropriate C/Ps assigned?	Are the appropriate C/Ps assigned?		C/Ps were assigned, but some of them were replaced including Project Director who supported the Project actively, which affected the smooth implementation of the Project.
	Do the Implementation Agency, C/Ps, local government and social organizations in Jember, institutions related to disaster mitigation in main hazardous areas have the ownership toward the Project?	Do the Implementation Agency, C/Ps, local government and social organizations in Jember, institutions related to disaster mitigation in main hazardous areas have the ownership toward the Project?		The main C/P section, the Directorate of River & Coastal does not put the Project as a high priority, though there are some staffs who specialize in Sabo. Meanwhile the new Directorate of Operational Management & Maintenance have high interest in the Project, and is expected to follow the Project actively. In Jember, though the leadership of SATLAK coordinator, the 2nd Assistant of the District government is important, the new 2nd Assistant does not seem to have a commitment toward the Project. To this situation the ex-2nd Assistant, the current head of the Bakesbang supported the Project. As for the communities there are differences on the awareness toward disasters depending whether the ones who recently suffered the disasters or not.
	Problems during the implementation process of the Project, their causes and solution	Problems during the implementation process of the Project, their causes and solution		<ul style="list-style-type: none"> • Since BPBD, the disaster management institution at the local level, has not been established in Jember, it was difficult to establish the early warning and evacuation system. In order to strengthen the early warning and evacuation system, the awareness raising by BPBD to the local organizations and development of the laws and regulations for early warning and evacuation, such as to determine the responsible person for warning, are necessary. • For researching hazardous areas it is necessary to make clear division of roles and coordination among the national, provincial and district levels of PU. • There was no problem because it was supported/facilitated by Regional government of Jember which is in this case Satlak. Almost all the project
	Did the coordination with various related institutions hindered the implementation of the Project?	Did the coordination with various related institutions hindered the implementation of the Project? What problems did this occur? Is there any solution measure to this?		There is no problem. Communication is mostly made one to one. In Jember the Project team discussed the roles of each SATLAK member based on which they conducted activities. • No. The related organizations were coordinated through Supporting Committee Meeting.
Relevance				
Priority	Match with the Indonesian Development Policies	What is the position of the disaster management in the National development plan?		The National Mid-term Development Plan (2010 - 2014) mentions the capacity development of disaster management for all levels of government institutions as a priority.
	Match with the Indonesian disaster management policies	Match with the Indonesian disaster management policies		The current Disaster Management Plan (2010 - 2014) does not mention Banjir Bandang. The Project team should make the policy planners aware of the disaster so that the next Plan would prioritize the disaster.

