The Republic of Indonesia Directorate General of Water Resources Ministry of Public Works

The Project for Capacity Development of Mt. Semeru Volcanic Disaster Structural Measures Planning in The Republic of Indonesia

Project Completion Report

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Japan International Cooperation Agency (JICA)

Yachiyo Engineering Co., Ltd.





Maps & Photos



Project Completion Report

<u>The Project for Capacity Development of Mt. Semeru Volcanic Disaster Structural Measures</u> <u>Planning in The Republic of Indonesia</u>

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Abbreviations

Abbreviations	Indonesian (English)
BBWS Brantas	Balai Besar Wilayah Sungai Brantas
DD W S-Diamas	(Brantas River Basin Management Office)
BINTEK	BinaTeknologi
	(Directrorate of Water Resources Engineering Development)
C/P	Counterpart
DEMNAS	Digital Elevation Model Nasional
DESDM	(Energy and Mineral Resources Agency)
DGWR	Directorate General of Water Resources
	Daftar Isian Pelaksanaan Anggaran
DIFA	(Budget Execution (Allotment) Document)
DLH	Dinas Lingkungan Hidup
	(Environmental Agency)
DPUTR	Dinas Pekerjaan Umum dan Tata Ruang
	(Public Works and Spatial Planning Agency)
DSDA	(Water Resources Agency)
DTM	Digital Terrain Model
GCPs	Ground Control Points
MOD	Minutes of Discussion
	Master Program Sumber Daya Air
MPSDA	(Master of Water Resources Management)
MPW	Kementerian Pekerjaan Umum
	(Ministry of Public Works)
МТ	Magister Teknik
	(Master of Engineering)
OP	Satuan Kerja Operasi
	(Working Unit)
PJPA	(Water Use Network Department)
PDM	Project Design Matrix
	Perusahaan Listrik Negara
PLN	(Regional Electricity Company)
PMM	Project Monitoring Meeting
RD	Record of Discussion
RPB	Review Prakiraan Biaya
SNI	Standar Nasional Indonesia
5111	Indonesian National Standard
SNVT	Satuan Kerja Non Vertikal Tertentu
	(Non Vertical Working Unit)
ST	Sarjana Teknik (Decholor of Engineering)
Talkom	(Bachelar of Engineering)
	Techniacal Working Unit
1 110	Unava Dangalalaan Lingkungan Uidun dan Unava Damantayan Lingkungan Uidun
UKL-UPL	(Environmantal Management and Monitering Plan)

CHAPTER 1 OVERVIEW OF THE PROJECT

1.1 Background and Context of the Project

The Republic of Indonesia frequently experiences natural disasters including volcanic eruptions and floods, which contribute significantly to economic and social losses. The country has 129 active volcanoes, ranking third in the world in terms of quantity. Volcanic eruptions cause various disasters such as ashfall, pyroclastic flows, and debris flows, which severely affect lives, property, and socioeconomic infrastructures. Consequently, addressing volcanic and sediment-related disasters is essential for ensuring regional safety and promoting sustainable development.

Recognizing this importance, the Indonesian government included disaster prevention as one of the seven priority development plans in its "National Medium-Term Development Plan (RPJMN 2020–2024)" formulated in January 2020, incorporating volcanic disaster mitigation as one of the key issues. In response to these challenges, Japan has been providing long-term support for volcanic eruption and sediment disaster countermeasures for Mt. Semeru and Mt. Merapi. This includes construction of sabo facilities through yen loans.

Given Mt. Semeru's history of frequent small-scale eruptions, the area has always been at high risk of sediment-related disasters. The volcanic ejecta is likely to form debris flow during rainfall, exposing residents to the risk of sediment and flood disasters every few years. Large-scale eruptions occur approximately every 10-20 years, where the eruption on December 4, 2021, resulting in 57 fatalities and evacuated more than 10,000 people. The pyroclastic flow caused thermal blasts that destroyed homes and farmland, while sediment overflowed the existing training dikes and devastating villages. Additionally, a crucial national highway bridge completely collapsed due to pyroclastic and debris flow impacts. As Mt. Semeru has experienced intermittent small eruptions even before this major event, it remains a high-risk region for sediment disasters. The substantial volcanic material produced by eruptions poses a constant debris flow and flood risk during the rainy season. This persistent risk emphasizes the urgent need for immediate and comprehensive countermeasures.

However, the Directorate General of Water Resources, Ministry of Public Works (DGWR-MPW), which oversees volcanic sabo, recognizes the control of volcanic sediment as a critical program. Nevertheless, they lacks the tehenical capacity for detailed planning of volcanic sabo facilities, particularly for structural measures needed to address the frequent debris flows caused by pyroclastic deposits, as seen in the 2021 eruption. Enhancing the planning and design capabilities of technical personnel has become an urgent issue.

1.2 Project Purpose and Outputs

1.2.1 Project Title

The project is titled "The Project for Capacity Development of Mt. Semeru Volcanic Disaster Structural Measures Planning in The Republic of Indonesia".

1.2.2 Project Purpose

Through technical assistance for the detailed design of volcanic sabo facilities at Mt. Semeru in East Java Province, the Project aims to establish an autonomous implementation system for volcanic sabo operation within the implementing agency, thereby contributing to the reduction of volcanic disaster risks.

1.2.3 Outputs

The Project's four key outcomes are as follows:

Output 1: The capacity to conduct basic survey and information gathering necessary to implement the detailed design of Sabo facilities will be strengthened.

- Output 2: The ability to review Sabo facility specifications and facility locations based on field survey results will be enhanced.
- Output 3: The capacity to prepare detailed design for Sabo facilities will be improved.
- Output 4: The preparedness to address environmental and social considerations will be reinforced.

The overall PDM (Project Design Matrix) for the project is provided in Annex 1.

1.3 Target Area and Project Duration

The project primarily focuses on the Rejali River Basin, which flows down the slopes of Mt. Semeru.

The project duration is set from December 25, 2023, to Feburuary 28, 2025.

1.4 Cooperating Partner Organization

1. **Implementing Agency**: Directorate General of Water Resources, Ministry of Public Works (DGWR-MPW)

2. Relevant Agencies:

The following departments under the Directorate General of Water Resources (DGWR) of the Ministry of Public Works (MPW) will participate in the project:

Headquarter:

- Directorate of River and Coasts
- · Directorate of Water Resources Engineering Development
- Directorate of Water Resources Management Systems and Strategies
- Technical Implementation Unit for Sabo Dams (Balai Sabo)

River Basin Organization:

• River Basin Organization for Brantas (BBWS Brantas)

1.5 **Project Implementation Structure**

The project will be implemented with DGWR-MPW as the implementing agency. The Directorate of River and Coasts, Directorate of Water Resources Engineering Development, Directorate of Water Resources Management Systems and Strategies, Technical Implementation Unit for Sabo Dams, and River Basin Organization for Brantas will be the relevant agencies. It will proceed based on the Record of Discussion (RD) signed on October 4, 2023 (refer to Figure 1-1). The first Project Monitoring Meeting was held on May 31, 2024 (see minutes of the meeting in Annex 5).



Source: Record of Discussion on The Project for Capacity Development of Mt. Semeru Volcanic Disaster Structural Measures Planning in the Republic of Indonesia Agreed upon between Ministry of Public Works and Housing and Japan International Cooperation Agency, Jakarta, October 4th, 2023

Figure 1-1 Project Implementation Structure

1.6 Activity Policy

The objective of this project is to strengthen individual capabilities through collaboration with the Counterpart (C/P) staff of BBWS Brantas, who are responsible for planning the sabo facilities in the project area, and to expand this enhancement across the entire agency through workshops. The tasks related to planning, design, and preparation of bidding documents for sabo facilities will be implemented in cooperation with BBWS Brantas staff, and capability development will be implemented through this collaboration. The knowledge and technical content gained will be shared through workshops with relevant departments of the Directorate General of Water Resources, including the Directorate of River and Coasts, to ensure overall organizational capability development.

While the daily activities primarily directed at C/P staffs of BBWS Brantas, when workshops are held or when the sharing of necessary information arises during other project activities, C/Ps from relevant agencies will participate. The names and affiliations of the C/Ps appointed by Indonesian side are shown in Table 1-1.A total of 18 personnel are involved, comprising of staffs from the aforementioned relevant agencies. Among them, the largest group (7 personnels) is from BBWS Bantas who are the direct subjects of the activities. The organizational chart of BBWS Brantas and the departments to which the C/Ps belong are shown in Figure 1-2. To ensure overall organizational capability improvement, the C/Ps are composed of staffs from the planning, design, and tender/construction supervision departments.

No.	Name	Organization
1	Anggun Etika P.,ST., MPSDA	Directorate of Rivers and Coasts
2	Nimas Ayu Anggraini, ST., MT.	Directorate of Rivers and Coasts
3	Hatta Putra, ST.,M.Eng.	Directorate of Rivers and Coasts
4	Yuddi Yudistira, ST., MT.	Directorate of Rivers and Coasts
5	Gauri Ashih Karitika, ST.	Directorate of Water Resources Management Systems and Strategies
6	Dr. Eng. Agus Santoso, ST.,M. Eng	Directorate of Water Resources Engineering Development
7	Agung Rizki Perdana, ST.	Directorate of Water Resources Engineering Development
8	Ir. Sri Hardini Suprapti, MT.	River Basin Organization for Brantas
9	Radia Zuljikar, ST., MT.	River Basin Organization for Brantas
10	Yubra Amasa, ST., M.Eng,	River Basin Organization for Brantas
11	Ima Sholikhati, ST., MT.	River Basin Organization for Brantas
12	Rif'atul Ummah, ST., MT.	River Basin Organization for Brantas
13	Gantar Musi Candrayana, ST.	River Basin Organization for Brantas
14	Dini Wulan Ramadhani, ST.	River Basin Organization for Brantas
15	Santosa Sandy Putra, ST., M.Sc., Ph.D	Technical Implementation Unit for Sabo Dams
16	Moh. Dedi Munir, ST., M.Sc.	Technical Implementation Unit for Sabo Dams
17	Maria Asunta Hana Pramudawati, ST., M.Eng.	Technical Implementation Unit for Sabo Dams
18	Indragiri Krisnangga Murti Setyo Budiharso, ST	Technical Implementation Unit for Sabo Dams

Table 1-1 Names and Affiliations of Counterparts

事業管理ユニッ	×			Head OT KIVER BE for BI	asin urganizatioi rantas	-			事業実施ユ	1 ~ 1
	_		-					-		ſ
Head of General Affairs & Administration Division	Head of Integration Division of Water Resources Infrastructure Development	Head of Water Resources Network Implementation Division (Bidang PJSA)	Head of Water Utilization Network Implementation Division	Head of Operation and Maintenance Division	Head of BBWS Brantas Work Unit	Head of Specific Non- Vertical Work Unit for Groundwater and Bulk Water	Head of Specific Non-Vertical Work Unit for Water Resources Network mplementation	Head of Specific Non-Vertical Work Unit for Water Utilization Network Implementation	Head of Specific Non- Vertical Work Unit for Dams	Head of Specific Non- Vertical Work Unit for Operation & Maintenance
	Radia Zulfikar, S.T., M.T.	Ir. Sri Hardini Suprapti, M.T.	(Bidang PJPA)	(Bidang OP)	(Satker Balai) *1)	(SNVT Air Tanah & Air Baku)	(SNVT PJSA) *2)	(SNVT PIPA)	(SNVT Bendungan)	E" (90 TVNS)
Sub-coordinator of Legal and Public	Sub-coordinator of General Planning	Sub-coordinator of River & Coast Implementation	Sub-coordinator of Irrigation & Lowland	Sub-coordinator of Operation & Maintenance			Yubra Arnasa, S.T., M.Eng			
communication		Control	Implementation Control	Planning				Coordinator of Tech	hnical	
Sub-coordinator of Personnel,		Riffatul Ummah, S.T., M.T.			Coordinate	or of Administration		Gantar Musi Candray	ana, S.T.	1
Archives Management & Public Service Sub-coordinator of	Sub-coordinator of Program Development and Budgeting	Sub-coordinator of Dams & Lakes Implementation Control	Sub-coordinator of Groundwater and Bulk Water Implementation Control	Sub-coordinator of Operation & Maintenance Implementation	Commitment Making Officer for River & Coast I *2	Commitment Making Officer River and Coast	for Making til River an	nitment Cc Officer for Maki	mmitment ing Officer for and Coast IV	Authorized Signatory for Payment Orders
Supplies Inventory & State-Owned Asset Management					Ima Sholikhati, S.T., M.T. Dini Wulan Ramadhani, S.T.	In regards to the proje *1 Planning unit *2 Construction unit *3 Maintenance	et of Capacity Develor : Satker Balai, Comm : SNVT PJSA, Commit : SNVT OP	pment of Mt. Semeru Volc. itment Making Officer for tment Making Officer for R	anic Disaster Structural Planning and Program iver and Coast I	Measures Planning

Figure 1-2 Organization chart of river basin organization for Brantas and C/P affiliation

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CHAPTER 2 PROJECT ACTIVITIES

2.1 **Project Activity Outcomes**

2.1.1 Work Schedule

The tasks for the Project were carried out for 14 months, from December 2023 to February 2025. The work flowchart of the tasks is shown in Figure 2-1, while the work implementation schedule and performance records are shown in Figure 2-2.

Details of the workshops conducted as part of capacity development activities outlined in Figure 2-1 are explained in Annex 4. The contents of other activity outcomes are included in Annex 6. As a result of these activities, a final report (refer to Annex 7), result of preliminary detailed design (draft)(Appendix 4-3-1~4-3-3 of the final report), and preliminary bidding document (draft) (Appendix 6-3-1~6-3-2 of the final report)were prepared.



Source: JICA Project Team



Output		Activity	202	23									2	024			_						20)25
Output		Activity	De	c	Ja	n I	Feb	M	ar	Apr	Ma	ay	Jun	J	lul	Aug	g	Sep	0	ct	Nov	Dec	Jan	Feb
	0.1	Implementation Plan and Work Plan Implem	nentat	ion	Plan	W	ork P	lan																
Activities	0.2	Activities for capacity development		Wo	rk P	1 an					E	lasic	2 Desi	gn	D	etaileo	d De	30 sign Bio	D dding		Er	5 vironme sial consi	ntal and deratior	DFR 15
Overall	0.3	Reports															In	docu Letrin nitor	n Rep ing S	s ort heet		FR	toring S	Project Completic Feport
vill be	1.1	Understanding current situation through field surveys, and collection of additional basic data from the Master Plan and from the 2021 eruption data																						
rmation gath bo facilities	1.2	Analysis and understanding of the data (sediment, hydrological, etc.) collected in the "Mt. Semeru Sabo Master Plan", which is being carried out as part of the preceding project "Information Collection and Verification Study on Volcanic Disaster Prevention in East Java and Bali, Indonesia"																						
and info m of Sal	1.3	Assessing the state of sedimentation and facility damage by field survey																						
tput 1 research iled desig gthened	1.4	Assessing the implementation plan and progress of the emergency response work that has been underway since immediately after the December 2021 eruption																						
Ou t basio - the deta stren	1.5	Updating data and collection of additional materials					 																	
o conduci iplement 1	1.6	Topographical surveys, existing facility measurements, and geological surveys are conducted for the purpose of rehabilitation and improvement planning and design of the facilities			ĺ																			
apaoity t ary to in	1.7	Analysis of hydrological / sediment data																						
The of	1.8	Revision of the survey implementation plan, if necessary								Ц														
tput 2 try to develop ohnical setion and solicy of the lities will be	2.1	Based on the results of the field survey, data collection and basic investigation, as well as the planning conditions for structural measures established in the "Review Mater Plan" a rehabilitation policy for the targeted facilities will be developed																						
Ou The capaci a to apeoffic location p Sabo faol	2.2	Procedures, methods, and schedules for facility rehabilitation planning and design are developed																		E	plenat	ion of te	chnical	matorials
detailed will be	3.1	Design																						
ut 3 prepare facilities thened	3.2	Construction plan																						
Outp acity to for Sabo strengt	3.3	Cost estimate																						
The car design	3.4	Preparation of Draft Bidding Documents												_										
nmental ons is	4.1	With respect to construction permits already obtained, information on construction details, construction methods, etc. will be compiled based on the results of the detailed design work performed under this project																						
put 4 n environ nsideratic thened	4.2	Content of existing environmental survey reports, including the perspective of gender mainstreaming is updated, based on JICA's Guidelines for Environmental and Social Considerations (January 2022)																						
Out, apaoity o social co streng	4.3	In order to finalize the detailed design, recommendations on environmental and social considerations will be prepared $\label{eq:constraint}$																						
The or and :	4.4	Support the organization of public consultations by $BBWS/local$ authorities is offered as needed																						
		Work in Indonesia Work in Japa	n																					

Source: JICA Project Team

Figure 2-2 Work implementation plan and results table

2.1.2 Contributions from Japanese side (Plans and Actuals Result)

Regarding contributions from the Japanese side are shown in Table 2-1 and Figure 2-3.

(Driginal Plan (From MOD PDM)		Result	Remarks
Ex	pert Dispatch	Exp	pert Dispatch	See Figure 2-3 for
1.	Team Leader / Sabo Facility	1.	Team Leader / Sabo Facility	details of expert
	Planning / Social and		Planning	activities.
	Environmental Considerations	2.	Co-Team Leader / Cost	
2.	Sabo Facility Design		Estimation / Tender Document 1	
3.	Survey / Geological Survey Plan	3.	Sabo Facility Design 1	
4.	Cost Estimation and Bidding	4.	Sabo Facility Design 2	
5.	Project Coordination	5.	Survey / Geological Survey	
6.	Environmental and Social		Plan	
	Considerations	6.	Cost Estimation / Tender	
			Document 2	
		7.	Social and Environmental	
			Considerations	
		8.	Sabo Control and Facility Plan	

Table 2-1 Japanese side contribution records

Source: JICA Project Team

Name	2023						20	24						205	25
Assignment	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2
Junji Yokokura Team leader / Sabo facility planning		1/21	2/8							9/15-2	2				
Leem Jihoon Co team Leader / cost estimation / Tender document 1		1/21	2/7 2/26	3/1 28,29		5/2-6		7/16-18	8/28-30	9/16-20	10/4-6	11/7-11		1/19-22	
H. Takeshima Sabo facility design 1				4	19 - 4/30	5/1 - 5/18	3			9/15-2	2			1/18-22	
K. Tsujimoto Sabo facility design 2				4	19 - 4/30	5/1 - 5/18	3			9/15-2	2				
Hisashi Furuichi Survey / geological survey plan		1/21	2/8 2/24	3/7											
Hefryan Sukma Kharismalatri Cost estimation / tender document 2		1/21	2/7 2/26	3/1 3/28		5/6		7/16-17	7/31-8/2	9/17-2	0				
H. Shiraishi Social and environmental consideration															
J. Fukushima Sabo control and facility plan								7/18	7/31-8/2 8/23-	9/12-13	10/3 10/10-1	11/18-22 2	2		

Source: JICA Project Team

Figure 2-3 Record of expert dispatch activities

2.1.3 Contributions from the Indonesian Side (Planned and Actual)

The actual contributions from the Indonesian side are as follows:

Original Plan (From MOD PDM)	Result	Remarks
1. Assignment of Counterparts (C/P)	1. Assignment of Counterparts (C/P)	
1) Personnel from the Directorate of Rivers and Coasts	 Personnel from the Directorate of Rivers and Coasts 	For details of C/P members, see Chapter 1 Project
2) Personnel from the	2) Personnel from the	Overview, Table 1-1.

Table 2-2 Indonesian side contribution records

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Original Plan (From MOD PDM)	Result	Remarks
 Directorate of Water Resources Engineering Development 3) Personnel from the Directorate of Water Resources Management Planning and Strategy 4) Personnel from the Technical Implementation Unit for Sabo Dams 5) Personnel from BBWS Brantas 	 Directorate of Water Resources Engineering Development 3) Personnel from the Directorate of Water Resources Management Planning and Strategy 4) Personnel from the Technical Implementation Unit for Sabo Dams 5) Personnel from BBWS Brantas 	
 Provision of Office Space and Required Utilities Office space within DGWI MPW, as well as offices in Lumajang and Surabaya Office utilities (electricity, water, communication/internet, security) 	 2. Provision of Office Space and Required Utilities 1) Office space in Lumajang and Surabaya 2) Office utilities (electricity, water, security) 	
3. Local Project Expenses	3. Local Project Expenses	
1) Project activity expenses, including allowances and travel costs for C/P	1) Project activity expenses, including allowances and travel costs for C/P	
 2) Expenses for project monitoring meetings and technical work unit activiti (e.g., venue costs, travel expenses for lecturers and participants) 3) Data provision 	 2) Expenses for project monitoring meetings and technical work unit activities (e.g., venue costs, travel expenses for lecturers and participants) 3) Data provision 	

2.2 Results of Activities

The activities related to Outputs 1 through 4 were conducted from January to November 2024. These were implemented collaboratively with C/Ps, resulting in capacity strengthening. The outcomes of these activities are as follows:

2.2.1 Activities Related to Output 1

Activity 1.1 Understanding current situation through field surveys, and collection of additional basic data from the Master Plan and from the 2021 eruption data

Existing status prior to project implementation

- 1) The C/Ps had an overview of the situation around the Rejali River following the recent eruption, but they seek a clearer understanding of the mechanisms and extent of sediment deposition in the river channel and potential future sediment movement and deposition.
- 2) Additional basic data from the Master Plan (1984) and the 2021 and 2022 eruption data includes data collected when the Review Master Plan (2024) was created (described later in [Activity 1.2]), LiDAR data and the current sediment deposition and topographical conditions (described later in [Activity 1.5]) collected during the field survey of the Project, and the current status of erosion control facilities. C/P shall be familiar with the status of these data collections.