	Match with Japanese ODA policies	Match with Japanese ODA policies	The Japanese ODA Policy for Indonesia (2004) stipulates 'Environmental conservation and Disaster management' as a priority for the 'Development of the Democratic society with Equity'.
Necessity	Is the necessity of the Project high?	Does the Project match with the needs of PU?	Since the cause of Banjir Bandang had not been identified the countermeasures had not be taken before the Project. It is expected to reduce the victims and damages by the disaster through strengthened capacity of PU on the issue.
		Does the Project match the needs of the people in Indonesia?	Since Banjir Bandang happens frequently and incur many victims, the Project for mitigation of the disaster matches the needs of the people.
		Is there any change in environment around the Project after the Preliminary study of the Project? Did the change affect the necessity of the Project?	The Disaster Management Plan (2010 - 2014) was developed and the new Directorate of Operational Management & Maintenance under the Directorate General of Water Resources was created. It did not affect the necessity of the Project.
Appropriateness as measures	Is the approach of the Project appropriate?	Are the selection of C/P, activities and Outputs appropriate for strengthening Banjir Bandang disaster mitigation capacity in the main hazardous areas in the country?	The selection of the C/P institutions are appropriate, however, the key C/Ps were replaced. Some activities necessary for achieving the Output 3 are not included, nor with input, budget, and Project period for them. Activities and Outputs for achieving the Project purpose are not correctly identified.
		Were the benefits of the effect and cost burden distributed equitably to the disaster management organizations and the residents?	The target areas for Output 3 were decided with PU, because these are the areas where recently suffered Banjir Bandang. The site in Sumatra is the model site for STC for the Sabo research.
		Do the Japanese technique and experience have the comparative advantage?	Japan has technical advantage on Sabo.
		Did the Project have difficulty due to the different situation from the preparatory study? How could the Project team respond or solve it?	Although the office of Expert working for the model site was originally informed at Dinas PU in Surabaya, when he was assigned it was not allocated and later it was placed in BBWS Brantas office. But it is not major problem.
Effectiveness			
Prospects for achieving the Project purpose	Prospects of achieving Project purpose: Is it likely that the capacity for Banjir Bandang disaster mitigation of PU and provincial organizations concerned in the main hazardous areas is strengthened?	Is it likely that researching Banjir Bandang hazardous areas is implemented in the main hazardous areas based on the manual?	It is not clearly secured. It is necessary to secure budget and system for training for Dinas Pus on researching hazardous areas and for implementing Action Plans.
		Is it likely that early warning and evacuation shall be conducted in the main hazardous areas based on the manual?	<ul style="list-style-type: none"> • It is not clearly secured. Coordination between Dinas PU and BPBD is important for establishing the early warning and evacuation system. The awareness on the disaster management differs at the national/provincial levels and the district level. It is expected to be established BPBD at the district level. • Yes. Project conducted evacuation drill in Jember. • Based on SOP/manual that have been created, it is highly possible that the community can be evacuated with socialization and simulation. The impediment that may exist is of the community has not accustomed to conduct emergency evacuation.
		Is it likely that various manuals developed by the Project would be approved by the concerned authorities?	<ul style="list-style-type: none"> • I don't know. It is going to be considered within PU in the future. Research manual could be a technical standard, meanwhile the early warning and evacuation manual could be a guideline since it depends largely on the social conditions of the places. The highest technical standard of PU is developed first by Balai Sabo, then through Water Resources Research and Development, and DG of Research and Development, thereafter would be approved by the Minister. Currently by commissioning local consultant, manuals which could be applied to other areas based on the ones for Jember with Action plans are currently under study. • It is under reformatting to the standard format. After that they would be under discussions. Through several discussions they would be approved. It normally takes 6 months to 1 year. If the manuals are discussed thoroughly among stakeholders, the process would be shorter. The research method manual would be regarded as manual, for early warning and evacuation
		Could the hazard maps be developed and revised in the main hazardous areas in the country?	Clear division of roles and collaboration among the national, provincial and district levels for developing hazard maps. In order to analyze the data for research, support from the national level is needed.
		What are the factors which affected the achievement of the Project purpose?	Are there any factors which contribute to the achievement of the Project purpose?
Caus	Are the Outputs sufficient to achieve the Project purpose?	Are the Outputs sufficient to achieve the Project purpose?	<ul style="list-style-type: none"> • For achieving the Output 3 the input of two experts were insufficient. • Yes. After Project finished, products of the Project especially manuals need to be disseminated.

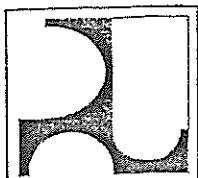
e-effect relationship	Did the important assumptions affect the achievement of the Project purpose?	Did the C/Ps who were transferred technique remain in the position? If not, what did it affect to the Project?	<ul style="list-style-type: none"> • That the original Project manager retired did affect negatively to the efficient progress of the Project. • It did not affect because each institution activities were based on the function and duty attached to each institution stipulated by the Regional Regulation. Therefore, it is supposed to be sustainable. • Some C/Ps have left, but the functions and roles of the organization did not change and they pursued each role, so that it did not affect the Project implementation.
	Efficiency		
Achievement level of the Outputs	Prospects of achieving Output 1: Is the research method for Banjir Bandang hazardous areas established in the model site?	Did the C/Ps in the model site become able to develop hazard maps for Banjir Bandang?	<ul style="list-style-type: none"> • They became able to develop them. With the topographic data, GIS software and manuals, they can develop and revise unless the geographical features don't change such as because of the earthquakes. • Yes. They could develop and revise them. • Research method uses GIS software, which many people don't understand. They need training. I can analyze data and process data through lecture by short-term expert. I would transfer my knowledge to other colleagues.
	Prospects of achieving Output 2: Are the early warning and emergency measures for Banjir Bandang in place in the model site?	Was the early warning and evacuation system established in the model site?	<ul style="list-style-type: none"> • It is established. The SOP for the early warning and evacuation for Kalijompo was developed. If the manuals is developed, this SOP can be applied to the other areas. • It was developed. But most important is how to maintain the system with residents' participation. • With the support from YPM, evacuation drill was conducted with various stakeholders in October 2010. • Evacuation simulation was not conducted based on the manual developed in April this year. It is currently planned that it would be conducted before the rainy season starts. For establishing the early warning and evacuation system, in cooperation with and sharing information with SATLAK members, each member did the respective activities.
		Did the C/Ps in the model site become able to develop the early warning and evacuation manual for Banjir Bandang?	With the support of YPM, C/P could understand it. It is important that BPBD takes this role.
		Was the awareness on the evacuation from Banjir Bandang improved in the model site?	It was improved. According to the researches on the consciousness on the disasters and on the early warning and evacuation conducted early 2010, low awareness was found in the areas other than where they had recently suffered the disaster. Awareness raising and socialization activities such as posters and seminars were conducted, so that the awareness and knowledge of the people were improved.
	Prospects of achieving Output 3: Was the capacity for researching Banjir Bandang hazardous areas strengthened in the main hazardous areas in the country?	Did the disaster management organizations in the country become to develop Banjir Bandang hazard maps?	They did not become able to do it. The method for developing hazard maps has not yet been established. It is planned to propose the method which the stakeholders easily can understand. Thereafter dissemination and guidance would be conducted.
		Is it likely that the final manual for researching Banjir Bandang hazardous areas be developed?	It is planned that the simplified manuals would be proposed soon and finalized.
		Is it likely that the Action Plans be developed for capacity improvement for Banjir Bandang disaster mitigation in the main hazardous areas in the country?	We are working for developing Action Plans, which are planned to suggest the roles of each organization.
	What are the contributing and impeding factors for achieving Output 1?	Are there any contributing factors for establishing the research method for Banjir Bandang hazardous areas in the model site?	The field researches on the disaster history of the other disasters could be applied to the hazardous areas for Banjir Bandang.
		Are there any impeding factors for establishing the research method for Banjir Bandang hazardous areas in the model site?	For establishing the research method it is necessary to obtain various data and software, such as meteorological data, rainfall data, topographic maps, and satellite photos which are necessary. Training also would be needed on the research and data analysis method.
		For establishing the early warning and evacuation system, is the cooperation from the stakeholders obtained?	<ul style="list-style-type: none"> • The district government did contribute little leadership for the Project, but others do. • The organizations in the model site cooperated to hold socialization and simulation.
		The early warning and evacuation developed in Kalijompo could be applied to other areas by making use of the existing system and the sustainable system was established?	<ul style="list-style-type: none"> • Since Indonesia is multi-ethnic and multi-religious country, different from Japan, it is not clear about it. • It may not be able to apply to other areas because of different geographical and community conditions.