Capacity development activities and results

- 1) Based on the results of field surveys and digital topographical data, JICA Project Team organized the outline of recent eruptions and changes in sediment deposition in a chronological order into maps and schematic diagrams. The organized materials were explained at the presentation and workshop.
- 2) As a response to future similar eruptions, it was emphasized that a) removal of sediment from within the river channel is necessary, and b) The prioritization of maintenance in areas of S2 and S4, where debris flows overtopped the dikes, requiring the construction or renewal of Sabo dams and raising of the weight of dikes.
- 3) These explanations concretely deepened the C/P's understanding of sediment movement and data collection.
- Activity 1.2 Analysis and understanding of the data (sediment, hydrological, etc.) collected in the "Review of Volcanic Debris Control Plan for Mt. Semeru (2024) (Review Master Plan (2024))", which was carried out as part of the preceding project "Data Collection Survey in Volcanic Disaster Reduction in East Java and Bali Islands"

Existing status prior to project implementation

Regarding the essential data, such as sediment and hydrological data collected during the preliminary survey titled "Data Collection Survey in Volcanic Disaster Reduction in East Java and Bali Islands", the C/P side was the source of rainfall data and was familiar with its content. However, they needed a more concrete understanding of other essential data, the sources of these data, and how they should be utilized.

Capacity development activities and results

The collected data were organized by category, specifying their sources and methods of utilization. These details were then explained through workshops and meeting, which deepened the understanding of the C/P side. An overview of the collected data is shown in Table 2-3. Notably, all this information has been organized in the preliminary work, the Review Master Plan (2024).

Data Type	Source	Usage
Volcanic eruption-	Various past research	To understand volcanic characteristics and
related data, disaster	papers, etc.	disaster characteristics
data		
GIS data	DEMNAS, Regional	To create base maps and longitudinal river
	Development Planning	profiles, to understand sediment slope
	Agency (BAPPEDA) of	gradients
	Lumajang Regency, etc.	
Rainfall data	BBWS	To understand rainfall characteristics, creating
		rainfall distribution maps, to calculate
		probabilistic rainfall and design rainfall
Debris flow occurrence	News sites	To identify source basins, to understand debris
data		flow occurrence frequency, to calculate debris
		flow triggering threshold rainfall
Specifications of Sabo	Sediment control facility	To understand facility damage conditions, to
facilities	register	identify Sabo dam height, dam width, dam
	_	type, and to calculate facility effectiveness

Table 2-3 Collected data

Source: JICA Project Team

Activity 1.3 Assessing the current condition of sedimentation and facility damage by field

survey

Existing status prior to project implementation

The sedimentation status and damage level of the Sabo facilities were organized in the existing Sabo facilities register created in the preceding information collection and confirmation work. However, since the implementation of the work, the sedimentation status has changed and emergency countermeasures have been implemented, so the C/P side also needed to reconfirm the current status through on-site investigations and analyze the cause of damage to the facilities.

Capacity development activities and results

 Through collaboration with the C/P, an on-site survey was conducted and the causes of damage to the targeted facilities were discussed on-site to deepen mutual understanding of the current situation. Furthermore, the gravel diameter survey, which is detailed in [Activity 1.5], was carried out jointly and guidance was provided on-site to enhance the C/P's understanding of the survey methods.



Example of a summary of a field survey



Discussion on the results of the field survey

Source: JICA Project Team

Figure 2-4 Discussion on the current state and facility damage from the field survey

2) Based on the results of the on-site survey, the causes of damage to the targeted facilities were organized by JICA Project Team. Survey results showed that the sabo facilities were eroded and scoured by the massive flow of sediment due to frequent debris flows, leading to the destruction and loss of the facilities. Further, the embankments of the existing facilities was observed to have many cavities and are not strong enough to withstand the debris flow. These findings were reported during workshops and meetings, deepening the C/P's understanding. The design of the sabo facilities based on these results will be discussed in [Activity 3].

Activity 1.4 Assessing the implementation plan and progress of the emergency response work that has been underway since immediately after the December 2021 eruption

Existing status prior to project implementation

C/P's understanding regarding the safety of facilities developed through emergency measures for future sediment movement was insufficient.

- 1) Emergency response works were conducted after the December 2021 eruption, encompassing the training dike on the left bank of the S2 area (Tanggul Curah Lengkong), the left bank of the S4 area (Tanggul Leprak 24, 25, 26), and the emergency training dike on the right bank of the same area. The works were carried out from 2022 to 2023. This fact was confirmed by both the C/P and JICA Project Team.
- 2) C/P understood that explanation on the sediment movement at the site and plan for reinforcement and raising the height of these facilities to make them safer against future debris flow flooding

is necessary. This understanding was shared with C/P.





Left bank of S2 area (Tanggul Curah

Source: JICA Project Team

Lengkong)

Left bank of S4 area (Tanggul Leprak 24, 25, 26)

Figure 2-5 Investigation survey to clarify the status of emergency construction of the training dike in collaboration with BBWS Brantas staff on Jan 24, 2024

Activity 1.5 Updating data and collection of additional materials

Existing status prior to project implementation

- 1) In updating the topographical data, LiDAR data were obtained from BINTEK's survey along the Rejali River. The C/P side recognized that LiDAR surveying is more efficient than conventional methods and that the 3D digital topographical data derived from LiDAR can be used to generate arbitrary cross-sectional views, which significantly improves planning and design efficiency. However, deeper understanding on the technical points to be noticed is necessary when utilizing such data.
- 2) Since the boulder size data essential for the design of the Sabo facilities had not yet been collected, a gravel diameter survey around the facilities was required. However, the C/P side did not fully understand the purpose and methodology of the survey, so enhancement of their understanding is important.

- 1) As a response from JICA Project Team to the update of the topographical data, the acquired LiDAR data was converted and corrected into a 3D Digital Terrain Model (DTM). The knowledge that LiDAR data is unprocessed point cloud data and cannot be directly used as terrain data was explained to C/P. The following points were explained to the C/P to deepen their understanding of the advantages of digital data and the important points to be noticed when using it.
 - LiDAR data needs to be converted to DTM •
 - Removal of disturbance (such as vegetation) is required in the conversion process.
 - DTM needs to be corrected based on control point data acquired separately on-site

2) Regarding the boulder size survey, JICA Project Team explained to C/P the purpose of the survey near the Sabo facilities. Boulder size data is used for determining the opening width of open-type Sabo dams, designing spillway sections, and stability analysis of Sabo dams. C/P understood that this survey is essential for the Sabo facilities design. The necessity of this survey for Sabo facilities was understood by the C/P. To deepen their understanding, the gravel diameter survey was conducted collaboratively by both JICA Project Team and the C/P, with JICA Project Team providing guidance on the survey methods. Additionally, the C/P partially organized the survey results and focused on acquiring



Source: JICA Project Team

Figure 2-6 Boulder size survey conducted in collaboration with BBWS Brantas staff on January 26, 2024

technical knowledge related to the survey methods.

Activity 1.6 Topographical surveys, existing facility measurements, and geological surveys are conducted for the purpose of rehabilitation and improvement planning and design of the facilities

Existing status prior to project implementation

Enhancement of knowledge and skills required to determine the facilities that need topographic or geological surveys, considering the structure and layout of the new facilities to be developed, is necessary. This also involved setting the scope of topographic survey, as well as the locations and depths for boring survey in each facility.

Capacity development activities and results

Based on the basic plan in the Review Master Plan (2024) and the results of the field survey, the following facilities are prioritized for development:

S2: 2 Sabo dams (CD Pelintas Curah Lengkong 2, CD Kobokan 5), 1 training dike (Tanggul Curah Lengkong)



Source: JICA Project Team

Figure 2-7 Geological survey by local subcontractor on May 12, 2024

 S4: 3 Sabo dams (KD Leprak 3, DD Leprak 2, DD Leprak 3), 8 training dikes (seven consecutive training dike on the left bank (Tanggul Leprak 22–26, II-D, XVII Kebondeli 2021), and 1 emergency training dike on the right bank)

Geological surveys were conducted near these prioritized facilities. During the surveys, JICA Project Team, C/P, and subcontractors coordinated to ensure schedule management and construction management, ensuring quality of results and preventing rework.

Activity 1.7 Analysis of the sediment, hydrological, etc. collected from the field surveys mentioned in 1.1 to 1.6 activities

Existing status prior to project implementation

Among the data collected in Activities 1.1 to 1.6, the analysis of sediment and hydrological data had mainly been conducted in the Review Master Plan (2024). The Review Master Plan (2024) had

been shared with C/P, and it was considered that C/P had a general understanding of its contents. However, it was desired to deepen the specific understanding on the analysis method of data collected and calculation method for design scale, design rainfall, and basic sediment volume, as well as updates from the Master Plan (1984).

- 1) As a response from JICA Project Team to the situations above, JICA Project Team provided multiple explanations to the C/P based on the Review Master Plan (2024) report. These explanations covered the setting of design scale, design rainfall, and basic sediment volume, as well as the updates of the Master Plan. In addition, the major changes in the Review Master Plan (2024) shown below were explained in detail.
- a. Setting cumulative rainfall exceeding the threshold rainfall for debris flow occurrence
 - In the Master Plan (1984), only one type of design rainfall was set (100-year rainfall), which was applied to both the design peak discharge and the design sediment discharge volume.
 - In contrast, the Review Master Plan (2024) applied two types of design rainfall. One is the 100-year rainfall used to calculate the design peak discharge used in the design of the spillway and the stability analysis of the dam. This value was calculated using the latest rainfall data.
 - The second type of design rainfall is the critical rainfall that caused debris flow for debris flow generation in the first year after the eruption. This was applied to calculate the design sediment discharge volume that should be targeted in structural measures. In areas where pyroclastic flows were deposited after the eruption, debris flows occur frequently, but this rainfall was calculated to reflect the phenomenon that the frequency of debris flows decreases over time (= critical rainfall to cause debris flow). This rainfall was calculated using both debris flow occurrence frequency and rainfall data.
- b. Change in the design sediment gradient
 - The design sediment gradient of Sabo facilities is usually set to about 2/3 of the original riverbed gradient.
 - However, as a result of field surveys and inventory surveys of Sabo facilities and damage conditions, it was found that the sediment gradient of Sabo facilities in the rivers at the foot of Mt. Semeru is steeper than 2/3 of the original riverbed gradient. Therefore, for Sabo facilities in the Mt. Semeru basin, the planned sediment gradient was set to 2.5/3, steeper than 2/3, based on the observed sediment record. The effect of the Sabo facilities was also calculated by setting the planned sediment gradient at 2.5/3.
- 2) In each meeting and discussions, C/P asked various questions about the above explanation indicating their efforts to fully understand the points discussed. As a result of the explanation in an easy-to-understand method using the contents of the Review Master Plan (2024) report and presentations, the C/P side gained a deeper understanding.
- 3) Regarding the matters related to the formulation of the Sabo facility layout plan mentioned above, the items that are considered to have been improved on the C/P side through this capacity development activity are shown in Figure 2-8, following the flow of Sabo facility plan formulation in Japan. Since there are lack of standards for the formulation of Sabo facility plans in Indonesia, the improvements were structured based on Japanese standard: Sabo Basic Plan Formulation Guidelines, integrating relevant points into the planning framework.



Source: Technical guideline for establishing sabo master plan against debris flow and driftwood, p.5 (phrase related to driftwood are excluded by JICA project team)

Figure 2-8 Improvement points in developing Sabo facility layout plans

Activity 1.8 Revision of the survey implementation plan, if necessary

Existing status prior to project implementation

Since there have been no significant changes in the sediment accumulation conditions within the river channel at the site, it was considered unnecessary to revise the survey plan at this stage. However, the C/P side needed to be aware of when and under what circumstances a revision of the survey plan might become necessary in the future.

Capacity development activities and results

- 1) JICA Project Team explained to the C/P that the survey plan would need to be revised if a significant change in the sediment deposition conditions occurred due to a large-scale eruption or if a new debris flow flood occurred.
- 2) The C/P asked questions based on specific cases, such as what to do if the shape of the crater changed, and these explanations helped the C/P to deepen their understanding.

2.2.2 Activities Related to Output 2

Activity 2.1 Based on the results of the activities in Output 1, as well as the planning conditions for structural measures established in the "Semeru Volcano Master Plan", Sabo facility specifications and facility locations are reviewed

Existing status prior to project implementation

In the Review Master Plan (2024), a) priority construction facilities were identified for the Rejali River, b) the type of Sabo dam (open-type/closed-type) was selected, c) the construction method (new construction/reconstruction/rehabilitation) was selected, and d) the dam height and training dikes height were set. However, based on the construction budget and field survey results, it was necessary to further narrow down the Sabo dam facilities for a), and to verify the validity of b), c), and d) based on field surveys. It was necessary for JICA Project Team to verify these, and to share the verification method and results with the C/P side to deepen their understanding.

Capacity development activities and results

The following verifications were carried out as JICA Project Team's response.

- 1) Selection of priority development facilities
- a. The Review Master Plan (2024) proposes priority development facilities in the midstream to the Curah Lengkong, Kobokan rivers and in the downstream to the river mouth of the Rejali River basin.
- b. Of these, the S2 area (midstream to the confluence of the Curah Lengkong and Kobokan rivers) and the S4 area (around the Leprak sand pocket) were selected as priority development areas, since they have been subject to debris flow flooding due to recent eruptions and are considered to have a particularly high priority for development.
- c. In addition, one Sabo dam upstream of the S2 area and two Sabo dams upstream of the S4 sand pocket are subject to significant riverbed fluctuations. It is desirable to develop these areas when the riverbed fluctuations have subsided. Therefore, they were excluded from the priority development facilities this time. The final number of priority development Sabo dams was set at five.
- d. As for the training dikes, one training dike in the S2 area and all training dikes in the S4 area were selected as priority development facilities from the perspective of preventing debris flow flooding.
- 2) Verification of the type of Sabo dam (open-type/closed-type)

In the Review Master Plan (2024), all the priority Sabo dams are open-type. In this field survey, no conditions that would prevent the dams from being permeable were identified. All the dams were permeable. (Details on the types are explained in [Activity 3.1(1)])

3) Verification of the construction method (new construction/reconstruction/rehabilitation)

The Review Master Plan (2024) stated that all existing Sabo facilities are priority to be repaired. However, based on the field survey, it was found that the existing dams have many cavities within the existing dam bodies, which reduces its strength and make it unsuitable as main dams. Additionally, the volume of material to be removed will be limited. Therefore, the approach was changed to construct a new dam and use the existing Sabo dam as a sub-dam. (Details of the construction method are explained in [Activity 3.1(1)])

4) Verification of dam height and training dike height

In the Review Master Plan (2024), the dam height is set to the same height as the existing Sabo dam. This is because the construction method is categorized as "repair". As mentioned in section 3) above, since the Sabo dams will be newly constructed, the dam height and training dike height have been adjusted based on the local conditions to ensure that sediment does not overflow when sediment accumulates. (Details on the design are explained in [Activity 3.1(2)])

Activity 2.2 Procedures, methods, and schedules for incorporating field survey results into facility planning are considered

Existing status prior to project implementation

- 1) It was necessary to prepare an implementation plan for the Project, and it was necessary to confirm the personnel structure on both JICA Project Team and C/P sides.
- 2) In addition, the C/P side is aware that there is a technical standard for Sabo facility design (SNI 2851_2021: Design Sabo dam) that should be followed when reflecting the field survey results in the construction plan and design. However, to ensure a higher level of safety in the design, it is necessary to also refer to Japan's technical standards.

Capacity development activities and results

- 1) A work plan for the Project was developed and a schedule for discussion between the C/P and JICA Project Team for managing the plan was established.
- 2) The personnel structure at BBWS Brantas required for the project implementation was confirmed.
- 3) As a procedure to reflect the field survey results in the construction plan, the C/P and JICA Project Team discussed the planning and design technical guidelines that should be followed. Both sides agreed to follow the Indonesian technical standards for Sabo facility design, but Japanese technical standards and technical documents would be referenced in cases where Indonesian standards do not provide specific guidance.

2.2.3 Activities related to Output 3

Activity 3.1 Design

- Activity 3.1.1 The appropriateness of each construction of facilities is explained, the design conditions of each facility are studied, and stability / structural calculations are conducted
- Activity 3.1.2 Preliminary detailed design is conducted for each package of facilities (seven facilities from two packages are assumed)

Existing status prior to project implementation

- In principle, Sabo facilities will be designed in accordance with the Indonesian technical standard for Sabo facilities design (SNI 2851_2021 Design Sabo dam). However, if there are design aspects not described in the above technical standard, or if it is necessary to incorporate technologies for designing safer Sabo facilities, it will be required to improve the design method by referring to Japanese technical standards and other reference materials.
- 2) Although the C/P side has an overview of the Indonesian technical standard, it was necessary to deepen their understanding of the design method that should be improved in order to design safer Sabo facilities.

Capacity development activities and results

JICA Project Team's response to this situation is as follows:

- 1) Shape of the opening of the permeable dam: Although only the slit type is described in the schematic diagram in the technical standard, the slit type as well as the conduit type were adopted depending on the local situation.
- a. Design water depth and freeboard: The design water depth and freeboard were set with more consideration for safety, referring to the Japanese standard.
- b. Stability calculation method (apparent unit weight): The concrete unit weight was set with consideration for the reduction in the dam volume of the open part of the dam. More accurate stability calculations were performed.
- c. Damage body material: High-strength concrete was used in the parts where scouring was expected, referring to the Japanese method. Additionally, coarse aggregate concrete, which offers superior strength and cost-effectiveness, was used for the dam body interior.
- 2) The improvements achieved in this capacity development activity and their specific contents were organized on the design flow diagram defined in the Indonesian technical standard for designing Sabo facilities (SNI 2851_2021: Design Sabo dam) (Figure 2-9).
- 3) As with [Activity 1.7], there were various questions raised by C/P side during the meeting and workshop regarding the above contents. This showed their effort to understand the points of concern. By providing clear explanations using reports, PowerPoint presentations, and other materials, the understanding of these topics was deepened on the C/P side.

Activity 3.1.3 Alternative considerations such as facility layout, scale, and effective amount are conducted as value engineering by taking into account environmental and social impacts

Existing status prior to project implementation

- 1) Regarding the facility location, it was necessary to set the dam height appropriately so that the sedimentation area of the Sabo dam would not affect residential areas upstream.
- 2) S2 Area: Currently, temporary roads have been built within the river channel, accommodating human and vehicle traffic. During flood events, these roads may be washed away, disrupting the transportation network and potentially requiring significant time for restoration. The construction of Sabo facilities was considered essential for improving convenience.
- 3) S4 Area: In S4 area, a pedestrian bridge has been installed over the existing KD Leprak 2 facility. It was essential to ensure that future construction activities would not affect this structure.

- 1) By reviewing the longitudinal river profile, the sedimentation area of the Sabo dam was determined. The dam height was set to ensure that the sedimentation area would not impact residential areas.
- 2) 2 Area Facility Design: For the priority Sabo facilities in the S2 area—CD Pelintas Curah Lengkong 2 and CD Kobokan 5—, the designs incorporated road functions on the Sabo dam crest. The road gradient and other parameters were set to ensure unobstructed passage of construction vehicles. Coordination with the C/P was conducted to share design methodologies, and it was confirmed that the cut-and-fill areas for the roads would not affect residential zones.
- 3) KD Leprak 2 Facility Design: The new dam at KD Leprak 2 was designed to avoid interference with the existing pedestrian bridge or its ancillary facilities (cables, etc.).





Activity 3.2 Construction Plan

Activity 3.2.1 The construction schedule, materials / equipment delivery method, temporary works, safety measures, and construction schedule are discussed.

Construction Schedule (Construction Schedule Management)

Existing status prior to project implementation

- The calculation of the construction schedule is generally carried out based on the MPW guidelines (PUPR No. 8/2023 "Guidelines for the preparation of Cost Estimates for Construction Work" and PUPR Notice No. 73/SE/Dk/2023), which calculates the work capacity and daily construction volume of each type of construction machinery and calculates the number of construction days from the quantity. The C/P side had a high level of understanding of the related knowledge.
- 2) In Indonesia, the construction schedule is usually created as an S-Curve schedule (S-Curved schedule: a schedule with the completion rate on the vertical axis and the schedule on the horizontal axis). On the other hand, there is a large amount of unstable sediment deposited upstream of the S2 and S4 areas, and there is a great concern that construction delays will occur if flooding or debris flows occur. In the S-Curve process, the priority of work in the event of such an incident was unclear, making it difficult to grasp the impact of delays on the entire construction project. The C/P was required to introduce a method to solve this problem.

Capacity development activities and results

To address these challenges, JICA Project Team introduced the concept of the *Critical Path* to the C/P side. By creating schedules based on the *Critical Path Method* (CPM), JICA Project Team identified and shared the critical route—the sequence of tasks that takes the longest time to complete and is essential to project management. This approach clarified task prioritization for both C/P and JICA Project Team, enabling smoother and more efficient schedule management during construction.

Material and Equipment Transportation Methods

Existing status prior to project implementation

The C/P has been carrying out emergency construction work in the S2 and S4 areas from 2022 to 2023 since immediately after the Mt. Semeru eruption, and the C/P side had a high level of understanding of the procurement of construction materials and machinery based on the local situation.

- 1) Most work items were similar to those in the emergency works, and commonly used materials (cement, aggregates, timber, etc.) and machinery were confirmed to be either locally produced or standard imported items available in the market.
 - 2) To minimize additional land acquisition and expedite progress, the project adopted existing roads for material and equipment transportation, aligning with the C/P side's preference. On the other hand, the sand mining zone in the construction area is regularly changed depending on the status of permits and licenses, and it was necessary to reconfirm the status of use of the existing road. Therefore, conducted a field survey of the sand mining and existing road conditions in the construction area with the C/P from June 5 to June 6, 2024. As shown in Source: JICA Project Team
- 3) Figure 2-10, it is confirmed that the existing road can be used to access the construction facility.
- 4) However, because there are concerns about the impact on the surrounding environment when using the existing road, it is recommended to the C/P that at a public meeting held before the start of construction, the impact that the transportation work will have on the surrounding area (noise, vibration, traffic congestion, etc.) should be fully explained to local residents and that

they should be asked to take such consideration into account.



Source: JICA Project Team



Temporary Construction Plan

Existing status prior to project implementation

- Many of the construction works carried out by C/P in the past, including the emergency construction works carried out by BBWS Brantas in 2022-2023, adopted temporary construction plans centered on sandbag dikes. However, the temporary construction target flow rate and river flow conditions were not sufficiently evaluated and considered, and there was a risk of damage to facilities by being buried with sediment during construction in the event of flooding or debris flow.
- 2) There were no guidelines or standards in Indonesia regarding temporary construction plans, and the items to be considered were limited to quantity and shape, so the consideration of temporary construction plans was insufficient.