What are the contributing and impeding factors for achieving Output 2?	How was the Project coordinated with the other JICA project for disaster mitigation? How did it affect to the Project?	<ul style="list-style-type: none"> • There are differences on awareness among the local government as well as the people. It takes time to raise awareness on the places where there is little awareness. In Kalijompo the awareness is high because of the recent disaster, however, it is necessary to raise awareness in Jember district, takes time to make understand the people with low level of education about the mechanism of the disaster, which affects negatively the evacuation system. 	
	Are there any contributing factors for establishing the early warning and evacuation for Banjir Bandang in the main hazardous areas?	The Project team coordinated with PMI and YPM. Evacuation drills were implemented hosted by PMI.	
	Are there any impeding factors for establishing the early warning and evacuation for Banjir Bandang in the main hazardous areas?	<ul style="list-style-type: none"> • It took time since in the places where there was no major disaster the awareness on the disaster is low so that people are not eager to cooperate with evacuation drills and development of the early warning and evacuation system. • It is difficult to obtain commitment from the local government. Without approval of the 2nd assistant, the coordinator of SATLAK things don't move. It is also important to have participation of the communities and involve the key persons as well as policy makers. 	
What are the contributing and impeding factors for achieving Output 3?	Are there any contributing factors for developing capacity for researching hazardous areas for Banjir Bandang in the main hazardous areas in the country?	<ul style="list-style-type: none"> • The creation of Sub-directorate of Operational Management & Maintenance. • Lecture on Banjir Bandang is included in the GMAT course in Gadjamada University, in the training by STC. 	
	Are the necessary budget, personnel and the system secured for developing capacity for researching hazardous areas in the main hazardous areas in the country?	<ul style="list-style-type: none"> • Training for Dinas PU officials to increase the research capacity and awareness raising on the disaster within PU as well as of each local government are necessary. The system is planned to be established based on the Action Plans. 	
	Does the coordination between PU and the disaster management organizations (BPBDs) become as an impediment for implementing the Output 3 in the hazardous areas of the Project?	In Jember the Project team established the cooperation between the district government and SATLAK.	
	Are there any impeding factors for developing research capacity for Banjir Bandang hazardous areas in the main hazardous areas in the	The active organizations are necessary at the local level. Budget for activities is needed.	
Cause and effect relationship	Appropriateness of the activities	Are the activities for Output 1 appropriate and sufficient for achieving the Output1?	No. The Project team conducted the dissemination and awareness raising activities on Banjir Bandang and to increase the awareness on disaster mitigation.
		Are the activities for Output 2 appropriate and sufficient for achieving the Output2?	No. The Project team conducted the dissemination and awareness raising activities on Banjir Bandang and to increase the awareness on disaster mitigation.
		Are the activities for Output 3 appropriate and sufficient for achieving the Output 3?	No. The activities for strengthening capacity are not mentioned on PDM.
	Appropriateness of the quantity, quality, and timing of Inputs fro Japanese side	Were the number of Experts, their expertise and dispatch period appropriate? Did they correspond to the needs?	Number of Experts is insufficient to achieve the Output 3. As the Project progresses, the approach toward the Output 3 was changed, which made changes from the original PDM.
		Was the Project budget the same as planned? Did it correspond to the needs?	Due to the large budget cut on the third year, the Project team asked increase of the activities cost.
	Appropriateness of the quantity, quality, and timing of Inputs fro Indonesian side	Was the Project budget secured as planned?	With the Project budget very limited, the Project team made efficient use of resources in coordination with seminars such as STC and PMI.
Was the selection of the stakeholders from various institutions appropriate? Was their cooperatoin obtained adequately for the Project?		<ul style="list-style-type: none"> • The effective and efficient project impoementation was enabled because the Project coordinated with Water Resources Research and Development and Gadjau Mada University which had been originally included in the C/Ps. • In Jember efficient implementation was possible with participation of the 2nd assistant, Bakesbang, and PU. 	
Were the types, quantity, timing for supply, and installation situation of the equipment procured in Indonesia adequate?		<ul style="list-style-type: none"> • All the necessary things were procured, however, some of their installation was delayed, since the coordination with the communicites and the securing the management system were needed. • It is not enough because the equipment installation in some disaster areas have not been installed yet. 	
Were the cooperation from the government, social organizations and residents in the model site?		There were cooperation also from the police and military outside the district government for the evacuation drills as well as for awareness raising activities.	