Capacity development activities and results

- The procedures and principles for temporary construction planning in the S2 and S4 construction areas were organized and shared with the C/P (Figure 2-11). For the Project, the target flow probability for temporary construction was set at a two-year return period, taking into account the construction period, Japanese guidelines, and cost-effectiveness. For calculating the target flow for each facility, existing materials, such as the Mt. Semeru Review Master Plan (2024), were actively utilized.
- 2) In addition to the conventional sandbag-based temporary construction plan (based on the half-river closure method), the temporary drainage tunnel method and temporary open drainage channel method were also explained to the C/P. By ensuring a thorough understanding of the advantages and disadvantages of each temporary construction method, the aim was to contribute to future river and Sabo -related projects under the jurisdiction of BBWS Brantas.



Source: JICA Project Team

Figure 2-11 Flowchart for Temporary Construction Planning

Temporary Construction Plan

Existing status prior to project implementation

In terms of safety measures, there was a strong tendency to view these as matters that should be considered as the responsibility of the contractor, and proactive proposals from the C/P regarding safety plans were not observed. For example, the bid documents for the emergency works conducted by BBWS Brantas in 2022 contained only a statement requiring the submission of a safety plan, with no further content regarding safety measures.

Capacity development activities and results

1) The hazards posed by volcanic activity and debris flows in the Project have a high potential to lead to serious accidents, which are not typically anticipated in general civil engineering works. It is desirable that the information held by the C/P is shared with contractors in advance. In this study, the risks associated with construction safety were discussed with the C/P and organized as shown in Table 2-4.

Risk/Hazard		Safety Measures
Hazards from Volcanic Activity	 Eruptions, lava flows, and volcanic earthquakes from Mt. Semeru. Ash and gas emissions caused by eruptions. 	 Responding to unforeseen events is critical. Anticipating unforeseen situations such as volcanic eruptions, debris flows, or other natural disasters, the following measures should be considered to establish a response policy: Information gathering. Emergency evacuation. Establishment of an emergency communication system. Procedures for responding to unforeseen events.
Hazards from Weather Conditions	 Risks associated with heavy rain and potential flooding due to the high rainfall in the Mt. Semeru region. Impacts on operational stability caused by strong winds or sudden changes in wind speed. 	 Operations should be immediately halted in the event of hazardous weather such as heavy rain or flooding. If there is a likelihood of severe weather changes, the work supervisor must temporarily suspend operations and evacuate workers to a safe location.
Geotechnical Hazards	• Risks of slope failure or landslides caused by the unstable ground in river channels used for construction.	 All earthworks should be carried out under the supervision of a work leader, adhering to established procedures and methods. Workers must follow the instructions of the work leader. Excavated soil or debris should not be placed near the edges of excavations. If temporary placement is unavoidable, measures must be taken to prevent collapses or debris falling into the excavation. Slope surfaces prone to deterioration due to wind, rain, or surface water inflow should be protected with sheets or protective nets. If the ground shows signs of potential collapse, the work leader must evacuate workers to a safe location.
Hazards from Heavy Machinery and Material Handling	• Risks of being caught, crushed, or falling due to the handling of heavy machinery and materials.	 Construction machinery and equipment must always be set up on level and stable ground with adequate load-bearing capacity. Anti-tipping measures should be applied as needed. Simultaneous operations on different levels (e.g., upper and lower levels) are prohibited.

Table 2-4 Anticipated hazards and safety measures in the Project

Project Completion Report

Risk/Hazard		Safety Measures
		 Workers must not stand under suspended loads, such as structural elements. Power sources must be turned off during maintenance, inspection, or handling of machinery to prevent accidents caused by crushing or entanglement.
Hazards from Working at Heights (2 meters or Higher)	• Risks of falling or tumbling.	 Scaffolding must be installed for work carried out at a height of 2 meters or more above ground level. If scaffolding is not feasible, workers must use safety harnesses or other fall prevention equipment, with appropriate fixtures installed for securing these devices. Install barriers such as wheel stops at appropriate locations to prevent vehicles or construction machinery from falling into excavation areas.

Source: JICA Project Team

- 2) Additionally, the JICA Standard Safety Specification (hereafter referred to as JSSS) was shared with the C/P side, and based on this, a draft of safety considerations for S2 and S4 construction was prepared (Appendix 5-2 of the final report). This document is crucial for understanding safety considerations specific to construction at Mt. Semeru and is expected to be effectively utilized in the evaluation of the construction plan (hereafter referred to as SMKK) prepared by the contractor after the contract is awarded.
- 3) For the Project, the tender format for S2 and S4 area construction is assumed to be competitive bidding (Local Competitive Bidding, hereafter referred to as LCB). Although the application of JSSS is not mandatory, it was recommended to the C/P side to actively use JSSS as a reference for construction safety, in addition to the Indonesian Ministry of Public Works and Housing Construction Safety Management System Guideline No. 21/PRT/M/2019.

Activity 3.2.2 Based on the detailed design results, a construction plan for each construction package is developed.

Existing status prior to project implementation

- 1) There were no existing guidelines or standards in Indonesia regarding the construction methods for Sabo dam facilities, and most construction plans up to now had been based largely on experience.
- 2) Furthermore, there was a strong tendency to consider construction planning as the contractor's responsibility, with little proactive input from the C/P side.
- 3) While experience and expertise gained through past projects are indispensable elements in construction planning, a lack of established basic construction flows and procedures posed a challenge. Without these, it was difficult for contractors to adapt flexibly to evaluations of the construction plan (hereafter referred to as RMPK) and modifications during construction supervision after the contract was awarded.

Capacity development activities and results

1) In Japan, basic policies on construction are rarely mentioned in the standards or guidelines related to Sabo dam facilities, such as *Guidelines for Debris Flow and Driftwood Countermeasures in Sabo Master Plan Development* and *Technical Guidelines for Designing Debris Flow and Driftwood Countermeasures*. However, the *Sabo Facility Design Manual, Chapter 7: Construction* by the Chubu Regional Bureau of the Ministry of Land, Infrastructure, Transport and Tourism includes basic construction policies. Based on this, basic construction flows and

procedures were explained to the C/P side.

Furthermore, construction planning was developed with consideration for flood characteristics. Particularly regarding the construction sequence of training dikes, the principle that "river improvement should be carried out from downstream to upstream" was explained, which differed from the conventional understanding of the C/P side. This enhanced C/P understanding of construction planning that considers river characteristics (refer to Figure 2-12).

- a. Ensuring safety during construction: The planned training dikes aim to prevent the lateral expansion of flooding from the fan crest and upstream river channels in the developing alluvial fan. Flooding on such terrain is expected to spread radially from upstream rather than laterally from the river channel. Hence, constructing dikes from the fan crest to downstream ensures higher safety during construction.
- b. Reducing the risk of training dike destruction during flooding: This approach minimizes the direct impact of flood flow on vulnerable sections (such as the sides of training dikes).



Source: JICA Project Team

Figure 2-12 Comparison of training dike construction directions

- 2) Based on the above basic construction policies, the expertise and knowledge gained through experience by the C/P side, and the regional characteristics, a draft construction plan (Appendix 5-1-1, 5-1-2 of the final report) was collaboratively formulated.
- 3) Regarding the quality control plan, construction projects in Indonesia are generally prepared based on the Indonesian National Standards (Standard Nasional Indonesia, hereafter referred to as SNI). However, as the SNI related to construction encompasses a vast scope, it is challenging to fully understand and comprehend all the details. Nevertheless, an overview and a minimum level of knowledge regarding quality control plans are essential for future construction supervision. In the Project, the SNIs related to the work were identified and organized into quality control items for each type of work (e.g., concrete work, earthworks, pavement works) to enhance the C/P side's understanding of the quality control plan.

Activity 3.3 Cost Estimation

Activity 3.3.1 The quantity calculation for each facility is performed

Existing status prior to project implementation

Since the C/P has been involved in quantity calculations, cost estimation, and business cost assessment on a daily basis, they are considered to have a high understanding of quantity calculation procedures, methods, and related knowledge. In this task, quantity calculations were performed in collaboration with the C/P based on the design drawings (draft) obtained from the results of [Activity 3.1] To prevent errors or rework due to mismatched quantity and unit prices, the quantity calculation sheet format was created in accordance with the MPW cost estimation standards.

Capacity development activities and results

1) CAD and Excel tools are used for quantity calculations, but there was an overconfidence in the tools and the results were not sufficiently checked, so JICA Project Team proposed to the C/P to check the calculations by hand and confirmed the results (Figure 2-13).



Source: JICA Project Team

Figure 2-13 Example of confirmation work for bill of quantities (activities from July to August 2024)

2) The hand-calculation checks were carried out multiple times by JICA Project Team, BBWS Brantas, and MPW's bidding pre-review department, ensuring the calculations were thoroughly reviewed and verified. The quantity calculation sheets for the S2 and S4 areas were compiled into the final report (Appendix 6-1).

Activity 3.3.2 Unit prices are set

Existing status prior to project implementation

The C/P has high knowledge of unit price setting and processes due to their involvement in emergency works in the region (2022-2023) and regular cost estimations for bid amount based on JICA Project Team estimations. They also have experience in conducting construction management and reviewing unit prices for new work categories.

Capacity development activities and results

Unit price setting is carried out based on the MPW cost estimation guidelines. For labor, materials, and equipment, base unit prices from the regional cost index for Lumajang Regency and East Java Province are used. However, some base unit prices from previous emergency works were found to deviate from the local market prices, so the C/P conducted surveys around Mt. Semeru to confirm the validity of the base prices. The cost estimation results for the S2 and S4 areas were compiled into the final report (Appendix 6-2-1, 6-2-2).

Activity 3.3.3 The cost of construction is estimated and compiled as an engineering cost estimate

Existing status prior to project implementation

In relation to [Activity 3.3(2)], the C/P side is involved in cost estimation and project cost estimates on a daily basis, so it is considered that the level of understanding related to the project is high. In this work, as part of the project cost estimate calculation process, in addition to the direct construction cost results from [Activity 3.3.1] and [Activity 3.3.2], common temporary facilities costs, site management costs, general management costs, etc. were calculated separately and compiled as the project cost estimate (Appendix 6-2-1, 6-2-2 of the final report).

Capacity development activities and results

The importance of result verification was explained to the C/P. In relation to this, calculations were cross-checked against the construction plan from [Activity 3.2(2)] to avoid missing cost items. Additionally, comparisons were made between the project cost estimates and similar projects to confirm its validity.

Activity 3.4 Preparation of Draft Bidding Documents

Activity 3.4.1 The conditions of the bidding documents are determined by discussion with DGWR

Existing status prior to project implementation

The existing environmental survey reports focused on construction scale and environmental impacts during construction. However, they lacked sufficient details on the social environment's impact, as required by JICA's Environmental and Social Guidelines.

- 1) Assuming the construction situation in the S2 and S4 areas, JICA Project Team made the following recommendations to the C/P when organizing the bidding document conditions:
- a. Submission of Detailed Price Proposals: Due to constant changes in site conditions from sediment movement and sand mining, various design changes during construction are expected. Contractors were required to submit detailed price proposals, including breakdowns of material costs, labor costs, equipment costs, and expenses, allowing the client to ensure cost transparency and manage funds appropriately within the budget.
- b. Cash Flow Confirmation: Cash flow issues during infrastructure construction projects are common, regardless of the company size. To ensure smooth operation, JICA Project Team recommended verifying past project records and submitting cash flow plans to ensure sufficient resources during construction and the defect liability period (one year after handover).
- 2) As a result of [Activity 3.3(3)], both the S2 and S4 areas had project cost estimates exceeding 100 billion IDR, which met the requirements for DGWR's internal pre-bid review (Review Prakiraan Biaya, RPB). C/P and JICA Project Team decided to use the RPB process for DGWR discussions and determination of bid document conditions. To prepare for RPB, the following documents were compiled after the basic design policy workshop on June 11, 2024:
 - RPB meeting presentation materials
 - Detailed design drawings
 - Quantity calculation sheets
 - Estimation sheets (including basic price lists and cost tables)
 - Construction plans
 - Draft bid documents



Source: BBWS Brantas

Figure 2-14 RPB Meeting presentation materials by BBWS Brantas (partial)

- 3) The RPB is accountable to the project implementing agency BBWS Brantas, and the agenda includes the detailed design (draft), construction plan, quantity and cost estimate, and tender documents (draft) for the Sabo facilities [Activity 3.1] to [Activity 3.4]. Over the 3 days RPB (July 29-31, 2024), JICA Project Team, in collaboration with BBWS Brantas, explained the detailed design (draft), construction plan, quantity and cost estimate, and tender documents (draft) to the Directorate of Rivers and Coasts, Technical Implementation Unit for Sabo Dam Technology, Directorate of Water Resources Engineering Development of the DGWR Headquarters, to hold a question-and-answer session. Explanations were given by BBWS Brantas, as well as JICA Project Team based in Indonesia and local JICA Project Team. Technical advice was provided by the design and planning team from Tokyo. The RPB was completed with an approval letter from the Director General of DGWR dated August 28, 2024 (Figure 2-14).
- 4) After the DGWR internal pre-bid review is completed (approved), an explanation will be required to the MPW tender invitation department (Direktorat Jenderal Bina Konstruksi) for the tender invitation. Based on the experience from RPB, it is expected that the necessary process for tender invitation will be carried out smoothly by BBWS Brantas, the project implementing agency.

Activity 3.4.2 Draft Bidding Documents is prepared for each construction package.

Existing status prior to project implementation

The DGWR's standard tender templates are irregularly updated by the Directorate General of Construction (Direktorat Jenderal Bina Konstruksi) under the Ministry of Public Works (MPW). Therefore, the latest template was carefully checked and obtained to prepare preliminary tender documents (draft).

Capacity development activities and results

Among the construction packages in the S2 and S4 areas, the number of facilities in the S4 area, in particular, targeted for design and construction increased compared to the initial plan at the start of the project. The estimated cost of the S4 area doubled compared to the project cost initially assumed by MOD. On the other hand, tender amount needs to consider the budget allocation plan (Daftar Isian Pelaksanaan Anggaran, DIPA) of BBWS Brantas, the implementing agency. Depending on the budget allocation plan, it is possible that the S4 construction may be divided into smaller tenders. Hence, the preliminary tender documents (draft) prepared for this task accounted for the possibility of divided tenders by organizing drawings and quantities by facility unit, making it easier to categorize sections. This approach aimed to facilitate finalization of the preliminary tender documents (draft) by the C/P side, reduce manpower, and prevent human errors.

2.2.4 Activities related to Output 4

Activity 4.1 With respect to construction permits already obtained, information on construction details, construction methods, etc. will be compiled based on the results of the detailed design work performed under the Project

Existing status prior to project implementation

During the emergency response construction immediately after the 2021 eruption, an environmental assessment report (UKL-UPL) was submitted to the Environmental Agency (DLH) of Lumajang Regency. Environmental approvals were obtained for each facility based on the report in March and May 2023. Since then, no new UKL-UPL has been submitted, so it was necessary to submit an updated environmental assessment report for the construction planned under the Project and renew the environmental approvals.

Capacity development activities and results

- 1) Based on the results of the preliminary detailed design (draft), information regarding construction content and methods was reviewed with BBWS staff for each facility, identifying facilities with and without existing environmental assessment reports.
- 2) The contents of the existing environmental assessment reports were compared with the results of preliminary detailed design (draft), focusing on key indicators such as excavation soil volume and length, which determine the type of environmental assessment report required. Differences and changes from existing environmental reports were reviewed for each facility.

Activity 4.2 The existing environmental investigation report including the gender mainstreaming perspective will be updated based on JICA guideline on Environmental and Social Considerations in Jan 2022

Existing status prior to project implementation

During the emergency response construction immediately after the 2021 eruption, the report was submitted by the Public Works and Spatial Planning Agency (DPUTR) of Lumajang Regency, while BBWS-Brantas only acted as a supporting agency providing information to Lumajang DPUTR. As a result, the C/P staff at BBWS had limited knowledge of JICA Guidelines for Environmental and Social Considerations or Indonesia's environmental approval process, as well as insufficient understanding of natural and social environmental considerations and gender mainstreaming.

- 1) A meeting was held with Environmental Agency (DLH) of Lumajang Regency on September 4, 2024, to confirm the necessary processes for updating environmental approvals, confirming that no additional EIA required, and to conduct follow-ups regarding the preparation of letters to relevant authorities. Progress was shared with BBWS staff.
- 2) Updates to the UKL-UPL were implemented based on changes identified in [Activity 4.1], with BBWS-Brantas becoming the main submitting party instead of Lumajang DPUTR to enhance their active involvement. When updating, the impact scope outlined in JICA's Environmental and Social Guidelines was reviewed, along with environmental management and monitoring standards and methods. Additional content requiring supplementation was compiled as recommendations in [Activity 4.3].
- 3) A joint meeting with BBWS-Brantas, Lumajang DLH, and other relevant agencies was held on November 7, 2024, to review improvements to the submitted UKL-UPL, such as clarifying or adding monitoring items. Updates were made based on the discussions, and the revised UKL-UPL was resubmitted.
- 4) Briefing Session on environmental and social consideration was held on December to deepen understanding of the updated UKL-UPL and the recommendations outlined in [Activity 4.3]. The
content of the briefing session includes:

- Overview of the UKL-UPL system
- Updates to the UKL-UPL under the Project
- Overview of JICA's Environmental and Social Guidelines
- Recommendations on environmental and social considerations
- Gender mainstreaming in disaster management

Activity 4.3 Recommendation is prepared for environmental and social considerations for finalizing Detailed Design.

Existing status prior to project implementation

Existing environmental assessment reports focused on construction scale and environmental impacts during construction. However, they lacked sufficient detail regarding social environment impacts as outlined in JICA's Environmental and Social Guidelines.

Capacity development activities and results

- 1) Since existing reports followed a predefined format, it was challenging to comprehensively incorporate the scope of JICA guidelines, including gender mainstreaming. Missing contents were identified and compiled into recommendations with BBWS staff for the following points:
 - Monitoring temporary land acquisition during construction
 - Developing and enforcing excavation soil reduction plans
 - Addressing considerations for access roads adjacent to residential areas
 - Gender-sensitive construction planning
- 2) The recommendations compiled above will be shared with C/P during the explanation meeting on the environmental and social considerations.

Activity 4.4 Assisting BBWS/local government to make the public consultation meeting, if necessary

Existing status prior to project implementation

Since the details of the construction were not yet determined, public consultations by BBWS/local government regarding the Project were considered early and had not been conducted.

Capacity development activities and results

- 1) After confirming the expected excavation soil volume, preparations for stakeholder consultations with local excavation operators were supported to reduce excavation soil volume.
 - On September 19, 2024, a stakeholder consultation was held with
 - Energy and Mineral Resources Agency (DESDM) of Lumajang Province, Water Resources Agency (DSDA) of East Java Province, BBWS-Brantas, and others to advance excavation soil volume reduction plans. Understanding and cooperation were sought, and agreements were reached.
 - On September 26, 2024, a meeting organized by Lumajang DESDM invited seven local excavation operators with permitted activities overlapping the project areas (S2 and S4) to provide explanations about the project.
- 2) For facilities near residential areas, public consultations by BBWS-Brantas and local governments were requested. While such consultations are generally conducted after selecting contractors, administrative reasons, such as the pending tender process, have delayed their implementation. Early public consultations were mentioned in recommendations under [Activity 4.3].

2.3 Record of Capacity-Building Activities

This task involved actively engaging C/P in decision-making processes during the preparation of preliminary detailed designs and tender document drafts, while ensuring their capacity development. As the C/P is expected to use the project outputs, obtaining their understanding and agreement regarding the design details was critical. To achieve these objectives, periodic briefings and workshops were conducted. Below is an overview of these activities and key capacity development points.

Briefing	Schedule	January 16, 2024 (face-to-face meeting)
session 1	Agenda	Capacity Building Activity Policy and Design Work Plan
	Participating C/P	BBWS Brantas
	Key points of capacity building activities	<u>Problem/Challenge</u> : Tender documents for emergency works in S2 and S4 areas is planned to be finished by August 2024, but the work schedule is very tight.
		<u>Approach to the solution:</u> JICA Project Team (the Team) presented the following proposals to the C/P to accelerate the design process, including (1) gradually developing the preliminary detailed design results (draft) and bidding documents (draft) for the S2 and S4 areas, and (2) utilizing LiDAR data from the Directorate of Water Resources Technology Development Agency in the preliminary detailed design results (draft), and discussed specific measures.
		Briefing Session 1
Briefing	Schedule	January 30, 2024 (face-to-face meeting)
Briefing Session 2	Schedule Agenda	January 30, 2024 (face-to-face meeting) Explanation of field survey results and confirmation of design conditions
Briefing Session 2	Schedule Agenda Participating C/P	January 30, 2024 (face-to-face meeting) Explanation of field survey results and confirmation of design conditions BBWS Brantas
Briefing Session 2	Schedule Agenda Participating C/P Key points of capacity building	January 30, 2024 (face-to-face meeting) Explanation of field survey results and confirmation of design conditions BBWS Brantas <u>Problem/Issue 1:</u> Existing roads for sand mining needed to be reconstructed in the S2 area.
Briefing Session 2	Schedule Agenda Participating C/P Key points of capacity building activities	January 30, 2024 (face-to-face meeting) Explanation of field survey results and confirmation of design conditions BBWS Brantas Problem/Issue 1: Existing roads for sand mining needed to be reconstructed in the S2 area. Solution approach 1: Proposed a Sabo dam shape that would add road functions to CD Pelintas Curah Lengkong 2 and CD Kobokan 5 in the S2 area. Furthermore, the C/P recommended coordination with related organizations to determine road specifications.
Briefing Session 2	Schedule Agenda Participating C/P Key points of capacity building activities	January 30, 2024 (face-to-face meeting) Explanation of field survey results and confirmation of design conditions BBWS Brantas Problem/Issue 1: Existing roads for sand mining needed to be reconstructed in the S2 area. Solution approach 1: Proposed a Sabo dam shape that would add road functions to CD Pelintas Curah Lengkong 2 and CD Kobokan 5 in the S2 area. Furthermore, the C/P recommended coordination with related organizations to determine road specifications. Problem/Issue 2: The existing dams of DD Leprak 3 and KD Leprak 3 are buried under sediment. In addition, there are concerns about the safety of the Regoyo suspension bridge just above KD Leprak 3.