	Are the important assumptions to achieve the Outputs likely to be fulfilled?	Did the C/Ps who received technical transfer continue to stay in the position?	Due to the reorganization of the Directorate General of Water Resources in 2009 many C/Ps left the office with absent for some time. This affected negatively the technical transfer. Because of the retirement of Project Manager communication with PU officials was made lower.
COORDINATION WITH OTHER DONORS AND schemes	Coordination with other donors and schemes	How was the Project coordinated with the other JICA project for disaster mitigation? How did it affect to the Project?	<ul style="list-style-type: none"> • JICA Expert for BNPB contributed to the achievement of this Project. • The JICA project which is currently under planning, for development capacity of BNPB and BPBD is now planning to support BPBDs to develop the disaster management plan in the provinces, on which the Expert has been making advice to BPBD in East Java Province that the plan should refer to the model in Jember developed by the Project. • By referring to the practice of developing early warning and evacuation system for the Yen-loan Project for the Progo River and Mt. Bawakaraeng, and by participating in the Early Warning and Evacuation seminar conducted by the Capacity Building Project for River Basin Management, an Expert used these examples as references for the developing the system of the model site.
Impact			
Prospects of achieving the Overall goal	Prospects of achieving the Overall goal: Is it likely that the early warning and evacuation system would be established in the main hazardous areas in the country?	Is it likely that the early warning and evacuation system for Banjir Bandang would be established in the main hazardous areas all over Indonesia within 3 to 5 years after the completion of the Project?	<ul style="list-style-type: none"> • It is uncertain. It is unclear whether the budget and personnel be secured for developing early warning and evacuation system, although the Action Plans suggests that they are necessary. • It can be achieved if there is regular/routine maintenance of EWS equipments and also regular socialization as well as simulation to the communities. • It could be achieved if the manual be made simple so that anyone can understand it. There is an idea that SOP be included in the disaster management plan for which it is under consideration for the disaster management plan to stipulate the responsible person for warning.
		Are there any factors which impede the achievement of the Overall Goal?	<ul style="list-style-type: none"> • Strengthening relationship between PU and BNPB. • Awareness of the top is necessary. • It is necessary for community involvement/empowerment. • The budget for training, and for obtaining equipment and data, the establishment of BPBDs with its budget, system, and personnel, and the techniques to develop SOP are needed.
Cause and effect relationship	Are the important assumptions fulfilled, or is it highly possible that they would be fulfilled?	Would the policy of disaster management in Indonesia not be fundamentally changed?	Since BNPB and the National Disaster Management Plan was just created, they are not expected to change soon.
		Is it likely that the necessary budget and personnel for establishing the early warning and evacuation system for Banjir Bandang in the main hazardous areas in the country?	<ul style="list-style-type: none"> • BPBD and Dinas PU need to be recognize that the establishment of the early warning and evacuation system are among their work. The Project team needs to make the top of PU to aware that the necessity of socialization and training whin PU to diffuse the products of the Project. • Under decentralization, it is difficult to promote local government to establish BPBD and conduct disaster mitigation activities.
		What else are needed to establish the early warning and evacuation system for Banjir Bandang in the main hazardous areas in the country?	Strengthening relationship between PU and BNPB, creation of BPBDs, and allocation of necessary budget for Banjir Bandagn disaster mitigation.
		What are the factors contributing to the achievement of the Overall goal?	Creation of Sub-directorate of Operational Management & Maintenance.
	The relationship between the Overall goal and the Project	Are there gaps between the Overall goal and the Project purpose?	The Project only establishes the early warning and evacuation system at the model site. It is difficult to diffuse to other areas without necessary laws and regulations for early warning and evacuation.
	Unexpected positive and negative impacts	Were there any unexpected positive or negative impacts?	<ul style="list-style-type: none"> • Banjir Bandang disaster mitigation and evacuation are included in the programs of the primary schools through high schools which announce themselves to be disaster preparedness schools in Jember. This was enabled in collaboration with PMI activities. • A lecture on Banjir Bandang is being given in the MPBA course in Gadjau Mada University. The lecture also plans to include the products of the Project. PU plans to increase the scholarships to 30 students enrolled in this course from the next year.
		Were there any impacts to the other JICA projects?	<ul style="list-style-type: none"> • The Project team conducted field research onto the affected areas surrounding the Mt. Merapi eruption and suggested the proper hazardous areas to the JICA Project team of Urgent disaster reduction project for Mt. Merapi/ Progo River basin and Mt. Bawakaraeng, by utilizing the result of the field researches for Banjir Bandang of the Project. • The Project team conducted field research in Padan area just after the earthquake and developed sediment-related hazard map.
Sustainability			