 Table 2-5 Briefing sessions and workshops for c/p's capacity building

		minimize interference with the Regovo Suspension Bridge under construction.
		<u>Problem/Issue 3</u> : There is concern about the risk of slope failure on the uppermost left bank of the S4 area (Gladak Perak)
		Solution approach 3: The Team explained that three factors are involved in the formation of a landslide dam: the inflow angle, the riverbed gradient, and the volume of the collapse. The Team explained and discussed with the C/P that the current slope collapse is unlikely to form a massive landslide dam. Additionally, the riverbed slope will be additionally confirmed using the LiDAR survey results, and countermeasures will be taken as necessary.
		<image/>
Workshop	Schedule	February 2, 2024 (face-to-face meeting/online)
1	Agenda	Work plan, explanation of site survey results and design conditions
	Participating C/P	Directorate of River and Coasts, Directorate of Water Resources Technology Development, Directorate of Water Resources Management Planning and Strategy Department, Technical Implementation Unit for Sabo Dam, BBWS Brantas
	Key points of capacity building activities	<u>Problem/Issue 1</u> : As volcanic disasters become more severe and occur more frequently; it is necessary to establish a mechanism for autonomous project implementation by C/P.
		Solution Approach 1: The Team proposed collaborating with the C/P on the preparation of the preliminary detailed design (draft) and bidding documents (draft). This will ensure that the C/P is familiar with the entire process, from design to bidding, and will be able to apply this knowledge in future projects. Additionally, as the successful implementation of this work requires coordination with key stakeholders, such as the State Government's Water Resources Department and the State Government's Energy and Mineral Resources Department, the Team recommended that the C/P promptly engage with these stakeholders.
		<u>Problem/Issue 2</u> : The lack of established indicator evaluation methods in the Project Development Matrix (PDM).
		Solution Approach 2 : The Team explained to the C/P that a quantitative evaluation method for the indicators in the PDM, which compares past and present data, would make it easier to understand the growth and improvement status. It was emphasized that such an approach would provide clear insights into progress. The evaluation method will be examined by the Team, and it is planned to be proposed and agreed upon during the monitoring meeting.
		Problem/Issue 3 : While the use of LiDAR data to accelerate the design process is understood, there are concerns regarding its reliability.
		Solution Approach 3: The Team decided to work with the Water

		Resources Technical Development Department to recheck the processing and refinement of the raw LiDAR data. Additionally, The Team explained and discussed with the C/P the process of reviewing the LiDAR data by confirming reference points through a local subcontractor.
		Decumentation of Briefing Session 1
Briefing	Schedule	February 26, 2024 (Face-to-face meeting)
session 3	Agenda	Confirmation of surveying/geological survey plan policy 1
	Participating C/P	BBWS Brantas
	Key points of	Problem/Issue 1: Elevation in LiDAR data may be inaccurate
	capacity building activities	Solution Approach 1 : The Team explained to the C/P the process of obtaining accurate elevation data through ground control point survey and the examination of Ground Control Points (GCPs)
		<u>Problem/challenge 2:</u> Contract scope of work is subject to change.
		Solution Approach 2 : Regarding changes in the scope of work, the Team coordinated with the C/P by maintaining regular communication with all relevant parties and reviewing the plan and progress in a timely manner.
		Documentation from Briefing Session 3
Briefing	Schedule	March 4, 2024 (Face-to-face meeting)
session 4	Agenda	Confirmation of surveying/geological survey plan policy 2
	Participating C/P	BBWS Brantas
	Key points of capacity building activities	<u>Problem/Issue 1</u> : Delays in the survey progress are expected due to challenges in ensuring worker safety caused by debris flows triggered by rainfall.
		Solution Approach 1: The Team selected the locations for the survey to be conducted in advance, considering the phased design schedule for the S2 and S4 areas.
		<u>Problem/Issue 2</u> : The location of the Curah Kobokan road plan and survey in the S2 area are unclear.
		Solution Approach 2: The Team suggested that the C/P promptly present the current road alignment plan to the relevant agencies (Pemda), confirm land ownership status, and coordinate with the

		relevant authorities (PLN, Telkom, etc.) to check the presence of public infrastructure such as communication cables, power cables, and raw water supply pipelines.
		Documentation from Briefing Session 4
Briefing	Schedule	March 28, 2024 (face-to-face meeting)
session 5	Agenda	Confirmation of basic design policy (Sabo facility layout plan) 1
	Participating C/P	BBWS Brantas
	Key points of capacity building activities	Problem/Challenge 1: In S2 area, there are many boulders scattered within the river channel, and a structure that is resistant to debris flows and abrasion is required.
		Solution Approach 1: Concrete, masonry, soil cement, etc., are all potential options for the embankment material. However, considering the frequent occurrence of debris flows in the area, the Team proposed to the C/P the use of high-strength concrete, which is durable and resistant to damage and abrasion. This material would provide the necessary strength to withstand the impact of debris flows, while also offering long-term durability against the erosive effects of the river's fast-moving sediment. The Team also recommended that the concrete be reinforced with steel to further enhance its strength and ensure the embankment's stability in the event of severe flows.
		Problem/Issue 2: The flow around the training dike in S4 area is irregular due to sediment accumulation. To prevent potential damage to existing facilities, the Team proposed straightening the flow by cutting through the hill on the left bank of the Rejali River.
		Solution Approach 2: The total amount of soil to be removed is 6.65 million cubic meters, covering an area of 10 hectares, which would require significant land acquisition. The Team recommended that the C/P promptly review the permit status and begin the necessary coordination for land use approval.
Briefing	Schedule	May 6, 2024 (Face-to-face meeting)
session o	Agenda	Confirmation of basic design policy (draft plan for sediment control facilities)
	Participating C/P	BBWS Brantas
	Key points of capacity building activities	Problem/Issue 1: There is a possibility that large boulders may flow down the river channel along with debris flows, raising concerns about the strength of existing Sabo dams.
		Solution Approach 1: The Team proposed to the C/P the plan of utilizing the existing Sabo dam as a sub-dam and constructing a new main dam upstream of the existing Sabo dam. This approach aims to enhance the overall stability of the erosion control system by reinforcing the structures with a new, more robust main dam that can withstand more severe debris flows. The existing Sabo dam would continue to

		function as a secondary structure to manage smaller debris, while the newly constructed main dam would be designed to handle more substantial loads, such as larger boulders and heavier debris.
		<u>Problem/Issue 2</u> : As an additional facility, the need for dams after Gladak Perak Bridge should be considered.
		Solution approach 2: To protect the training dike (Tanggul Leprak 26) in S4 area, the groin works downstream of the Gladak Perak Bridge are considered to be effective to some extent. However, to mitigate the risk of riverbed fluctuations and lateral erosion, the Team recommended to the C/P that the groin be installed in an area with stable bedrock. Additionally, the Team emphasized the need for coordination with the Department of Roads (Bina Marga) as the proposed location is close to road infrastructure under their jurisdiction. This coordination would ensure that the project does not interfere with existing road facilities and that proper alignment with relevant authorities is maintained.
Briefing	Schedule	May 8, 2024 (Face-to-face meeting)
session /	Agenda	Confirmation of design policy related to land acquisition
	Participating C/P	BBWS Brantas
	Key points of capacity building activities	<u>Problem/Issue 1:</u> There are concerns about potential interference between the sand mining area in the river and the planned Sabo control facilities.
		Solution Approach 1: The Team proposed that the C/P prompty provide the State Energy and Mineral Resources Department (ESDM) with detailed drawings and location information of the proposed Sabo facilities. This would allow the ESDM to review the sand mining areas and their current permit status. If any interference with the planned facilities is confirmed, the Team recommended that ESDM review regulations and policies regarding the potential relocation of the existing sand mining operations to avoid conflicts with the construction of the Sabo infrastructure.
		<u>Problem/Issue 2</u> : Implementing sediment removal requires coordination with multiple stakeholders.
		Solution Approach 2: To facilitate meaningful and timely discussions with the provincial government regarding sediment removal, the Team proposed to the C/P a draft outline of the sediment removal plan, including the scope, excavation depth, and facility intervals. This plan was based on the overall sediment control works plan.
		Image: constraint of the second sec
Briefing	Schedule	May 15, 2024 (Face-to-face meeting)
session 8	Agenda	Confirmation of basic design policy (Sabo facility layout plan) 3
-	Participating C/P	BBWS Brantas

	Key points of capacity building	<u>Problem/Issue 1</u> : The image of the design documents for the Sabo facility to be completed is unclear.
	activities	Solution Approach 1: The Team provided detailed design drawings, quantity calculations, design reports, structural calculations, and other relevant documents from previous sediment control projects carried out in Indonesia (such as Mt. Merapi). These materials were shared as samples to help the C/P visualize the expected deliverables.
		<u>Problem/Issue 2</u> : The possibility of using modular concrete for Sabo dams needs to be considered in order to shorten the construction period.
		Solution Approach 2: The Team explained to the C/P the concerns regarding the use of modular concrete, highlighting that unless the embankment is constructed using continuous mechanical methods with soil cement or on-site soil—similar to practices in Japan—that would likely be less economical and slower in construction schedule. Additionally, this approach would incur significantly higher costs.
Workshop	Schedule	June 11, 2024 (face-to-face meeting/online)
2	Agenda	Basic design policy (draft plan for sediment control facilities)
	Participating C/P	Directorate of River and Coastal, Directorate of Water Resources Technology Development, Directorate of Water Resources Management Planning and Strategy, Technical Implementation Unit for Sabo, BBWS Brantas
	Key points of capacity building	<u>Problem/Issue 1</u> : Regarding appropriate operation and maintenance activities.
	activities	Solution Approach 1: The reconstruction of the Sabo dam has been designed as an open-type dam to maintain its capacity during normal conditions when no debris flows occur. This design emphasizes the importance of operation and maintenance. It was recommended that these activities be conducted approximately every five years, as outlined in the RMP (Review Master Plan (2024)), and that sediment and soil excavation be carefully managed. Additionally, it was suggested that operation and maintenance plans prioritize the safety of the facility, designate areas where mining activities are prohibited, and establish access roads for maintenance purposes.
		<u>Problem/Challenge 2:</u> Cooperation with local governments is essential through Focus Group Discussions, but the specific agenda and key issues to be addressed are unclear.
		Solution approach 2: The Team recommended to the C/P that they organize the current Sabo construction plan and technical recommendations in advance to clarify the focus of the discussion. This would help ensure a more structured and productive Focus Group Discussion (FGD) with local governments.
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DGWR pre-bid	Schedule	July 29th to July 31st, 2024 (Face-to-face meeting/Online)
examination	Agenda	Confirmation of Preliminary Detailed Design Results (Draft) and Bidding Documents (Draft)
	Participating C/P	Directorate of River and Coastal, Directorate of Water Resources Technology Development, Directorate of Water Resources Management Planning and Strategy, Technical Implementation Unit Sabo, BBWS Brantas
	Key points of capacity building activities	During the three-day pre-bid review held from July 29 to 31, The Team, in collaboration with BBWS Brantas, presented the detailed design (draft), construction plan, quantity and cost estimates, and draft tender documents for the Sabo facilities. These presentations were made to the Directorate of River and Coasts, the Directorate of Water Resources Technical Development, and the Sabo Dam Technical Implementation Unit at DGWR Headquarters.
		The session included a thorough explanation of the project's key components and a Q&A where participants could raise questions and receive clarifications. BBWS Brantas, as the project's implementing agency, led the explanations, with The Team providing additional support both locally and from Japan, ensuring that all technical and procedural aspects were comprehensively addressed.
		This collaborative review was essential for ensuring that all relevant departments and stakeholders were aligned on the project's scope and execution, helping to pave the way for the successful launch of the tender process.
Briefing	Schedule	September 17th–18th, 2024 (Face-to-face meeting)
Session 9, Briefing Session 10	Agenda	Briefing Session 9: Follow-up of capacity building activities related to Output 1 (Survey) and Output 2 (Basic Design)
		Briefing Session 10: Follow-up on capacity building activities related to Output 3 (detailed design and tender documents)
	Participating C/P	BBWS Brantas
	Key points of capacity building	<u>Problem/Issues:</u> It was necessary to follow up on capacity development of C/P regarding themes where learning was lacking.
	activities	Solution approach: Regarding the areas where results were not achieved, the team members traveled to Indonesia and held face-to-face briefing sessions with the C/P in Surabaya. The Team members in Indonesia confirmed and clarified in advance the themes for which technology transfer was insufficient to the C/P, and prepared explanatory materials on these themes.
		Example 1 Documentation from Briefing Session 9

		For participant a two-day course with face to face meeting lectures and
		Q&A sessions, C/P was able to deepen my understanding of topics that C/P had not previously studied. These sessions and lectures allowed for direct interaction and clarification of key concepts, enabling C/P to gain a more comprehensive grasp of the material.
Briefing	Schedule	December 20, 2024 (online)
Session 11	Agenda	Environmental and social considerations
	Participating C/P	BBWS Brantas
	Key points of capacity building activities	<u>Problem/Issues</u> : It is necessary to minimize environmental impact while aligning the requirements of the JICA Guidelines with Indonesian regulations.
		Solution approach: Referencing the JICA Guidelines, consider relevant laws, social acceptability, biodiversity, monitoring, and grievance mechanisms. Additionally, consult with local communities and stakeholders to incorporate their opinions and concerns. This collaborative approach will help identify solutions that meet the needs of the local community and foster their cooperation in mitigating environmental impact.
		Problem/Issues: There is a possibility that activities will become concentrated on roads near residential areas due to the use of access roads. Solution approach: Proactively communicate with residents by providing regular updates on road usage and creating forums for them to express their opinions. By understanding the needs and concerns of residents and working together to find solutions, it will be easier to gain local cooperation.
Workshop	Schedule	January 20, 2025 (face-to-face meeting/online)
5	Agenda	Draft Final Report
	Participating C/P	Directorate of River and Coasts, Directorate of Water Resources Engineering Development, Directorate of Water Resources Management Planning and Strategy, Sabo Dam Technical Implementation Unit, BBWS Brantas
	Key points of capacity building activities	Problem/Issues: BBWS Brantas fully understands the details of the design, but their explanations to the local government have not been sufficient. Solution approach: To facilitate better communication between BBWS Brantas and the local government, the Team will extract relevant materials from the reports, and provide them to BBWS Brantas.



CHAPTER 3 CHALLENGES, INNOVATIONS, AND LESSONS LEARNED IN PROJECT IMPLEMENTATION AND MANAGEMENT

The main challenges in implementing and managing the Project are as follows:

- 1. Providing technical support to multiple C/P-affiliated organizations that are geographically dispersed.
- 2. Ensuring C/P participation in field surveys and collaboration with consultants.
- 3. Facilitating C/P involvement in detailed design work and cooperatiion with consultants.
- 4. Providing technical support to C/P who do not understand English in a non-face-to-face communication setting.
- 5. Enhancing the capacity of DGWR in the sabo field, not limited to BBWS Brantas.
- 6. Follow-up on capacity building for C/P on topics where understanding is insufficient.
- 7. Engaging stakeholders in the removal of sediment captured by sabo dams.

Below is a summary of the challenges, solutions, outcomes, and lessons learned through these activities.

Table 3-1 Challenges, innovations, and lessons learned in project implementation and management

1) Conduc geograp	ting technical support for multiple C/P-affiliated organizations that are obically dispersed
Challenges	 The relevant organizations involved in the Project are diverse, as follows: Directorate of Rivers and Coasts Directorate of Water Resources Engineering Development Directorate of Water Resources Management System and Strategy Technical Implementation Unit for Sabo Dams Brantas River Basin Organization (BBWS Brantas) The relevant organizations were numerious and geographically dispersed across Jakarta, Yogyakarta, Bandung, and Surabaya. Meanwhile, the personnel of JICA Project Team and the project implementation period were limited. Under these circumstances, it was necessary to provide recommendations for strengthening the technical capacities of personnel across multiple organizations and for establishing a sustainable implementation framework.
Measures	 The primary counterpart (C/P) for the Project was BBWS Brantas, which is responsible for constructing the sabo facilities. Their activities focused in Surabaya and the river basins of Mt. Semeru. The consultants' activities were mainly in Surabaya where BBWS Brantas is located, and in the Mt. Semeru watershed which is the target area of detailed design work. Figure 3-1 Discussion on detailed design between BBWS Brantas, C/P, and JICA Project Team on Sept. 17, 2024

	•	The workshop on detailed design and tender documents was conducted at BBWS Brantas to strengthen the knowledge and capacity of the direct C/P staffs.
	•	For C/P belonging to other organizations, information was shared through web-based workshops to strengthen their capacities in the Work Plan Workshop (February 2, 2024) and Basic Design (June 11, 2024).
	•	The efficiency of activities was ensured to achieve the specified outcomes within the existing consultant team structure and limited time.
Results &	•	The activities necessary for technology transfer were effectively carried out through
Lessons		face-to-face meetings between BBWS Brantas C/P staffs and JICA Project Team.
Learned	•	When field activities in the Mt. Semeru watershed were required, both the JICA
		Project Team and C/P from BBWS Brantas were able to easily access the site and collaboratively conduct the field surveys.

2) Partici	pation of C/P in field surveys and collaboration with JICA Project Team
Challenges	The previous work performed by C/P has mainly focused on office-based tasks for management of facility construction, with limited opportunities for field surveys. To strengthen their capability to coordinate detailed design for sabo facilities, it was necessary to acquire the skills to assess natural conditions such as terrain and geology, sediment transport phenomena, and facility damage conditions at the site. These skills would enable them to plan and design sabo facility based on accurate field information.
Measures	 The sabo facility design team from the JICA Project Team worked together with C/P to conduct field surveys. In the Mt. Semeru watershed, JICA Project Team provided detailed explanation on the mechanisms of sediment runoff, deposition, and erosion to C/P. On-site, in front of damaged facilities, facilities buried by sediment, and eroded riverbeds, JICA Project Team clarified the causes of facility damage to C/P and explained the repair and reconstruction concepts based on each cause. JICA Project Team and C/P collaborated on a boulder diameter survey, and the method was transferred as technical knowledge to C/P. Figure 3-3 Collaborative field survey between C/P and JICA Project Team on Jan. 24, 2024
Results & Lessons Learned	 C/P was able to understand the actual conditions of sediment movement on-site. C/P and JICA Project Team were able to discuss the design based on sediment movement and the causes of damage at the site. Through observing real phenomena during the field survey, C/P understood that understanding the mechanisms is crucial for considering appropriate facility design. As a result, C/P's capability related to facility design was enhanced.

3) Engaging	g C/P in detailed design work and cooperation with JICA Project Team
Challenges	Until now, at BBWS Brantas, C/P has been engaged primarily in management-focused tasks such as surveys and construction contract administration, with limited direct experience in sabo facility design. It was necessary to understand the content and process of facility planning and design to enhance the quality of management.

Measures		JICA Project Team collaborated with the C/P to set basic policies and, based on these policies, formulated basic and detailed designs and prepared drawings and quantity calculations.
		Through this collaboration, JICA Project Team demonstrated the work flow and the content of each task to C/P.
	•	C/P was provided with relevant design standards and the procedures for applying each item.
	•	By presenting the applicable design procedures and design standards to the C/P, the
Pogulto &	-	capacity and knowledge level of construction planning and design was improved.
Lessons	´ •	With enhanced knowledge on construction planning and design, the C/P is now able to manage the work with higher quality.
Learned	•	It was reaffirmed that carrying out work based on design standards is an extremely
		efficient and effective way to improve planning and design capacity.

4) Providing technical support to C/P who do not understand English in a non-face-to-face			
commun	communication setting		
Challenges	The sabo facility design team from JICA Project Team was based in Tokyo, while the team members in charge of cost estimation and tender document preparation, as well as the C/P, were in Indonesia. Additionally, few C/P at BBWS Brantas could understand English. In this situation, the finding a method for technology transfer to the C/P effectively and efficiently became a challenge.		
Measures	 An English-proficient individual was hired as a local consultant, and this local team member acted as an interpreter between Indonesian and English. A regular weekly web-based meeting was established between the JICA Project Team members based in Tokyo and Indonesia, the local subcontracted consultants, and the C/P in Indonesia. 		
Results & Lessons Learned	 As a result, a more conducive environment for communication between the Japanese consultants and C/P was established. With each meeting, the methods of presenting information were refined and improved, making the explanation easier to understandable. By continuing these regular meetings, the capabilities of C/P were gradually enhanced. 		

5) Enhancing the capacity of DGWR in the sabo field, not limited to BBWS Brantas		
Challenges	As the capabilities of BBWS Brantas are strengthened, it is also necessary to enhance the capabilities of the relevant departments within DGWR in the field of sabo. This includes addressing the transmission of technical knowledge within the organization, improving communication between engineers and departments, and implementing mechanisms for collaboration with Balai Teknik Sabo.	
Measures	 The direct target of this technical cooperation is the C/P of BBWS Brantas. As described in Section 1.6, these C/P are selected from the various departments of BBWS Brantas' project management and project implementation unit. The knowledge accumulated by C/P is expected to contribute to the overall functionality of the organization. As explained in points 2) and 3), the participation of C/P in field surveys and detailed design work, along with their collaboration with JICA Project Team, has simultaneously improved communication between C/P engineers from different departments within BBWS Brantas, leading to enhanced organizational capabilities. To enhance facility planning and design capabilities within DGWR-related organizations, a web-based workshop was conducted. For the workshop, efforts were made to ensure that as many relevant counterparts as possible could participate. The Director of the Technical Planning Sub-directorate of the Directorate of Rivers and Coasts coordinated the participation of a wide range of counterparts. The content and timing of the workshop were adjusted flexibly following the work 	

 progress and the availability of Indonesian counterparts. The themes of the workshop included: 1) Implementation plan for Basic policies and basic design for facility planning, 3) Preliminary d 4) Preliminary bid documents, 5) Environmental and social consider Draft final report summarizing all of the above. These allowed for explanation for the entire project. 	
	• Balai Teknik Sabo, as an organization within DGWR, has technical development and training functions in the field of sabo. Participation in the workshop and briefing during the internal review of the bid documents helped strengthen collaboration and enhance capabilities. As discussed in Chapter 5, achieving higher-level plans is essential. Regarding the transfer of the technical knowledge gained in the Project within the organization and human resource development, it is crucial to continue collaboration with Balai Teknik Sabo through committees, working groups, etc.
Results & Lessons Learned	 Web-based workshops were conducted for C/P from relevant organizations other than BBWS Brantas, contributing to the strengthening of DGWR's capabilities in sabo field. By systematically presenting sabo technologies to counterparts in the field, it became possible to strengthen the overall capabilities of DGWR.

6) Follow-up on capacity building for C/P on topics with insufficient understanding		
Challenges	Despite the efforts outlined in points 2) to 5), there were remained areas where the desired results were not fully achieved, and addressing how to enhance C/P capabilities in these specific areas became a challenge.	
Measures	 For the areas where the results were not achieved, JICA Project Team member staying in Tokyo traveled to Indonesia and joined the team member in Indonesia and conducted a face-to-face workshop with C/P in Surabaya. JICA Project Team member in Indonesia identified the themes where the technology transfer to C/P was insufficient. They then prepared explanatory materials on these themes. The briefing session was held over two days, from September 17 to 18, 2024. The first session involved explaining the key points of the Review Master Plan (2024), followed by a detailed explanation of the prepared materials. Instead of merely providing a one-way explanation, the sessions included Q&A segments, allowing sufficient time for clarification and ensuring that the C/P fully understood the content. 	
Results & Lessons Learned	 The face-to face sessions and Q&A segments over two days successfully deepen the understanding of themes that had been insufficiently learned. Regularly monitoring the C/P's level of understanding and providing follow-up support as needed has proven essential in achieving the initial objectives, reaffirming its importance. 	

7) Stakeholder involvement in sediment removal captured by sabo dams		
Challenges	For the maintenance of sabo facilities, removal of accumulated sediment is essential.	
	However, the management of the Rejali River is under the jurisdiction of the Water	
	Resources Agency of East Java Province, not the MPW. Meanwhile, sand mining	
	operation in the river is managed by the Energy and Mineral Resources Agency of East	
	Java Province. Therefore, coordination among multiple stakeholders is necessary for the	
	implementation of sediment removal.	

Measures	 During the stakeholder meeting held on September 19, 2024 at the East Java Provincial Government building, JICA Project Team presented not only the design policy for the facilities targeted by the Project but also highlighted the importance of sediment removal based on the findings of the Review Master Plan (2024), including the sediment memoval was emphasized to BBWS Brantas and other related agencies. To facilitate the implementation of sediment removal, a plan outline for sediment removal based on the sabo facility design (including scope, sediment excavation depth, facility spacing, etc.) was proposed to BBWS Brantas. This aims to ensure meaningful and expedited discussions with the provincial government in the future. 	
Results & Lessons Learned	The importance of sediment removal was shared not only with the MPW but also with the Water Resources Agency and the Energy and Mineral Resources Agency of East Java Province, which hold the permitting authority for sediment removal. Based on the proposed sediment removal plan outline, a prompt discussion and clarification on the current and future permited zones for sand mining, along with related challenges, were conducted.	

CHAPTER 4 ACHIEVEMENT OF PROJECT OBJECTIVES

At the start of the project activities, a baseline survey was conducted with the C/P from BBWS/Brantas, to confirm their understanding of the activities related to Outputs 1-4 and to check the progress of the work (date of baseline survey:2024/2/28-3/1). At the end of the project, an endline survey was conducted with the same C/P, covering the same items as the baseline survey to assess their understanding and progress of the work (date of endline survey:2024/9/24-27, 2024/12/23).

The level of understanding was evaluated using a score of 0 to 3 as shown below.

Evaluation Question:

- 0: The individual has no knowledge on the content.
- 1: The individual has a low or minimal level of knowledge.
- 2: The individual has some knowledge and can complete/explain the task with guidance.
- 3: The individual has sufficient knowledge and able to complete/explain the task independently, without guidance.

The progress of the work was also evaluated using a score of 0 to 3 as above, as follows:

Evaluation Question:

- 0: No progress on the work.
- 1: Less than 50% of the work has been completed.
- 2: More than 50% of the work has been completed.
- 3: More than 90% of the work has been completed.

The questions for the baseline and endline surveys and the scores in regards to the response are summarized in Table 4-3. Based on this, the achievement status of the project purpose for each indicator is summarized in Table 4-1. Furthermore, the achievement status of each indicator for Outputs 1-4 was evaluated and summarized in Table 4-2.

Table 4-1 Achievement Status of Project Goal Indicators

Project Goal	Achievement
Capacity for formulating detailed design of Sabo facilities in the Semeru Volcano area	Status
will be strengthened.	Status
Indicator 1	
Deepening the understanding of stakeholders regarding the knowledge and work	
processes related to the detailed design of Sabo facilities. (2*)	
<at baseline="" of="" survey="" the="" time=""></at>	
As of November 2023, understanding of the detailed design and work process was	Achieved
insufficient.	Acineveu
<at endline="" of="" survey="" the="" time=""></at>	
Through joint field investigations with JICA Project Team and C/P, as well as through	
meetings, briefings, and workshops, C/P gained a deeper understanding of the	
methodologies in compiling the detailed design of Sabo facilities.	
Indicator 2	
Draft bidding documents/detailed design proposals officially approved by	
MPW/DGWR	
<at baseline="" of="" survey="" the="" time=""></at>	
Draft bidding documents/detailed design proposals had not been prepared.	
<at endline="" of="" survey="" the="" time=""></at>	Achieved
In August 2024, a preliminary detailed design proposal and draft bid documents were	
completed through collaboration between the JICA Project Team and C/P. These were	
then finalized by BBWS Brantas and submitted to MPW/DGWR as the official detailed	
design and bid documents. These documents were official approved by MPW/DGWR	
on August 28, 2024.	
Indicator 3	Achieved
A construction permit is obtained based on the updated environmental survey report.	Achieveu

<At the time of baseline survey>

During the emergency response works following the 2021 eruption, the Public Works
and Spatial Planning Office (PUTR) of Lumajang Regency submitted an environmental
documents to the Environmental Agency of Lumajang Regency. Based on this report,
construction permits (UKL-UPL) were obtained on March and May 24, 2023,
respectively. However, the updated environmental documents for the planned works in
the Project has not been submitted, and new construction permits has not yet been
obtained.

<At the time of endline survey>

For the upcoming reinforcement and rehabilitation works of the Sabo facilities, it was necessary to update the existing environmental documents and reacquire the construction permit (UKL-UPL). Discussions have been held with the Environmental Agency of Lumajang Regency, which is responsible for issuing the construction permits, to clarify the required procedures for obtaining new approval. In addition, letters to the relevant authorities were prepared to advance this process were prepared, the updated environmental documents were submitted, and the construction permit was reacquired on December 10, 2024.

Source: JICA Project Team

Table 4-2 Status of Achievement	of Indicators for	Outputs 1 to 4
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Output 1 The capacity to conduct basic research and information gathering necessary to implement the detailed design of Sabo facilities will be strengthened	Achievement Status
 Indicator 1.1 Understanding of the related counterpart personnel on the knowledge and processes to formulate detailed design for Sabo facilities is enhanced. <at baseline="" of="" survey="" the="" time=""> [Evaluation score: 0.5]</at> Understanding on the contents of the Review Master Plan (2024), which serves as the foundational study for conducting detailed facility design, was insufficient. Additionally, comprehension on methods for collecting basic information, such as sediment movement, facility damage on-site, and their causes, was inadequate. <at endline="" of="" survey="" the="" time=""> [Evaluation score: 2.8]</at> Through explanations provided during joint field investigations, meetings, consultations, and workshops conducted between JICA Project team and C/P, the understanding on the foundational information in the Review Master Plan (2024) and the methods for collecting and establishing the basic information required for the detailed design of Sabo facilities was significantly enhanced. 	Achieved
Indicator 1.2 Topographic survey and geological survey are completed. Regarding topographical surveys, the Directorate of Water Resources Engineering Development (Bintek) created a topographic map using LiDAR following the 2022 eruption, and it was confirmed that this map accurately represents the local topographic conditions. As for the geological surveys, a boring survey was conducted through a subcontract, mainly in areas where Sabo facilities will be implemented, and a report describing the results was completed.	Achieved

Output 2	Achievement
The capacity to review Sabo facility specifications and facility locations based on	Status
field survey results is strengthened.	
Indicator 2.1	
Understanding of the related counterpart personnel on the knowledge and	
processes to review Sabo facility specifications and facility locations based on field	
survey results is enhanced.	
<at baseline="" of="" survey="" the="" time=""> [Evaluation score: 0.8]</at>	
Understanding of the knowledge and workflow required to determine the location,	
specifications, and other aspects of Sabo facilities by considering on-site conditions	
was insufficient.	
<at endline="" of="" survey="" the="" time=""> [Evaluation score: 2.9]</at>	Achieved
Ability to develop sediment management planning, facility layout planning, and	
basic design policies based on the Review Master Plan (2024) were strengthened	
through collaboration with JICA Project Team. By this collaboration, the capacity to	
clarify sediment movement and the causes of facility damage was also enhanced.	
The prioritization of Sabo facilities for construction was established and an	
understanding of methods for sediment/hydrology analysis and specification	
determination (e.g., Sabo dam heights) was deepened. Furthermore, the capacity to	
formulate workflows for these tasks was enhanced.	
Indicator 2.2	
Sabo facility specifications and facility locations are identified.	
Based on consultations with C/P and considering the on-site conditions, the	Achieved
prioritization of Sabo facilities for construction was determined, layout plans were	
established, and key specifications (e.g., Sabo dam heights) were determined.	
Output 3	Achievement
The capacity to prepare detailed design for Sabo facilities is strengthened.	Status
Indicator 3.1	
Understanding of the related counterpart personnel on the knowledge and	
processes to prepare detailed design for Sabo facilities is enhanced.	
<at baseline="" of="" survey="" the="" time=""> [Evaluation score: 0.8]</at>	
Knowledge on design conditions (e.g., discharge capacity, external forces),	
calculation methods for structural stability (e.g., sliding, overturning, bearing	Achieved
capacity), and setting water channel shapes was insufficient.	
<at endline="" of="" survey="" the="" time=""> [Evaluation score: 2.8]</at>	
Understanding of design conditions (e.g., discharge and external forces), water	
channel design, and stability calculation methods necessary for Sabo dam design	
was improved.	
Indicator 3.2	
Draft detailed design, construction plan, cost estimate and draft bidding document	
are prepared.	
In August 2024, JICA Project Team and C/P collaboratively prepared	Achieved
preliminary detailed design results and preliminary bid documents. Using these	
documents, C/P independently created drafts of each deliverables and submitted	
them to MPWH/DGWR in the same month.	
Output 4	Achievement
The capacity on environmental and social considerations is strengthened	Status
Indicator 4.1	
Enhanced understanding of knowledge and processes related	
to environmental and social consideration documents	
<pre><at baseline="" of="" survey="" the="" time=""> [Evaluation score: 0.7]</at></pre>	
Understanding on the required documents for environmental and social	Achieved
considerations was vague. There was insufficient recognition on the need for	
environmental condition assessments, compensation property confirmation, and	
public consultations.	
At the time of endline survey> [Evaluation score: 2.5]	

Through the process of updating UKL-UPL, the necessary environmental and social consideration documents were clarified. Assessments of environmental conditions and compensation properties were conducted, and awareness of the	
importance of public consultations increased.	
Indicator 4.2	
Updating existing environmental survey reports in line with JICA Guidelines	
For the planned reinforcement and rehabilitation works of Sabo facilities, it was	
necessary to update the existing environmental documents and reacquire the	
construction permit (UKL-UPL). Discussions has been held with the Environmental	
Agency of Lumajang Regency; the authority responsible for issuing the construction	
permit. The discussions are to confirm the procedures required for obtaining new	
approval. Letters to the relevant authorities were prepared to advance these	
procedures.	
A comparison has been made between content of the existing environmental	Achieved
documents and the results of the preliminary detailed design. Differences and	
changes in the plans for each facility were reviewed. While ensuring alignment with	
JICA guidelines, the environmental documents for each facility were updated.	
It has been confirmed that no new land acquisition or relocation of residents will	
be required for the implementation of the Project. Environmental and social	
considerations relevant to the project were reviewed, and recommendations were	
prepared.	
After submitting the updated environmental documents, the construction permit	
was reacquired on December 10, 2024.	
Source: JICA Project Team	

Table 4-3 Baseline and endline survey results for C/P

Questionnaire (Result of Baseline Survey and Endline Survey)(1/4)

Output 1 The capacity to conduct basic research and information gathering necessary to implement the detailed design of Sabo facilities will be strengthened Indicator 1.1: Enhanced understanding of knowledge and workflows required by relevant counterpart personnel for conducting foundational surveys or gathering information Indicator 1.2: Completion of Topographic and Geological Surveys

			Baseline	Endline						
No		Item								
Activity 1	.1	Understanding current situation through field surveys, and collection of additional basic data from the Master Plan and from the 2021 eruntion data	0.8	3.0						
	1	Have you gained an understanding of the characteristics of the river channel, such as the sediment in the riverbed and its sedimentation status, riverbed width and riverbed material?	1.0	3.0						
	2	Have the master plans, review master plan reports, and eruption data for 2021/2022 been gathered? (Yes/No)	0.5	3.0						
Activity 1	.2	Analysis and understanding of the data (sediment, hydrological, etc.) collected in the "Mt. Semeru Sabo Master Plan", which is being carried out as part of the preceding project "Information Collection and Verification Study on Volcanic Disaster Prevention in East Java and Bali Islands"	0.3	3.0						
	1	Have you collected essential data of the preceding project, such as sediment, hydrology, meteorological data? (Yes/No)	0.2	3.0						
	2	Do you comprehend the analysis of Mt. Semeru watershed characteristics conducted in the preceding project?	0.3	3.0						
Activity 1	.3	Assessing the current condition of sedimentation and facility damage by field survey.	1.0	3.0						
	1	Based on the field survey, were you able to evaluate the current condition of sedimentation and the damage degree of target facility?	1.0	3.0						
	2	Can you analyze the causes of damage to the target facility?	1.0	3.0						
Activity 1	.4	Assessing the implementation plan and progress of the emergency response work that has been underway since immediately after the December 2021 eruntion	0.4	3.0						
	1	Have you verified the existing facilities, including the emergency response works in place after an eruption? Furthermore, have you confirmed the construction schedule in the target area?	0.3	3.0						
	2	Is the emergency response work data effectively managed and are the results appropriately incorporated into the design drawings?	0.5	3.0						
Activity 1	.5	Updating data and collection of additional materials	0.6	1.7						
	1	Do you understand the proper handling of LiDAR survey data, including the advantages and key considerations when designing with LiDAR survey data?	0.5	1.7						
	2	Do you comprehend the purpose and methodology of the boulder diameter survey?	0.7	1.7						
Activity 1	.6	Topographical surveys, existing facility measurements, and geological surveys are conducted for the purpose of rehabilitation and improvement planning and design of the facilities.	0.4	3.0						
	1	Have you thoroughly confirmed and understood the scope of work for the Sub-Contractor, including specifications and quantities?	0.5	3.0						
	2	Do you effectively manage schedules for Sub-Contractors?	0.5	3.0						
	3	Have you thoroughly reviewed and organized the data from the geological survey?	0.2	3.0						
Activity 1	.7	Analysis of the sediment, hydrological, etc. collected from the field surveys mentioned in 1.1 to 1.6 activities.	0.4	3.0						
	1	Were you able to assess the appropriateness of the planning scale and planned rainfall values through analysis?	0.3	3.0						
	2	Were you able to evaluate the suitability of the planned amount of sediment runoff through analysis?	0.3	3.0						
	3	Were you able to analyze the appropriateness of the design flow rate?	0.7	3.0						
Activity 1	.8	Revision of the survey implementation plan, if necessary	0.7	3.0						
	1	Do you understand when a revision of the survey plan implementation needs to be conducted?	0.7	3.0						
		Avarage of Items	0.5	2.8						

Output 2:The capacity to develop a technical specification and location policy of the Sabo facilities will be strengthened. Indicator 2.1: Enhanced understanding of the knowledge and workflow required to examine facility specifications and locations

Indicator 2.2	: Id	entification of facility specifications and locations				
Na		Item	Baseline	Endline		
INO		Item	C/P Avg	C/P Avg		
Activity 2.1		Based on the results of the activities in output 1, as well as the planning conditions for structural measures established in the "Semery Volcano Master Plan" sabo facility specifications and facility locations are reviewed	0.8	2.8		
	1	Have you organized the constraints for the layout of the facilities?	0.8	2.7		
	2	Are you able to assess the appropriateness of the proposed sediment gradient configuration?	0.8	2.7		
	3 Are you able to assess the policy for selecting the location of the facility appropriate?		0.7	2.8		
	4	Can you assess the appropriateness of the chosen dam type?	0.7	2.8		
	5	Can you evaluate if the selected dam height and seawall height are suitable?	0.8	2.8		
6 Can you assess the a		Can you assess the appropriateness of the facility's sediment effect?	0.8	3.0		
Activity 2.	Activity 2.2 Procedures, methods, and schedules for incorporating field survey results into facility planning are considered.					
	1	Do you comprehend the list of design standards that need to be adhered to?	1.2	3.0		
2 Has the implementation plan been prepared? (Yes/No)		Has the implementation plan been prepared? (Yes/No)	1.3	3.0		
	3	Have you determined the schedule and frequency of meetings for managing the implementation plan? (Yes/No)	0.3	3.0		
	4	Has the necessary personnel structure (implementation structure) for project execution been verified?	0.8	2.8		
		Avarage of Items	0.8	2.9		

Indicator 3.2	: Pr	eparation of detailed design plans, construction plans, cost estimates, and bidding documents		1			
No		Item	Baseline	Endline			
			C/P Avg	C/P Avg			
Activity 3.1		Design	0.4	2.7			
	1	Do you have a clear understanding of setting the design conditions (combination of loads, constants to be used)?	0.5	2.7			
	2	Do you have a clear understanding of how to space the permeable parts (slits) of dam?	0.2	2.7			
	3	Do you understand the stability calculations and methods for the embankment (both for the overflow and non-overflow sections)?	0.5	2.7			
	4 Do you understand the suitable embedding of structure?						
	5	Have you considered and included appropriate cut-offs and stepping (stepped cut) of the dam?	0.5	2.7			
	6	Have you considered alternative considerations taking into account environmental and social impacts?	0.3	2.7			
Activity 3.2		Construction plan	0.8	2.7			
	1	Have the construction site conditions and constraints been properly assessed and organized?	0.8	2.8			
	2 Have you assessed the feasibility of the construction road plan?						
	3 Are you able to consider and evaluate a preliminary construction plan taking into account the construction methods and sequence?						
	4	Can you assess the appropriateness of the target flow rate for temporary facility?	0.8	2.5			
	5	Can you make the important points regarding the construction work clear to be noted?	0.8	3.0			
Activity 3.3		Cost estimate	1.2	3.0			
	1	Have you confirmed the applied basic price (materials, labor, equipment) for unit price analysis?	1.2	3.0			
	2	Do you regularly verify if the dimensions used for quantity calculations align with the drawings?	1.2	3.0			
	3	How can we ensure the accuracy of calculation items for estimated construction costs and identify any potential omissions?	1.2	3.0			
	4	Are quantity calculations routinely reviewed and verified?	1.2	3.0			
Activity 3.4		Preparation of Draft Bidding Documents	0.9	2.8			
	1	Have you checked DGWR's latest Bidding Documents Template? (Yes/No)	0.8	2.8			
	2	Was the division of the procurement packages appropriately determined based on the construction scope and cost estimation results?	0.8	2.7			
	3	Are all specifications, design drawings, and quantities mutually aligned?	1.0	2.8			
		Avarage of Items	0.8	2.8			

Output 3: The capacity to prepare detailed design for Sabo facilities willbe strengthened. Indicator 3.1: Enhanced understanding of knowledge and workflows related to detailed design

Output 4 The capacity on environmental and social considerations is strengthened Indicator 4 1: Enhanced understanding of knowledge and processes related

Indicator 4.1 Indicator 4.2	indicator 4.1: Undating existing environmental survey reports in line with JICA Guidelines									
No	Item	Baseline	Endline							
Activity 4.1	With respect to construction permits already obtained, information on construction details, construction methods, etc. will be compiled based on the results of the detailed design work performed under this project.	C/P Avg 0.9	C/P Avg 2.4							
	1 Are the specific methods for assessing the environment and creating the necessary materials clear?									
	2 Have you thoroughly evaluated the surrounding environmental conditions?	0.8	3.0							
	3 Have you verified the extent of the property compensation?	0.8	1.3							
Activity 4.2	The existing environmental investigation report including the gender mainstreaming perspective will be updated based on JICA guideline on Environmental and Social Considerations in Jan 2022.	0.0	1.7							
	1 Have you obtained and verified the JICA guidelines? (Yes/No)		3.0							
	2 Do you understand the gender mainstreaming perspective on JICA guidelines?	0.0	0.3							
Activity 4.3	Recommendation is prepared for environmental and social considerations for finalizing Detailed Design.	0.8	3.0							
	1 Is the DGWR's policy regarding recommendations related to environmental and social considerations clear?	0.8	3.0							
Activity 4.4	Assisting BBWS/local government to make the public consultation meeting, if necessary.	0.8	3.0							
	1 How do you assess the need for a public consultation meeting for this project?	0.8	3.0							
	2 Do you comprehend the criteria that will determine whether a PCM is required or not?	0.8	3.0							
	Avarage of Items	0.7	2.5							

Source: JICA Project Team

CHAPTER 5 RECOMMENDATIONS FOR ACHIEVING THE OVERALL GOAL

5.1 Challenges in Achieving the Overall Goal

The overall goal of the Project and its evaluation indicators are defined in the PDM as follows:

Overall Goal

Sabo facilities in Indonesia are properly planned, designed, and maintained.