Policy and institutional aspect	Is it likely that the disaster mitigation policies in Indonesia would be sustained for some years in future? Would the Banjir Bandang disaster mitigation be among the priority issues in the policies?	<ul style="list-style-type: none"> • Yes, because the disaster occurs frequently. • The priority of disaster mitigation is 1. flood, 2. drought, 3. earthquake, 4. landslide.
	Is it likely that the laws and regulations related to the early warning and evacuation for Banjir Bandang would be in place?	BNPB should take the lead to establish them.
Organizational and financial aspects	Is it likely that the organizations at the national level for Banjir Bandang disaster mitigation would be sustained for future?	PU was reorganized recently, which was to follow Water Acts in 2004, hence won't change in near future, and BNPB was also created recently.
	Is it likely that the system, budget and personnel for implementing Action plans for Banjir Bandang disaster mitigation would be secured in each organization in the main hazardous areas in the country?	<ul style="list-style-type: none"> • The organization framework and regulation for BPBD Jember are now under study, which would be discussed in the parliament and be approved, hopefully in November. Currently new BPBD will have 14-17 officers. • It could be considered that agencies in charge of climate data, topographical maps, and satellite photos would cooperate with the research. • We (PMI national) are interested in the Project activities. We would like to consider our cooperation in other areas.
	Is it likely that the system, budget and personnel of PU for diffusion of the practices to other areas would be secured after the Project? Is the measures for securing the budget sufficient?	<ul style="list-style-type: none"> • For the sustainability of the Project, strengthening of institutional capacity of PU and coordination capacity of BNPB would be needed. • It is uncertain since the Director General of Water Resources would be replaced next year, so as Directors. • Although STC is the training institution for people including Dinas PU officials, the sustainability of STC is uncertain, for it personnel has decreased dramatically (from 33 last year to 5 this year). (Hence it is uncertain about which institution is in charge of training, and whether and how much training to Dinas PU officials will be conducted. • Balai Sabo could also diffuse the techniques developed by the Project. • I don't know, for PU has been focusing on the reconstruction, not on preparedness and emergency response. • A new JICA project for capacity development of BNPB and BPBDs is under consideration, which aims to strengthen capacity of BNPB and BPBDs. The project may include development and training on hazard maps and early warning and evacuation system, which would make use of the products of the Project.
	Is it likely that the sufficient ownership toward the Project of PU and the disaster management institutions at the national level and in the main hazardous areas in the country would be secured in the	<ul style="list-style-type: none"> • It depends on the awareness of PU, BNPB, and the top of the local governments. . • I don't know. It will be adjusted to each policy of the region. For Jember, it will be adjusted with the Regional budget for the implementation of such activity.
	Is it likely that the organization system comprising the local government and residents for early warning and evacuation can also be applied in the other areas and be sustained in future?	• It is uncertain. But the Project team is developing the manual which could apply to different ethnicities and religions.
Technical aspect	Is it likely that the Banjir Bandang disaster mitigation abilities (research method, early warning and evacuation system) of C/Ps developed by the Project would be sustained and developed further in future?	It depends on establishing the training system within PU.
	Is it likely that the C/Ps and the disaster management institutions at the national level as well as in the main hazardous areas in the country can develop and revise hazard maps by themselves?	<ul style="list-style-type: none"> • PU and other related institutions could develop and revise the manuals and hazard maps by themselves. • As regards to the main hazardous areas in the country if the officers of Dinas PU receive training for it and obtain data.
	Would the early warning and evacuation system and practices for Banjir Bandang developed by the Project in the main hazardous areas be able to be applied in the other hazardous areas in the country? If not, what kind of supports are needed?	The Project team designed the simple EWS equipment which could be produced in Indonesia. The early warning and evacuation system can be implemented since it is simple. Although the model in Jember utilizes the plantation system, the SOP considers the plantation as a community, also developed the communication system downstream. It may have to consider the ethnicities.

		<p>Was the mechanism to diffuse the Banjir Bandang disaster mitigation developed in the model site to other areas developed in the Project?</p>	<p>Not yet. After transferring the techniques to develop the manuals and SOP to the key persons, it is necessary to diffuse these by teaching at such as STC. The Project team plans to propose to establish the system to follow up.</p>
		<p>Was / Would be the technical transfer on maintenance of the supplied equipment done appropriately? Are there any plans for preparing the related facilities and maintaining of the supplied equipment at the national level as well as in the main hazardous areas in the country for future?</p>	<ul style="list-style-type: none"> • Training on operation and maintenance would be conducted in the dissemination workshop. • Technical transfer was conducted appropriately. On maintenance it depends on the availability of budget in Regional government.
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Social, cultural and environmental aspect</p>	<p>Social, cultural and environmental aspects</p>	<p>Could the residents' organizations established for the early warning and evacuation in the model site be applied in the other hazardous areas socially and customarily?</p>	<ul style="list-style-type: none"> • It depends on whether the evacuation system was developed such that the alarming of the disaster would be announced to the leaders of each community, thereafter the others follow the evacuation. For them to evacuate, its socialization is required, such as to make them to understand hazard maps and evacuation route. • It is necessary to consider ethnicities. • We have to know the knowledge and customs about disaster mitigation by each community to develop early warning and evacuation system for them. • Each community has a key person, through whom we could communicate with residents. • It suggests in SOP that the first step is to conduct basic research on social and natural conditions, respectively.
		<p>Are the women, the poor and the vulnerable people sufficiently considered in the established early warning and evacuation system? Is there any possibility to lessen the effect of the early warning and evacuation for lack of consideration for them?</p>	<ul style="list-style-type: none"> • There is no such possibility. At Jember site, BBWS Brantas and the provincial government of Jember collaborated to develop early warning and evacuation measures. • It is uncertain since the social conditions in Indonesia are so different from Japan. • Early warning and evacuation system was considered at all the community level.