Indicator 1: In other areas outside Mt. Sumeru, including the other two mountains in the Sector Loan, plans and designs are implemented applying the processes and construction methods introduced in the Project.

Source of indicator data: MPW/DGWR project reports/documents

Indicator 2: Number of personnel and the budget necessary for maintenance of Sabo facilities based on renewed / revised design and construction technology provided as the Project's result will be secured and increase compared with those before the Project.

Source of indicator data: National budget annual reports.

The challenges in achieving each indicator of the overall goal are described below.

5.1.1 Challenges in Achieving Indicator 1

The outcomes achieved through activities in Mt. Semeru are outlined in Chapter 4 which indicated that the project objectives have been achieved. However, addressing the following challenges is necessary to achieve the relevant indicators of the overall goal:

(1) Sharing the technologies introduced by the project across relevant MPW departments

- 1) While the project goal of "Capacity building for preparing detailed designs of Sabo facilities in the Mt. Semeru watershed" is considered achieved, further efforts are required to ensure that the project's outcomes are not limited to the current C/P and its department. The knowledge gained should be shared with other relevant organizations within the MPW, including those involved with Mt. Ciremai, Mt. Agung, and other volcanic regions requiring Sabo technology.
- 2) Therefore, it is necessary to make the following efforts so that the findings obtained in the Project can be applied to other volcanoes in Indonesia:1. Important matters are indicated as technical standards and guidelines. Training opportunities will also be set up to disseminate this to the entire organization. 2. The technical standards and guidelines are applied to actual projects. The technical standards and guidelines are revised based on issues identified in the process, and strive to reflect the latest knowledge of the revisions. 3. In volcanic regions other than Mt. Semeru, volcanic eruptions exhibit distinct forms, sediment properties, and topographic features. Therefore, implementation of countermeasures appropriate to the characteristics of each volcano is crucial. Efforts should focus on developing methods to adapt the knowledge introduced in the Project for application to other volcanoes, fostering innovation and technical development. It is important to share the results with the relevant organizations within the DGWR and feed them back to technical standards and guidelines.

(2) Human resource development

- 1) To implement the planning and design utilizing the methods introduced in the Project in areas beyond Mt. Semeru, addressing the current shortage of MPW personnel capable of understanding and applying these techniques is crucial.
- 2) To achieve this, fostering practitioners with expertise in planning and design work at related MPW departments, such as river basin offices responsible for other volcanic Sabo projects, is necessary.

5.1.2 Challenges in Achieving Indicator 2

(1) Securing human resources

The challenge of securing sufficient personnel numbers is similar to the issues mentioned in Indicator 1. Training engineers who can apply the new knowledge gained through the Project to practical work is necessary.

(2) Securing Budget

Regarding the maintenance and management of Sabo facilities, procedures are underway to implement rehabilitation and reconstruction of urgent Sabo facilities at volcanoes such as Semeru, Kelud, and Agung through the "Volcanic Disaster Risk Reduction Sector Loan Project" funded by Japanese ODA Loan.

Over the past decade (2013-2022), Indonesia has constructed or rehabilitated 259 Sabo facilities and developed plans for over 50 facilities funded by the national budget. Between 2018 and 2022, the expenditure on planning and constructing Sabo facilities, such as Sabo dams, was 2.8522 trillion Rupiah (approximately 280 billion yen on an exchange rate of Rp104/yen)¹). The current budget for the countermeasure plan accounts for 70% of this amount, and covering this cost through the national budget alone is challenging. Thus, as mentioned earlier, implementation through ODA loans is currently under process.

In this way, at present, maintenance and management plans are formulated by incorporating not only domestic budgets but also bilateral funding. On the other hand, in the National Medium-Term Development Plan (RPJMN2020-2024), disaster risk reduction is one of the priority developments plans, and the national budget in this area is increasing (see 5.2.2 below). It is important that the mainstreaming of disaster risk reduction in the National Medium-Term Development Plan is maintained, and that efforts to secure and increase national budgets in the field of disaster risk reduction are continued.

1) Reference: JICA: Information Verification Survey on Volcanic Disaster Management in East Java and Bali, March 2024, DGWR response to JICA's questionnaire, Annex 6-2.

5.2 Recommendations for Achieving the Overall Goal

Based on the challenges mentioned in 5.1, the following recommendations are provided to achieve these goals:

5.2.1 Recommendations for Achieving Indicator 1

(1) Sharing and accumulation of technology strengthened through the Project - preparation of technical guidelines

1) Accumulating knowledge acquired by counterparts (C/P) in MPW-related organizations

It is necessary to organize the knowledge acquired individually by C/P through the Project into explicit and formal knowledge (such as documents, diagrams, charts, formulas, etc.) to promote

sharing and clarity within MPW-related organizations. Effective sharing and preservation of knowledge are essential for improving the technical capabilities of the organization as a whole. One way to formalize the insights gained by C/P as explicit knowledge is by incorporating them into technical guidelines. These guidelines should cover both planning and design, as well as maintenance management.

2) Development of Planning and Design Guidelines

To develop the guidelines, a committee should be established. The STC in the Directorate of Water Resources Technology Development, which is responsible for technology development in DGWR, is considered to be the most suitable department to lead the committee. To ensure that the guidelines are applied more appropriately and effectively in practice, the committee members should include related organizations within DGWR, academic experts, consultants, and contractors. By involving participants from academia, government, and the private sector, it becomes possible to conduct multifaceted discussions from academic, administrative, and practical perspectives.

The following work procedures are proposed for developing the technical guidelines:

- Understand the current state of technical guidelines and related frameworks in Indonesia.
- Select technical guidelines related to sabo in volcanic regions and revise them based on the knowledge gained through the Project.
- Standardize the guidelines to ensure their applicability to the natural conditions of other volcanoes.

The Japanese Ministry of Land, Infrastructure, Transport, and Tourism's "Guidelines for Formulating Basic Sabo Plans (Debris Flow and Driftwood Measures Edition) April 2016" and "Technical Guidelines for Designing Debris Flow and Driftwood Measures April 2016" are considered as potential models.

Regarding the revision of technical guidelines, the following themes are identified as being particularly important and insufficiently addressed in Indonesia's existing guidelines but strengthened through the Project:

• Sabo facility layout planning:

As shown in Figure 2-8 referenced earlier, the items improved on the C/P side through the Project include critical rainfall thresholds for debris flow occurrence, design sediment runoff volumes, and sediment storage gradients.

• Sabo facility design:

As shown in Figure 2-9 referenced earlier, the items improved on the C/P side through the Project include design flow depths, freeboard, and materials for sabo dams, as well as aperture shapes and stability calculations for permeable dams.

• Construction planning:

As shown in Figure 2-11 referenced earlier, the items improved on the C/P side through the Project include the plan for temporary works, such as cofferdams for river works.

3) Development of maintenance management guidelines

For Sabo facilities, proper removal of deposited sediment is crucial to ensure their effectiveness. After a major eruption, when Sabo facilities capture debris flows, the relevant river basin agencies must work with provincial governments to remove the sediment. At Mt. Semeru, the functionality of Sabo facilities relies on private sand mining operations, which are indispensable for debris flow countermeasures.

The following plans have been developed for sand mining at Mt. Semeru and should continue to be implemented:

- Update surveys on current sand mining practices.
- Appropriate placement of sand mining sites.

- Development of access roads to facilitate sand mining.
- Proper administrative oversight of sand mining volumes.
- Defining sand mining boundaries that do not affect sabo facilities.

These procedures should be formalized into maintenance management guidelines to be implemented at Mt. Semeru and extended to other volcanoes (Kelud, Agung) and other areas in Indonesia. A committee, including members from DGWR, BBWS Brantas, and East Java provincial departments, should oversee the development of these guidelines.

(2) Human resource development

To apply the knowledge gained in the Project to other volcanoes, a sufficient number of practitioners is required. Instead of training personnel within individual departments, the following methods are proposed:

- 1. Conduct lectures by qualified instructors based on curriculum incorporating necessary subjects.
- 2. Proposed curriculum themes:
 - a. Explanation of revised planning and design guidelines (e.g., procedural steps from sediment runoff volume estimation to detailed sabo dam design).
 - b. Case studies addressing practical issues not covered by planning/design standards (e.g., damage mechanisms of sabo facilities following Mt. Semeru's 2021 eruption and corresponding maintenance strategies).
- 3. Candidate instructors:
 - a. Engineers/researchers involved in compiling the revised guidelines.
 - b. Engineers from BBWS Brantas with field experience in surveys and designs.
- 4. Consolidate non-standardized topics into training materials for knowledge transfer (e.g., "Investigation of damage causes and repair/reconstruction methods based on damage causes").

STC, as a human resource development organization within DGWR, is suitable to oversee these efforts.

(3) Appropriate placement of personnel and application of guidelines

It is important that the trained personnel are appropriately allocated to the departments where the newly introduced Sabo technology is needed, and that the newly formulated technical guidelines are thoroughly applied and complied with within the MPW organization and among consultants/ contractors. To this end, the following measures are proposed:

- Training to raise awareness within DGWR regarding the planning, design, and construction of sabo facilities.
- Public relations, web posting, and briefing sessions to raise awareness of the technical guidelines among consultants and contractors.
- Clear statement that the planning and design guidelines will be applied in the contracts between consultants/contractors and DGWR for actual surveys or construction work

As for maintenance, it is proposed that the maintenance guidelines should be shared with relevant state government departments, and the following measures be implemented:

• Awareness within DGWR of the sabo facility maintenance guidelines and training on their contents

• DGWR should share the maintenance guidelines with relevant state government organizations, and agencies and departments related to sediment removal will work together to implement them.

(4) Implementation of Measures for Achieving Indicator 1

1) Establishment of a working group

To effectively implement the measures mentioned above, it is recommended that a working group and its secretariat be established within DGWR as a cross-organizational mechanism. The working group should be composed of relevant departments within DGWR. It will be supervised by the Director General of DGWR, and its members should include the Rivers and Coasts Department, Water Resources Engineering Development Department, Water Resources Management Planning and Strategy Department, Sabo Dam Technical Implementation Unit, and Brantas River Basin Management Office (BBWS Brantas). STC should also be a member.

The working group is a cross-organizational mechanism to share the new knowledge gained from the Project within DGWR and to implement measures to apply it in practice, such as creating technical guidelines and maintenance guidelines. If the function of the working group includes securing budgets and human resources, as described in the next section, it is expected that the overall goal will be achieved more effectively.

2) Implementation schedule

Initially, technical guidelines should be developed, followed by capacity building based on these guidelines. Subsequently, operations related to sediment removal should be continued and incorporated into maintenance guidelines, which will also include capacity-building activities. The schedule for the first five years will align with the strengthening of the STC's functions (refer to Figure 5.1). Ultimately, this will be integrated with the STC roadmap.



Figure 5-1 Activities for achieving Indicator 1

Source: JICA Project Team

5.2.2 Recommendations for Achieving Indicator 2

(1) Securing personnel

Developing and securing human resources capable of applying the design and construction techniques resulting from the Project to practical work is a necessary condition for achieving higher objectives. The method for this is explained in section (2) of Indicator 1. If the number of Sabo facilities requiring maintenance increases compared to before the project, additional personnel will be needed. Accordingly, budget allocations will also need to increase. The budget implications of securing human resources are described in the next section.

(2) Securing budgets

1) Allocate disaster risk reduction as a priority development plan in The National

Medium-Term Development Plan and allocation of the National Budget

In the National Medium-Term Development Plan (RPJMN 2015-2019), disaster risk reduction is included among the seven development issues ¹). Disaster risk reduction is listed as one of the seven development plans that should be prioritized, including disaster risk reduction in the framework of sustainable development at the central and regional levels, and mainstreaming disaster risk reduction in national and regional development plans. ²)

Further, in the National Medium-Term Development Plan (RPJMN 2020-2024), disaster risk reduction is also listed as one of the seven development plans that should be prioritized. ³⁾ Improving resilience against natural disasters and climate change is mentioned, including measures against volcanic eruptions and landslides. The proportion of investment in disaster risk reduction in the national budget is expected to increase from 0.04 in 2019 to 1.36% in 2024. ⁴⁾ As a national goal, the budget for disaster risk reduction is expected to be significantly increased.

To achieve the overall goal, it is necessary to continue mainstreaming disaster risk reduction and increasing the budget for it after 2025.

2) Investment in Sabo projects by DGWR in the Ministry of Public Works and Housing

The Directorate General's budget has increased 1.4-fold in six years, from 31.1 trillion rupiah (2015) to 43.97 trillion rupiah (2020).⁵⁾ Of this, the flood control sector's budget for 2021 grew 1.7-fold compared to 2020.⁶⁾ If dams are added to flood control, the total for 2020 will be 25.22 trillion-rupiah, double that of 2016, and is equivalent to 1% of the 2020 national budget.

3) Growth of DGWR's disaster mitigation budget

Under the mainstreaming disaster risk reduction policy, which continues from RPJMN 2015-2019 to RPJMN 2020-2024, the DGWR is strengthening its response to debris and flood disasters. As a result of the efforts of DGWR to secure a budget for this purpose, the amount of the national budget in the field of disaster risk reduction is increasing. The national budget for disaster risk reduction is on the rise under the National Medium-Term Development Plan. On the other hand, at present, this is not enough, and procedures are underway for volcanic Sabo projects such as Mt. Semeru with yen loans from Japan. In parallel with the situation in which external funds are being used, it is important to continue efforts to secure domestic budgets as in the past.

4) The need for diverse funding sources

Even though the national budget for disaster risk reduction is increasing under the national midterm plan, it is not enough at present. Further, procedures are being carried out for the volcanic Sabo projects, including Mt. Semeru, through a Japanese yen loan. It is considered that efforts using diverse funding, not just the national budget, will be necessary in the future.

(3) Recommendations for achieving the indicators

- 1) As mentioned above, if the nation continues to recognize the importance of disaster risk reduction and if the budget and human resources are secured, the maintenance of Sabo facilities based on the results of the Project will be carried out, and the number of facilities will increase compared to before the project. In this technical cooperation, the BBWS Brantas C/P has a strong desire to learn new technologies, and it is recommended that such human resources be developed in future personnel acquisition, and that a budget for disaster risk reduction will be secured in the future as planned in RPJMN 2020-2024, in order to achieve the indicator.
- 2) Along with securing the budget, how to use it, i.e., appropriate budget allocation, is important. Prioritizing projects (such as clarifying the priority of projects based on urgency and importance in the maintenance of Sabo facilities), shifting from "reactive maintenance" to "preventive maintenance," and effective budget management, minimizing unnecessary expenditures and using funds efficiently. These measures will ensure that limited budgets are allocated to the most appropriate areas, contributing to budget availability.

3) In implementing the project, it is necessary to focus not only on improving the quality of the work from a management perspective, but also from a technical perspective. In the field of Sabo, senior employees are retiring, and technology transfer to younger generations has been insufficient. Once debris flows due to volcanic activity occur frequently, many erosion control works must be treated at the same time. However, there is not enough capacity and manpower for planning, design, and construction of facilities. Capacity development is an urgent issue.

3) JST Asia-Pacific Research Center APRC-FY2023-PD-IDN01 p. I.15,

5) Coordination Meeting of Strategic Program of PUPR (2019.11)

¹⁾ Bappenas, Director of Forestry and Water Resources Conservation: MEDIUM TERM DEVELOPMENT PLAN: RPJMN 2015-2019, p.9

²⁾ Indonesian Minister of State for Forestry and Water Resources Conservation: National People's Congress for the Promotion of the Pembangunan Menengah (RPJMN) 2015-2019, Buku I Agenda Pembangunan Nasional, pp.6-167~6-175

⁴⁾ JST Asia-Pacific Research Center APRC-FY2023-PD-IDN01 p.VII.22

⁶⁾ DIPA-2020, DIPA-2021 Ditjen Sumber Daya Air Kementerian PUPR

Annex

- Annex-1 PDM
- Annex-2 Project Flowchart
- Annex-3 Assignment Plan (Final Version)
- Annex-4 Activity of Training/Seminar
- Annex-5 Minutes of Meeting for Project Monitoring Meeting
- Annex-6 Other Activity Records
- Annex-7 Final Report
- Annex-8 Capacity Development Materials
 - Preliminary Detailed Design (Draft)Preliminary Bidding Document (Draft)
- Annex-9 Points to be communicated for the following Project
- Annex-10 Capacity Development of the Sabo Technical Center (STC)
- Annex-11 Management of a Seminar to Present the Results of Support

Work of Capacity Development of STC

Annex-1 PDM

Project Design Matrix (PDM)

Project Design Watrix (FDW) Project title: The Project for capacity development of Mt. Semeru volcanic disaster structural measures planning Duration: 1 Year Implementing Agencies: Directorate General of Water Resources, Ministry of Public Works and Housing (hereinafter referred to as "DGWR-MPWH") River Basin Organization for Brantas/Balai Besar Wilayah Sungai (hereinafter referred to as "BBWS") Brantas

Target Areas: Jakaiia (HQ of DGWR-MPWH) and Selected Pilot River Basin in Mt. Semeru

Target Group: DGWR-MPWH and BBWS

Indirect beneficiaries : Indonesian Citizens

Narrative Summary	Verifiable Ind	icators	Means of Verification	Important Assumption		
[Overall Goal] Sabo facilities are properly planned, designed and maintained in Indonesia	 In other areas outs including the other tw Sector Loan, plans implemented applying construction methods Project. Number of personnel necessary for main facilities based on r design and constru provided as the Proje secured and increas those before the Proje 	ide Mt. Sumeru, o mountains in the and designs are g the processes and introduced in the and the budget tenance of sabo enewed / revised ction technology ect's result will be e compared with ct.	 Project reports/documents of MPWH/DGWR Annual national budget report 	The economy growth of Indonesia is unchanged drastically from the current situation		
[Project Purpose] Capacity for formulating detailed design of sabo facilities in the Semeru Volcano area will be strengthened.	 Understanding of the personnel on the processes to formulate sabo facilities is enhand The draft bidding of detailed designs offici MPWH/DGWR Construction permit is updated environmen report 	related counterpart knowledge and detailed design for ced (*2). document / draft ially approved by obtained with the tal investigation	 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff The final report of the Project Finalized/ Authorized bidding document Construction permit obtained with the updated environmental investigation report 	Current sediment control policies/strategies in Indonesia are not changed, and maintained.		
[Outputs] 1. The capacity to conduct basic research and information gathering necessary to implement the detailed design of sabo facilities will be strengthened.	1.1 Understanding of the personnel on the processes to conduct information gatherin implement the detail facilities is enhanced 1.2 Topographic survey survey is completed.	related counterpart knowledge and basic research and ng necessary to ed design of sabo (*2). and geological	 1.1 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff 1.2 Topographic survey report and geological survey report 	Turnovers of technical personnel who are trained do not much occur.		
 The capacity to review sabo facility specifications and facility locations based on field survey results is strengthened. 	 2.1 Understanding of the personnel on the processes to revie specifications and based on field survey (*2). 2.2 Sabo facility specific locations are identifier 	related counterpart knowledge and w sabo facility facility locations results is enhanced ations and facility d.	2.1 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff2.2 Design Report			
 The capacity to prepare detailed design for sabo facilities is strengthened. 	 3.1 Understanding of the personnel on the processes to prepare of sabo facilities is enhanded. 3.2 Draft detailed design, cost estimate and document are prepare 	related counterpart knowledge and detailed design for need (*2). construction plan, l draft bidding d.	 3.1 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff 3.2 Design report, Engineering estimation, Draft bidding document 			
4 The capacity to prepare environmental and social considerations is strengthened	 4.1 Understanding of the personnel on the processes to prepare environmental and sc are enhanced (*2). 4.2 The existing environm report is updated guideline. 	related counterpart knowledge and the document of ocial consideration ental investigation based on JICA	 4.1 Baseline survey and end line survey with questionnaire and interview toBBWS Brantas staff 4.2 Updated environmental investigation report based on JICA guideline 			
[Activities] (Activities for achieving Output 1)		[Inputs]	-1			
 Field survey, information gathering and basic inv surveying, geological survey, laboratory testing, etc. 1.1Understanding current situation through field additional basic data from the Master Plan an 	restigation (topographical .) surveys, and collection of d from the 2021 and 2022	 Counterparts Staff of Direct Staff of Direct Development 	er or and Coasts orate of Rivers and Coasts orate of Water Resources Engineering			
eruption data 1.2 Analysis of the data (sediment, hydrological, Semeru Sabo Master Plan", which is being preceding project "Data Collection Surve Reduction in East Java and Bali Islands"	etc.) collected in the "Mt. carried out as part of the ey on Volcanic Disaster	 3) Staff of Director System and Staff 4) Staff of Tech Dams 5) Staff of Riv (BBWS Branta) 	orate of Water Resources Management rategy nical Implementation Unit for Sabo er Basin Organization for Brantas (s)	 [Pre-conditions] Activities of the Project are not restricted due to COVID-19. Disasters which cause serious damages do not 		
1.3 Assessing the current condition of sedimentati	on and facility damage by	2. Project Office	and necessary utilities	occur.		

 field survey. 1.4 Assessing the implementation plan and progress of the emergency response work that has been underway since immediately after the December 2021 eruption. 1.5 Updating data and collection of additional materials 1.6 Topographical surveys, existing facility measurements, and geological surveys are conducted for the purpose of rehabilitation and improvement planning and design of the facilities. 1.7 Analysis of the sediment, hydrological, etc. collected from the field surveys mentioned in 1.6 activities. 1.8 Revision of the survey implementation plan, if necessary (Activities for achieving Output 2) Reviewing of sabo facility specifications and facility locations based on field survey results 2.1 Based on the results of the activities in output 1, as well as the planning conditions for structural measures established in the "Semeru Volcano Master Plan", sabo facility specifications and facility locations are reviewed. 2.2 Procedures, methods, and schedules for incorporating field survey results into facility planning are considered. (Activities for achieving Output 3) Detailed Design 3.1.1 The appropriateness of each construction of facilities is explained, the design conditions of each facility are studied, and stability / structural calculations are conducted. 3.1.2 Draft detailed design is conducted for each package of facilities (seven facilities from two packages are assumed). 3.1.3 Alternative consideration such as facility layout, scale and effective amount are conducted as value engineering by taking into account environmental and social impacts. 3.2 Construction plan 3.2.1 The construction schedule, materials / equipment delivery method, temporary works, safety measures, and construction schedule are discussed. 3.2.2 Based on the detailed design results, a construction plan for each facilities is developed. 	 Office spaces in DGWR-MPWH office space in Jakarta and Brantas office space in Lumajang and Surabaya. Utilities (electricity, water, tele communication / internet, security) for the office spaces Local Project Expenses Expenses for Project activities including allowance/travel costs for C/Ps Expenses for Project Monitoring Meeting and Technical Working Unit such as venues and travel costs for lecturers and participants Data provision [Japanese Side] Dispatch of Experts Leader/Sabo Facilities Planning Engineer/ Environmental and Social Consideration Sabo Facilities Design Engineer Tooyraphic/Geological Specialist Cost/Bidding Document Specialist Project Coordinator Environmental and Social Consideration Specialist 	
 3.3 Cost estimate 3.3.1 The quantity calculation for each facility is performed. 3.3.2 Unit prices are set. 3.3.3 The cost of construction is estimated and compiled as an engineering cost estimate. 3.4 Preparation of draft bidding documents 3.4.1 The conditions of the bidding documents are determined by discussion with DGWR 4.2 Deaft hidding documents is repared for each construction pediage. 		
3.4.2 Draft bidding documents is prepared for each construction package.		
(Activities for achieving Output 4) Environmental and Social Considerations		
4.1 With respect to construction permits already obtained, information on construction details, construction methods, etc. are compiled based on the results of the draft detailed design work performed under this project.		
 4.2 The existing environmental investigation report including gender mainstreaming perspective will be updated based on JICA guideline on Environmental and Social Considerations in Jan. 2022. 4.3 Recommendation is prepared for environmental and social considerations for finalizing Detailed Design. 		
 4.4 Assisting BBWS/local government to make the public consultation meeting, if necessary. 		

(*1): "Budget necessary."
 (*2): "Enhanced" means XX % of related counter personnel in BBWS Brantas staff properly answers the questions of the questionn aire and interview. "XX" will be determined through the baseline survey.

Annex-2 Project Flowchart

Project Flowchart

<u> </u>		2023						2	024						20	25
	Output	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2
	and Work Plan															
ritie		Implement	tation Plan Work	Plan												
\ctiv	0.2 Activities for capacity		0					0			34			6	6	DFR
all /			Work P	an			Basic De	sign Comp l e	tion	Detailed Desig	n Completion Bio	lding documen	ts	Environmenta social consid	and erations	
Ne l		-														
- I	0.3 Reports											L				
											Monitoring	(Sheet		DER	Sheet	Completio
																Report
			1.1	Understandi	ing current	situation thr	ough field su	urveys, and	l collection o	f additional b	asic data f	rom the Mas	ter Plan and	i from the		
			2021	eruption da	ita											
0	tout 1		1.2 Analy	sis and und	erstanding	of the data (sediment, h	ydrological,	etc.) collect	ed in the "M	t. Semeru S	Sabo Master	Plan", whic	h is being ca	rried out as	part of
Th	e capacity to conduct		the prece	ding project	Informatio	on Collection	and Verific	ation Stud	y on Volcani	c Disaster Pi	revention in	East Java a	and Bali, Ind	onesia		
bas	ic research and		1.3	Assessing th	ne state of :	edimentatio	n and facilit	ty damage l	by field surve	y						
neo	ermation gathering essary to implement the															
det	ailed design of Sabo			Assessing th	ne implemer	tation plan a	and progress	s of the em	ergency res	oonse work t	hat has bee	en underway	since imme	diately after	the	
fac	ities will be strengthened			mber 2021 (eruption											
				1.5 Upda	ting data ar	d collection	of additions	al materials								
					-											
				1.6 Top	ographical a	surveys, exis	ting facility	measurem	ents, and geo	ological surve	eys are con	ducted for t	he purpose (of rehabilitat	ion and	
				Improve	ment planni	ng and desig	лот тле тас	inges	_							
				1.7	Analysis of	hydrological	/ sediment	data								
					1	+	l									
						1.8	Revision of f	the survey	implementat	ion plan, if n	cessary					
						A A	J									
Ou	tput 2															
tec	hnical specification and			2.1 Base	d on the re	sults of the	field survey,	data colle	ction and bas	sic investigat	ion, as well	as the plan	ning conditio	ons for struc	tural measur	es
loc	ation policy of the Sabo			establishe	ed in the "R I	leview Mater	Plan″ a rei	abilitation	policy for th	e targeted fa	cilities will	be develope	d			
Tac	ities will be strengthened					2.2 Proc	dures met	hode and a	chedules for	facility rahe	bilitetion ol	enning end d	lesim ere de	veloped		
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The	capacity to prepare															
det	ailed design for Sabo					3.2	Constructio	n plan								
fac	ities will be strengthened						•									
								3.3 Cost	estimate							
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0	tput 4								4.1							
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cor	isiderations is	design wor	k performed	under this	project					4.2						
str	engthened	4.2 Conte	nt of existin	g environme	ental survey	reports, inc	luding the p	erspective	of gender			ł				
		Considerat	tions (Janua	ry 2022)	otoA s G	araterines for	-uvironmen	nati ento 30	Undi			4.3				
		4.3 In ord	er to finalize	the detaile	d design, re	commendati	ons on envi	ronmental a	and social				ł			
		4.4 Supp	ort the orge	prepared nization of r	ublic cone	itations by F	BWS/local	authorities	is offered				4.4			
		as needed	or a talle of ga													
1																
1		I													1	

Annex-3 Assignment Plan (Final Version)
Annex-4 Activity of Training/Seminar

1	Minutes of Development	Meeting for at ff Mt Seme	the First Workshop for ru Volcanic Disaster Stru	• The Project For Capacity ctural Measures Planning
Corresponding	Activity in P	DM		Output 1
Year, month, d	ate 2	2024	February	2
Location	I	Batu Tegi Mee	ting Room DGWR Buildin	ng and Zoom Online
Participants				
Nan	ne	0	rganization, Department	, Section, Position
Mr. Leo Eliasta	a Sembiring	Directorate of	of Rivers and Coast (SUP.	AN)
Mr. Thomson		Directorate of	of Rivers and Coast (SUP	AN)
Mr. Taufik		Directorate of	of Rivers and Coast (SUP.	AN)
Mr. Hatta Puti	ra	Directorate of	of Rivers and Coast (SUP	AN)
Ms. Paula Swa	istika	Directorate of	of Rivers and Coast (SUP	AN)
Mr. Irvandi		Directorate of	of Rivers and Coast (SUP.	AN)
Ms. Safira		Directorate of	of Rivers and Coast (SUP.	AN)
Ms. Sevi Inasi	h	Directorate of	of Rivers and Coast (SUP	AN)
Ms. Anggun Et	tika. P	Directorate o	of Rivers and Coast (SUP	AN)
Ms. Silmi		Directorate o	of Rivers and Coast (SUP	AN)
Mr. Yudi	r1	Directorate o	of Rivers and Coast (SUP	AN)
Ms. Gauri A. K	artika	Directorate of Strategy (SS	of Water Resources Mana	gement System and
Mr. Agung Biz	ki Pordono	Directorate	of Water Resources Mana	romant System and
MIL Agung MIZ	KI I EI UAIIA	Strategy (SS	PSDA)	gement System and
Ms Nurfairi		Directorate of	of Water Resources Mana	gement System and
inio, i turiujii		Strategy (SSPSDA)		
Mr. M. Fathur	Rahman	Directorate of	of Water Resources Mana	gement System and
		Strategy (SS	SPSDA)	
Mr. Eka N. Ab	di	Sabo Dam Te	echnical Implementation	Unit (Balai Sabo)
Mr. Dedi Muni	r	Sabo Dam Te	echnical Implementation	Unit (Balai Sabo)
Msantosa San	dy P.	Sabo Dam Te	echnical Implementation	Unit (Balai Sabo)
Mr. Yubra Arna	asa	BBWS BRAN	NTAS	
Mr. Nizam Per	mana	BBWS BRAN	NTAS	
Ms. Ima Sholil	khati	BBWS BRAN	NTAS	
Ms. Rifatul Ur	nmah	BBWS BRAN	NTAS	
Mr. Irfan Nurd	liansyah	BBWS BRAN	NTAS	
Mr. Purnomo S	Sodiq	BBWS BRAN	NTAS	
Ms. Devi Eka	V	BBWS BRAN	NTAS	
Mr. M. Wildan	Arizal	BBWS BRAD	NTAS	
Mr. Yayan Rac	hmadi	BBWS BRAD	NIAS	
Mr. Takumi Is	uchiya	JICA HQ		
Mr. Hiroyuki r		JICA Expert	aio Office	
Ms. I. Kashina Ma. Haatin	ara	JICA Indone		
Ma Arvanti Ka	arling	IICA Export	Staff	
Mr. I. Vokokur	20	IICA Project	Toom	
Mr. Jihoon Lee	a m	JICA Project	Team	
Mr. H. Takosh	ima	JICA Project	Team	
Mr H Furnich	ni	JICA Project	Team	
Mr K Tsuiime		JICA Project	Team	
Mr Kusairi		JICA Project	Team	
Ms. Hefryan S	ukma	JICA Project	Team	

Mr. Goldman	JICA Project Team
Mr. Moh. Sultan	JICA Project Team
Mr. Moh. Arif	JICA Project Team
Mr. Ryan	JICA Project Team
Mr. A. Widarto	Indra Karya
Mr. Agung Wahyu	Indra Karya
Mr. Muflikhin	Indra Karya
Mr. Rhino Asgawi	Indra Karya
Mr. Junichi Fukushima	YEC Jakarta Office
Ms. Andina	YEC Jakarta Office

Contents of Activities

Semeru Project Kick-off Meeting

Speakers and Key Points:

1. Mr. Takumi Tsuchiya (JICA):

- The technical assistance provided for this major project is expected to help advancing the Semeru Project in the future.

2. Mr. Leem Jihoon (JICA Project Team):

- Capacity development project is scheduled to be completed by December 2024.

- The project will act as a bridge between the review master plan and the Sector Loan Project for the Semeru Volcano area.

- This phase aims to establish an autonomous system for Sabo project implementation.

The project design will take into account the existing sand mining activity in S2 and S4 areas.
Indicators to evaluate project goals are still being developed, with a preference for quantitative metrics.

- A minimum of six workshops are planned to support the project activities.

- LiDAR technology will accelerate surveys, providing reliable data.

3. Mr. Leo (PUSDA):

- Engineers will be available on standby throughout the project.

- Team members will only need to be mobilized to Surabaya during workshops.

- Emphasize on the importance of producing reliable and understandable design products.

- Design standards for Sabo facilities may be updated in line with new codes and information.

- A formal letter should be issued to involve DGWR staff and other counterparts.

- Data quality, especially LiDAR data, must be carefully checked before use.

4. Mr. Hendra (BBWS Brantas):

- The timeline must be rigidly followed to avoid delays.

- Equipment and office needs have been discussed and verbally agreed upon.

- The staff in charge will provide technical support in both Surabaya and Lumajang.

5. Ms. Kashihara (JICA):

- A formal letter may not be necessary, but clear communication with responsible parties is crucial.

- Project commencement could be delayed until March due to pending signing process.

6. Mr. Eka (Balai Sabo):

- Highlighted the importance of Balai Sabo's technical and historical expertise, referencing

lessons learned from Merapi.

- Balai Teknik Sabo will contribute its best engineers to the project.

- Emphasized the need to update Sabo knowledge and synchronize it with current scientific issues.

- There are risks associated with using LiDAR Fixed Wing Planes in the active volcano area.

7. Bintek:

- Reported issues with having inadequate PCs to process RAW data.

8. Mr. Thomson (PUSDA):

- Suggested inviting senior members of BBWS Brantas to contribute their historical knowledge.

- Proposed more frequent involvement of counterparts like PVMBG in the Semeru area.

9. Ms. Anggun (PUSDA):

- Mentioned a timeline gap in supervision and design processes due to delays in ICB procurement.

10. Mr. Yokokura (JICA Project Team):Sand mining activities have been included in the draft final report.

11. Balai Sabo (Balai Sabo):

- In Merapi, sediment is measured by PVMBG with LiDAR every two months, and this method could be applied to the Semeru project.

END







1	Minutes of Meeting for the 2 nd Workshop for The Project For Capacity Development ff Mt. Semeru Volcanic Disaster Structural Measures Planning				
Corres	sponding shop	Activity	iı	n Outpu	ut 1, Output 2, Output 3
Year, date	month,	2024	Ju	ne	11
Locati	ion	Batutegi	Me	eting Roc	om 7 th Floor PUPR Office and Online
Partic	rinants	Dututegi	1110		
1 ai tic	Name	2			Organization, Department, Section, Position
Mr. Le	eo Eliasta S	Sembiring		Director	rate River and Coastal
Mr H	atta Putra			Director	rate River and Coastal
Mr. Yı	uddi Yudist	ira		Director	rate River and Coastal
Mr. Ta	aufik			Director	rate River and Coastal
Ms. A	nggun Etik	a		Director	ate River and Coastal
Mr. W	ahyu Hariy	vanto		Director	ate River and Coastal
Ms. P	aula Swast	ika		Director	ate River and Coastal
Mr. Aı	rief Irvandi			Director	ate River and Coastal
Ms. S	avira Anisa	h		Director	ate River and Coastal
Ms. Ir	ndira Aisyal	h		Director	ate River and Coastal
Mr. Aş	gus Santoso)		Director	ate of Technical Management of Water Resources
Mr. Aş	gung Rizki	Perdana		Director	ate of Technical Management of Water Resources
Ms. S	ri Handini	Suprapti		BBWS I	Brantas
Mr. R	adia Zulfika	ar		BBWS I	Brantas
Mr. Yı	ubra Arnasa	a		BBWS I	Brantas
Ms. Ir	na Solikhat	zi		BBWS I	Brantas
Ms. R	ifatul Umn	nah		BBWS E	Brantas
Mr. G	antar Musi			BBWS I	Brantas
Candr	rayana				
Ms. D	ini Wulan l	Ramadhar	ni	BBWS I	Brantas
Mr. Ir	fan Nurdia	nsyah		BBWS I	Brantas
Mr. Pu	urnomo Soc	liq		BBWS I	Brantas
Mr. M	l. Wildan			BBWS I	Brantas
Msant	toso Sandy	Putra		Sabo Da	m Technical Implementation Unit (Balai Sabo)
Mr. D	edi Munir			Sabo Da	m Technical Implementation Unit (Balai Sabo)
Ms. M	laria Asunt	a Hana P.		Sabo Da	m Technical Implementation Unit (Balai Sabo)
Mr. In	ndragiri Kri	snangga		Sabo Da	m Technical Implementation Unit (Balai Sabo)
Mr. Ju	anji Yokoku	ra		JICA Pr	oject Team
Mr. H	isashi Furu	uchi		JICA Pr	oject Team
Mr. H	idehiro Tak	teshima		JICA Pr	oject Team
Mr. Le	eem Jihoon			JICA Pr	oject Team
Mr. K	usairi	ı		JICA Pr	oject Team
Mr. G	oldman Da	linsi		JICA Pr	oject Team
Mr. M	loh. Arif			JICA Pr	oject Team
Msult	an Cl			JICA Pr	oject Team
Ma D	erryan Suk	ma d A		JICA Pr	oject leam
Ma I	yan Muhan	imaa A.		JICA Pr	oject ream
Ma J	unichi Fuki	isnima		YEC L	
Mr. A	Widente			IEU Ja Indra V	
M_{m} M	uflikhin			Indra K	arya
1 TATU: TAT	ulliniiii			mura n	aiya

Mr. Bintang Akbar	Indra Karya	
Mr. Rhino Asgawi	Indra Karya	
Contents of Activities		

Texts

Basic Design Points

- The basic design of Semeru is based on RMP (Review Master Plan) 2024 which was finalized at the beginning of the year
- All tender documents must be completed no later than September 2024
- All Sabo facilities will be converted into open type dams, so they must be followed up with good OP activities. Large-scale OP should be carried out every 5 years until the sediment around the facility is excavated.
- Usually, basic design only consists of simple information related to dimensions, but this basic design is different because of the need to speed up work. This basic design contains more detailed information so that the tender process can be carried out immediately
- The volume of work which includes cut and fill between the time of work and the tender will be very dynamic, adapting to factual conditions in the field which are rapidly changing because they are greatly influenced by the frequency of eruptions and rainfall.
- S2 Package design will advance without waiting S4 geology survey finish.
- There must be OP road access from the basic design that will be finalized
- There must be an explanation about the area that is prohibited for mining activities in the design document
- Sediment transport must be considered in determining the elevation height of the embankment or dam
- 1. Question (Mr. Yubra from BBWS Brantas): Can the consultant (JICA Project Team) provide direction and guidance for the ideal sand mining location? We also need to consider the precast and modular material. Can these materials be used for main dam reconstruction?

Answer (Dr. Leo from Directorate River and Coastal): BBWS Brantas should coordinate with Balai Sabo for sand management. Ideally, a guide can be established for sand mining activities in Semeru during the project loan.

Regarding modular materials, there are several things that must be considered, including more difficult transportation, sub-dam protection, and the feasibility of the material itself.

Answer (Mr. Fukushima from YEC): Modular dam materials must be discussed and studied further because there are many things that must be considered. The location points for determining which dams use modular must also be analyzed properly.

The analysis will involve flow and sedimentation reviewing the conditions of existing and new facilities

2. Question (Mr. Yubra from BBWS Brantas): Is it necessary to hold an FGD (Focus Group Discussion) with the Lumajang regional government to discuss sand mining concessions?

Answer (Mr. Taufik from Directorate River and Coastal): It would be better to conduct an FGD (Focus Group Discussion) with the local government and discuss the issues that may emerge, including technical recommendations, location details and boundaries, details of heavy equipment and the number of vehicles operating per day.

Answer (Dr Leo from Directorate River and Coastal): There must be mining management with provincial coordination (accompanied by central government assistance)

3. Question (Ms. Anggun from Directorate River and Coastal): Does the design need to be legalized by the planning team? Another thing to pay attention to is environmental documents. Is there a need to upgrade the UKL/UPL (Environmental Management Monitoring) to AMDAL (Environmental Impact Assessment) if you look at the total sediment that will be accommodated in each facility?

Answer (Mr. Fukushima from YEC): Further information and conditions of existing environmental documents will be communicated.

Answer (Ms. Dini from BBWS Brantas): We have coordinated with the Lumajang district government and ensured that the location has UKL/UPL (Environmental Management Monitoring) documents. If there must be an upgrade from UKL/UPL (Environmental Management Monitoring) to AMDAL (Environmental Impact Assessment), it will be communicated further.

4. Question (Mr. Hatta from Directorate River and Coastal): Will the final product for tender use the DED or Basic design?

Answer (Mr. Fukushima from YEC): The tender will use basic design with dynamic adjustments along with the RPB (RPB = Cost Estimation) that will be implemented

5. Question (Mr. Yokokura from YEC): Can the consultant team proceed to the preparation of detailed design and tender document with the basic policy of facility design proposed in this work shop?

Answer (Dr. Leo from Directorate River and Coastal): Consultant team may proceed to the detailed design and tender document preparation with the policy and basic design that has been proposed.

END

Photography



Basic Design Meeting at Batutegi Room, PUPR-DGWR Building, $11\,^{\rm st}$ June 2024

Notes:

The meeting held hybrid in PUPR DGWR Building and Zoom

1 Draft Final Report for the Semeru Project Capacity Development.			
Corresponding Activity in PDM	All Activities		
Year, month, date 2025	anuary 20		
Location Hybrid (DG)	VR Office Building & ZOOM Meeting)		
Participants			
Name	Organization, Department, Section, Position		
Anggun Etika	Directorate of River and Coastal (Supan), Staff		
Farhan Putra Riyadi	Directorate of River and Coastal (Supan), Staff		
Irvandi	Directorate of River and Coastal (Supan), Staff		
Savira A	Directorate of River and Coastal (Supan), Staff		
Hatta Putra	Directorate of River and Coastal (Supan), Staff		
Juan Thalita	Directorate of River and Coastal (Supan), Staff		
Dessy Puji Arianti	Directorate of River and Coastal (Supan), Staff		
Anggi	Directorate of River and Coastal (Supan), Staff		
Ari Setyorini	Directorate of System and Strategic Management (<i>SS PSDA</i>), Head of Such Directorate for Management of Service and Counts		
	Sub Directorate for Management of Foreign Loans and Grants		
Gauri. A. Kartika	Directorate of System and Strategic Management (<i>SS PSDA</i>), Star		
Sil Handini Suprapti	BBWS, Head of Subdifictionale for River and Coastal BBWS Brantas		
Gantar Musi Candrayana, ST.	BBWS, SIVI Stall Water Resources Network Implementation		
Rif atul Umman, ST., MT.	BBWS, Head of the Implementation Team for River and Coastal		
Dini Wulan Ramadhani, S. I	BBWS, SIVE Staff Water Resources Network Implementation		
Ima Sholikhati, ST., MT	BBWS, Commitment Making Officer River and coastal I		
Irran Nurdiansyan	BBWS, Commitment Making Officer River and coastal I Staff		
Pramudya Widianto	BBWS, Staff of Water Resources Network Implementation Sector		
Sodiq Purnomo	BBWS, Commitment Making Officer River and coastal I Staff		
Devi Eka Vinatalia, S. I	BBWS, Commitment Making Officer River and coastal I Staff		
Galih	Balai Teknik Sabo, Staff		
Hanna	Balai Teknik Sabo, Staff		
Shoichiro Machida	JICA Indonesia		
Junji YOKOKURA	JICA Project Team		
	JICA Project Team		
Jihoon LEEM	JICA Project Team		
	JICA Project Team		
Kazuki ISUJIMOTO	JICA Project Team		
Hefryan K.	JICA Project Team		
Ryan Muhammad Az-Zuchruf	JICA Project Team		
Moh Sultan	JICA Project Team		
Moh Arif	JICA Project Team		
Goldman D	JICA Project Team		
Mochammad Syubbanul Muflikhin, S.T.	JICA Project Team (Indra Karya)		
Bintang Akbar Timur, S.Tr	JICA Project Team (Indra Karya)		
Ir. Achmad Widarto, M.T.	JICA Project Team (Indra Karya)		

Contents of Activities

Opening Remarks

JICA Project Team (Mr. Junji Yokokura)

• This meeting marks the final phase of the Semeru Capacity Development project. The team has compiled a draft final report, and all key aspects will be explained. Due to time constraints, the draft report will be sent to each counterpart via email.