KEMENTERIAN PEKERJAAN UMUM
DIREKTORAT JENDERAL SUMBER DAYA AIR Attachment 2

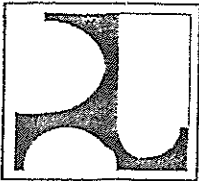
Jl. Pahlawan No. 20, Kebayoran Baru, Jakarta Selatan, 12110, Telp (021) 7203951,
7223013, Facs. (021) 7261292, 7204512 email: subdit_bendungan@yahoo.com

ATTENDANT LIST

DAFTAR HADIR RAPAT

ACARA : Rapat Pelaksanaan Supporting Committee ke-4, Terkait dengan Proyek
Penanganan Bencana Banjir Bandang Secara Terpadu
HARI / TANGGAL : Selasa / 21 Juni 2011
TEMPAT : Ruang Rapat Dirjen SDA

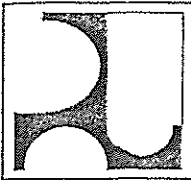
NO	NAMA	INSTANSI	TANDA TANGAN
1	SHIRO NAKASONE	JICA HDQ.	
2	Hitoshi BABA	JICA.	
3	Kenji TANAKA	JICA HDQ	田中 顕治
4	Isgiyanto	BBWS Brantas	
5	Sudarsono	Subdit Bencana	
6	M. SIDIK	SDA PROV. JATIM	
7	HARIYONO UTOMO	Subdit Prasarana Konservasi & Sedimen	
8	ASEP YUSUF	Subdit Prasarana Konservasi & Sedimen	
9	M. RONDHI	PPK - UNEJ	
10	Rachmad Jayadi	MPBA-FT-UBM	



KEMENTERIAN PEKERJAAN UMUM
DIREKTORAT JENDERAL SUMBER DAYA AIR

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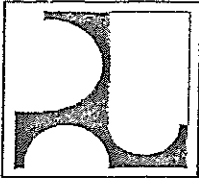
NO	NAMA	INSTANSI	TANDA TANGAN
11	DARMANTO	FT. UGM	
12	Widagdo	SDA	
13	Untung Budi S	Balai Sabo	
14	Deno Toshiyasu	PU JICA	
15	YOSHIDA Keiji	PU JICA	吉田 桂治
16	Yoshio Tokunaga	JICA expert for BNPB	
17	Yosuke OKITA	JICA Indonesia	神田 陽介
18	Tamahi Yamachi	JICA	山内 正典
19	M. ANROW	SDA	
20	HARTANTO	DIT BOP	



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NO	NAMA	INSTANSI	TANDA TANGAN
21	ARUNG SAMUDRO	KSD. Prastawa KONSERVASI dan SEDIMEN	
22	Pradyo Yudo A.	KSD. Penanggulangan Bencana	
23	Eddy Subandi	KSS WIL I P. BENCANA	
24	HENORA UTAMA	Subdit. perencanaan TEKNIK	
25	Andi Paningsih	Subdit. Cetak Sampul & Pasir	
26	BAYU ADITYA C.	SUBDIT PRASARANA KONSERVASI & SEDIMEN	
27	DAI AGUS M.	DINAS PU PENGAIRAN KAB. JEMBER	
28	Andry F.	Jica asl	
29	Noviyanti P.B.	Jica. asl.	
30	Lilik Kurniawan	Kasubdit Pencegahan BNPB	



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NO	NAMA	INSTANSI	TANDA TANGAN
31	SANDI S HASAN	PMI JEMBER	
32	Ersytra Tiara	Datin SDA	
33	Vidya. K	JICA	
34			
35			
36			
37			
38			
39			
40			