JICA Representative (Mr. Takumi Tsuchiya)

- It is hoped that the new SABO engineering technology will be applied in future projects, including the master plan for Kelud Mountain.
- The STC strengthening plan will be discussed further after the completion of the draft final report on capacity development.

DGWR PUPR (Ms. Anggun Btika)

- Has the total sediment volume from the upstream area to the estuary (S1-S6 area package) been confirmed?
- The loan includes six project packages, but only two have been mentioned. It is necessary to assess and prepare for the sediment volume conditions.
- The SSPSDA Sub-Directorate will assist with the bidding process.

BBWS Brantas (Ms. Ima Solikhati)

- The final draft report has not yet been legalized.
- For future projects, design standards, methods, and criteria should be determined early to avoid prolonged discussions on these matters.
- The bidding process and procurement have already started in 2024, but authorization from BP2JK is still required. BP2JK urgently needs a letter from the lender to clarify this situation.

DGWR.PUPR (Ms. Anggi)

- The design criteria should be clearly defined and described in the report.
- The conceptual background (e.g., retention in the upstream area, control in the downstream area) must be determined for the next project.
- The conditions surrounding the SABO facility should be explained, including potential land acquisition requirements, social environment considerations, and other factors related to the SABO dam's lifespan.

JICA Project Team (Mr. Leem Jihoon)

• Only S2 and S4 will be executed in the near future, but the calculations have already been completed based on the Review Master Plan.

• Land Acquisition: The report only provides information on topography and other details. In summary, no land acquisition is required.

Comments, Q&A.

- The DED documents should be legalized as soon as possible by BBWS Brantas.
- Further innovation and new technologies should be explored to enhance the effectiveness of SABO facilities.
- For future projects, the consultant to be procured recommends conducting a LiDAR mapping survey.

END

Photography





Annex-5 Minutes of Meeting for Project Monitoring Meeting

MINUTES OF MEETING

ON

The PROJECT FOR CAPACITY DEVELOPMENT OF Mt. SEMERU VOLCNIC DESASTER STRUCTURAL MEASURE PLANNING

AGREED UPON BETWEEN

AUTHORITIES CONCERNED IN INDONESIA AND JAPAN INTERNATIONAL COOPERATION AGENCY AND PROJECT TEAM OF JAPAN INTERNATIONAL COOPERATION AGENCY

(JICA PROJECT TEAM)

Jakarta, May 31, 2024

Mr. okokura

Team Leader / Sabo Facilities Planning Engineer JICA Project Team

Mr. Nozomu Ono Senior Representative JICA Indonesia Office

Dr. Dwi Purwantoro, ST., MT., Director for Rivers and Coasts, Project Manager of the Project In response to the official request submitted by the Indonesian Government, the Record of Discussion (hereinafter referred to as "R/D") on The PROJECT FOR CAPACITY DEVELOPMENT OF Mt. SEMERU VOLCNIC DESASTER STRUCTURAL MEASURE PLANNING (hereinafter referred to as "the Project") was signed on October 4, 2023 between the Indonesian Side (Ministry of Public Works and Housing) and Japan International Cooperation Agency (hereinafter referred to as "JICA") (collectively hereinafter referred to as "Both Parties"). Based on the R/D, the Project commenced on December 25, 2023. In accordance with the Implementation Schedule of the Project, the Project Monitoring Meeting (hereinafter referred to as "PMM") was held on May 31, 2024.

During the meeting, both parties discussed the main points on the PMM as given in Appendix 1.

Appendix 1: Main Points Discussed Appendix 2: Q & A

Main Points Discussed

In this PMM meeting, following points were discussed and confirmed:

1. Verifiable indicators and means of verification of the Project Design Matrix (PDM)

- 1) Verifiable indicators and means of verification shown in Annex 1 are applied to the PDM in R/D.
- 2) Evidences for indicators can be documents, photos, etc. created by the counterparts. Verification of the evidences by DGWR is not compulsory.

2. Support for Enhancement of Sabo Technical Center (STC)

1) Additional Scope of the Project "Support for Enhancement of Sabo Technical Center (STC)" is as in the table below:

Assumed Activities in the Project	Expected support from PU
Analysis of the current situation and Goal setting with the view of human resource development in the field of Sabo and the development of Sabo technology in order to reduce the risk of sediment disasters in Indonesia	Setting the CP for this activity and identifying the STC personnel for future processes
Preparation of a draft roadmap for the improvement of Sabo technology in Indonesia based on the above-mentioned Goal setting and analysis of the current situation	Actively participating in the preparation of a draft roadmap
Preparation of a technical training curriculum and syllabus based on the above draft roadmap	Active involvement in developing the technical training curriculum and syllabus including setting target personals of the related departments / organizations of PU
Investigation of equipment and facility upgrades for STC to fulfill the role stipulated in the aforementioned draft roadmap in the medium to long term	Preparation of budget plan for operation / maintenance for the equipment and facility upgraded

 Counterparts for STC has been decided i.e., Balai Teknik Sabo (Mr. Sandy) and Director for Water Resources Engineering Development (Mr. Dani Hamdan). The counterparts are committed to actively participate in the SCT activities. Japanese side requested for the commitment by Indonesia side as follow:

- a) Establishment of STC as a firm organization with sufficient budget and the staffing.
- b) Plans to be prepared for the organizational structure and budget security so that the STC can continue its activities even after the temporary
- c) Not only to the making of the roadmap (draft) but also to the further activities for the enforcement of STC even after the Project.

Indonesia side is confirmed the followings:

- a) DGWR confirmed the PDM and agreed to prepare the evidences requested by JICA Project Team.
- b) Counterpart organization and personnel for STC have been decided, and they are to participate actively in STC activities.

Project Design Matrix (PDM)

1. PDM and evidence for endline survey

Dr. Leo (Head of Sub Directorate for Technical Planning) asked if evidences requested by JICA Project Team for the Questionnaire and endline survey scoring need to be specific and if the evidences need to be verified by DGWR in Jakarta.

Mr. Leem (JICA Project Team) explained that documents, photos, or pictures can be used as evidences with proper explanation from the personnel. Verification by DGWR is not compulsory.

Dr. Leo mentioned that the proposed PDM is acceptable.

2. Concern on language barrier

Mr. Hatta (Staff, Directorate of River and Coastal) explained his concern about language barrier between international experts and local staff / BBWS officials that might affect the knowledge transfer.

Mr. Leem answered that there will be no issues with language barrier since the Project has hired local staffs in Surabaya office (3 technical staffs and 2 administration staffs) who are fluent in English and they can assist their communication.

Sabo Technical Center (STC)

3. Whether the activities for STC need to be incorporated into the PDM, including the Questionnaire, or not

Mrs. Ari (Head of Sub Directorate for Management of Foreign Loans and Grants) mentioned that PDM and the questionnaire are generally acceptable.

Mrs Ali asked if the PDM can be modified in case there is additional scope regarding STC in the Project.

Mr. Tsuchiya (Assistant Director, Global Environment Dept., JICA) explained, 1) The main portion of this technical cooperation is detailed design of Mt. Semeru, hence STC issues have not been incorporated into the PDM, 2) STC may be added into an amended PDM, if desirable by DGWR.

Mrs. Ari asked if additional questionnaire related to STC can be included in the baseline survey.

Mr. Tsuchiya explained, 1) Questionnaire is aimed at quantifying the level/ability of counterpart's capacity in technical matters, 2) However, the output of additional activities related to STC is very clear, e.g. reports, roadmap, etc. 3) Hence,

evaluation of the output is easy, and incorporating STC into the Questionnaire is not essential.

Dr. Leo mentioned the Project will proceed with the current PDM so that the capacity of the counterpart personnel for designing the sabo structures may be strengthened.

4. Schedule of activities for STC and the need of period extension

Mrs. Ari asked about work schedule of STC activities.

Mrs. Kashihara (JICA Indonesia Office) explained that the Project is expected to finish in December 2024 and currently no extension is planned.

Mr. Tsuchiya added, 1) We have to discuss first what kind of output is expected, and then we can discuss the schedule, 2) At the same time, it is important to be aware that there is limitation to additional budgets for STC activities.

Dr. Leo concluded that it is crucial to have more detailed plan and a clear output expected to decide if the project period extension is required.

5. Counterpart for STC

Dr. Leo asked about the counterpart and contact persons for STC activity.

Mrs. Ari (Head of Sub Directorate for Management of Foreign Loans and Grants) explained that the counterparts are Balai Teknik Sabo (Mr. Sandy) and Director for Water Resources Engineering Development (Mr. Dani Hamdan).

Mr. Sandy (Analyst of Water Resources Management, Balai Teknik Sabo) explained that Balai Teknik Sabo is committed to actively participate in the preparation of draft of the roadmap.

4

Annex 1

Ver.1, Dated May 31th, 2024

Project Design Matrix (PDM) Project title: The Project for capacity development of Mt. Semeru volcanic disaster structural measures planning Duration: I Year Implementing Agencies: Directorate General of Water Resources, Ministry of Public Works and Housing (hereinafter referred to as "DGWR-MPWH") River Basin Organization for Brantas/Bala Besar Wilayah Sungai (hereinafter referred to as "BBWS") Brantas Target Areas: Jakata (HQ of DGWR-MPWH) and Selected Pilot River Basin in Mt. Semeru Target Group: DGWR-MPWH and BBWS Indirect beneficiaries: Indonesian Citizens

Narrative Summary	Verifiable Inc	licators	Means of Verification	Important Assumption
[Overall Goal] Sabo facilities are properly planned, designed and maintained in Indonesia	 In other areas outs including the other tw Sector Loan, plans implemented applying construction methods Project. Number of personne necessary for main facilities(*1) based or design and constru- provided as the Proj secured and increas those before the Proje 	ide Mt. Sumeru, to mountains in the and designs are g the processes and introduced in the I and the budget tenance of sabo or nenewed / revised tection technology zet's result will be e compared with ct.	 Project reports/documents of MPWH/DGWR Annual national budget report 	The economy growth of Indonesia is unchanged drastically from the current situation
[Project Purpose] Capacity for formulating detailed design of sabo facilities in the Semeru Volcano area will be strengthened.	 Understanding of the personnel on the processes to formulate sabo facilities is enhand. The draft bidding detailed designs offici MPWH/DGWR Construction permit is updated environmen report. 	related counterpart knowledge and detailed design for ced (*2). document / draft ially approved by obtained with the tal investigation	 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff The final report of the Project Finalized/Authorized bidding document Construction permit obtained with the updated environmental investigation report 	Current sediment control policies/strategies in Indonesia are not changed, and maintained.
 The capacity to conduct basic research and information gathering necessary to implement the detailed design of sabo facilities will be strengthened. 	 1.1 Understanding of the percosmel on the processes to conduct information gatherin implement the detail facilities is enhanced 1.2 Topographic survey survey is completed. 	related counterpart knowledge and basic research and ng necessary to ed design of sabo (*2). and geological	 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff Topographic survey report and geological survey report 	Turnovers of technical personnel who are trained do not much occur.
 The capacity to review sabo facility specifications and facility locations based on field survey results is strengthened. 	 Understanding of the personnel on the processes to revie specifications and based on field survey (*2). Sabo facility specific locations are identified. 	related counterpart knowledge and w sabo facility facility locations results is enhanced ations and facility d.	 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff Design Report 	
 The capacity to prepare detailed design for sabo facilities is strengthened. 	 Understanding of the personnel on the processes to prepare of sabo facilities is enhand and the context of the sabo facilities is enhand to cost estimate and document are prepare of the sabo facilities of the sabo fa	related counterpart knowledge and detailed design for need (*2). construction plan, draft bidding d.	 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff Design report, Engineering estimation, Draft bidding document 	
4 The capacity to prepare environmental and social considerations is strengthened	 4.1 Understanding of the personnel on the processes to prepare environmental and sc are enhanced (*2). 4.2 The existing environm report is updated guideline. 	related counterpart knowledge and the document of ocial consideration tental investigation based on JICA	 4.1 Baseline survey and end line survey with questionnaire and interview toBBWS Brantas staff 4.2 Updated environmental investigation report based on JICA guideline 	
 [Activities] (Activities for achieving Output 1) Field survey, information gathering and basic invsurveying, geological survey, laboratory testing, etc 1.1Understanding current situation through field additional basic data from the Master Plan ar eruption data 1.2 Analysis of the data (sediment, hydrological, Semeru Sabo Master Plan", which is being preceding project "Data Collection Surva Reduction in East Java and Bali Islands" 1.3 Assessing the current condition of sedimentatifield survey. 1.4 Assessing the implementation plan and pr response work that has been underway sit December 2021 erunging 	restigation (topographical .) surveys, and collection of d from the 2021 and 2022 etc.) collected in the "Mt. carried out as part of the ey on Volcanic Disaster ion and facility damage by ogress of the emergency ice immediately after the	[Inputs] [Indonesian Sidd 1. Counterparts 1) Staff of Direct Development 3) Staff of Direct System and Str 4) Staff of Direct System and Str 4) Staff of Tech Dams 5) Staff of Riv (BBWS Branta 2. Project Office : 1) Office space: Jakarta and E Surabaya. 2) Utilities (elec	el orate of Rivers and Coasts orate of Water Resources Engineering prate of Water Resources Management rategy nical Implementation Unit for Sabo er Basin Organization for Brantas (s) and necessary utilities in DGWR-MPWH office space in Brantas office space in Lumajang and etricity, water, tele communication /	 [Pre-conditions] Activities of the Project are not restricted due to COVID-19. Disastrers which cause serious damages do not occur.

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Ver.1, Dated May 31th, 2024

1.5 U 1.6 U 1.6 Tc s i 1.7 A S 1.8 Ref (Activit Revice field s 2.1 Ba c 2.1 Ba c 2.1 Ba c 3.1 Ref (Activiti Detail 3.1 D 3.1. 3.1. 3.1. 3.2 Cc 3.2. 3.2. 3.3 Cc 3.3. 3.3. 3.4 Pr 3.4. 3.	pdating data and collection of additional materials opographical surveys, existing facility measurements, and geological surveys are conducted for the purpose of rehabilitation and mprovement planning and design of the facilities. nalysis of the sediment, hydrological, etc. collected from the field surveys mentioned in 1.6 activities. evision of the survey implementation plan, if necessary ities for achieving Output 2) wing of sabo facility specifications and facility locations based on survey results sed on the results of the activities in output 1, as well as the planning conditions for structural measures established in the "Semeru Voleano Master Plan", sabo facility specifications and facility locations are eviewed. seedieves, methods, and schedules for incorporating field survey sults into facility planning are considered. set for achieving Output 3) ted Design sign 1 The appropriateness of each construction of facilities is explained, the design conditions of each facility are studied, and stability / structural calculations are conducted. 2 Draft detailed design is conducted for each package of facilities (seven facilities from two packages are assumed). 3 Alternative consideration such as facility layout, scale and effective amount are conducted as value engineering by taking into account environmental and social impacts. postruction plan 1 The construction schedule, materials / equipment delivery method, temporary works, safety measures, and construction plan for each facilities is developed. 2 Based on the detailed design results, a construction plan for each facilities is developed. 2 Based on the detailed design results, a construction plan for each facilities is developed. 2 Based of the bidding documents 1 The cost of construction is estimated and compiled as an engineering cost estimate. 2 Darft bidding documents is prepared for each construction package 2 Draft bidding documents is prepared for each construction package	internet, security) for the office spaces 3. Local Project Expenses 1) Expenses for Project activities including allowance/travel costs for CPs 2) Expenses for Project Monitoring Meeting and Technical Working Unit such as venues and travel costs for lecturers and participants 3) Data provision [Japanese Side] 1. Dispatch of Experts 1) Leadert/Sabo Facilities Planning Engineer/ Environmental and Social Consideration 2) Sabo Facilities Design Engineer 3) Topographic/Geological Specialist 4) Cost/Bidding Document Specialist 5) Project Coordinator 6) Environmental and Social Consideration Specialist	
3.4.	discussion with DGWR 2 Draft bidding documents is prepared for each construction package		
(Activită Environn 4.1 Wi con the pro 4.2 Ti ma En 4.3 F con 4.4 As	es for achieving Output 4) mental and Social Considerations th respect to construction permits already obtained, information on nstruction details, construction methods, etc. are compiled based on t results of the draft detailed design work performed under this oject. he existing environmental investigation report including gender unstreaming perspective will be updated based on JICA guideline on vironmental and Social Considerations in Jan. 2022. Recommendation is prepared for environmental and social nsiderations for finalizing Detailed Design. sisting BBWS/local government to make the public consultation to the public consultation to the public consultation withing if necessary.		

- mecting, it necessary.
 (*1): "Budget necessary for maintenance of sabo facilities" will be determined through the implementation of Detailed Design in the Project.
 (*2): "Enhanced" means XX % of related counter personnel in BBWS Brantas staff properly answers the questions of the questionnaire and interview. "XX" will be determined through the baseline survey.

(End of document)

Attachment: Attendance List and Presentation Materials

Attendance List:

Nó	Name	Institutions/	Position
DG	NR – Directorate General of Wa	ater Resources	
1	Mr. Leo Eliasta Sembiring		Head of Sub Directorate for
			Technical Planning
2	Ms. Paula Swastika		Staff
3	Mr. Irvandi	Directorate of River and	Staff
4	Ms. Safira	Coastal (Supan)	Staff
5	Ms. Sevi Inasih		Staff
6	Mr. Hatta Putra		Staff
7	Ms. Ari Setyorini	Directorate of System	Head of Sub Directorate for
		and Strategic	Management of Foreign Loans
		Management (SS	and Grants
8	Ms. Gauri A. Kartika	PSDA)	Staff
9	Mr. Agung Rizki Perdana	Director for Water	Staff, Water Resources
		Resources Engineering	Management
		Development	
10	Ms. Ima Sholikhati		Commitment Making Officer
			(PPK) River and Coastal 01
11	Ms. Rifatul Ummah, ST., MT.		Chair of the Implementation
			Team for the River and Coastal
		BBWS Brantas	Implementation Control
12	Mr. Irfan Nurdiansyah	BBITO Brantas	Technical Staff
13	Mr. Purnomo Sodiq		Technical Staff
14	Ms. Devi Eka Vinatalia		Technical Staff
15	Mr. M. Wildan Arizal		Individual consultant
16	Mr. Yayan Rachmadi Utomo		Individual consultant
17	Mr. Santosa Sandy Putra, ST.,	Sabo Technical	Analyst of Water Resources
	M.Sc., Ph.D.	Implementation Unit	Management Trackalaria (Chaff of Mator
18	Mr. Moh Dedi Munir	(Balal Teknik Sabo)	Reconical Stall of Water
110	(law on laternational Cooners	tion Agonovi)	Resources Management
JICA	A (Japan International Coopera		Assistant Director DPP Group
19	Mr. Takumi Tsuchiya	JICA HQ	Global Environment Dent
20	Mr. Fiii Otouki		Soniar Adviser
20	Mr. Eiji Otsuki	JICATIQ	Global Environment Dent
21	Me Tomoko Kashihara	IICA Indonesia	Ciosai Environment Dept.
21			
22	Hastin. C. Diantara	JICA Indonesia	Staff
23	Mr. Hiroyuki Yamamoto	JICA Expert Indonesia	JICA Expert SDA PUPR
24	Dyas	JICA Expert Indonesia	Technical Staff
JIC/	A Project Team		
25	Junji Yokokura	Team Leader	Via Zoom
26	Leem Jihoon	Co-team Leader	
27	H. Takeshima	Team member	Via Zoom
28	K. Tsujimoto	Team member	Via Zoom
29	Hisashi Furuichi	Team member	Via Zoom
30	Hefryan Sukma Kharismalatri	Team member	
31	Junichi Fukushima	YEC Office	Via Zoom
32	Goldman Dalinsi	Local Staff	Via Zoom
33	Ryan Muhammad Az-zuchruf	Local Staff	
34	Moh. Arif	Local Staff	Via Zoom

7

35	Sultan	Local Staff	Via Zoom	
36	Agung Wahyu Widodo	Local Staff	Via Zoom	
37	Achmad Widarto	Local Staff	Via Zoom	
38	Rhino Agaswi	Local Staff	Via Zoom	
39	Mochammad Syubbanul Muflikhin	Local Staff	Via Zoom	

Presentation Materials:

It will be attached

MINUTES OF MEETING ON THE PROJECT FOR CAPACITY DEVELOPMENT OF MT. SEMERU VOLCANIC DISASTER STRUCTURAL MEASURE PLANNING

AGREED UPON BETWEEN

AUTHORITIES CONCERNED IN INDONESIA AND JAPAN INTERNATIONAL COOPERATION AGENCY AND PROJECT TEAM OF JAPAN INTERNATIONAL COOPERATION AGENCY

(JICA PROJECT TEAM)

Jakarta, January 20, 2025

Mr. Junji Yokokura

Team Leader / Sabo Facilities Planning Engineer JICA Project Team

Dr. Dwi Purwantoro, ST., MT.,

Dr. DWI Purwantoro, S I., Wi I. Director for Rivers and Coasts, Project Manager of the Project

Mr. Takumi Tsuchiya Assistant Director Disaster Risk Reduction Group Global Environment Department Japan International Cooperation Agency (JICA) In response to the official request submitted by the Indonesian Government, the Record of Discussion (hereinafter referred to as "R/D") on The PROJECT FOR CAPACITY DEVELOPMENT OF Mt. SEMERU VOLCNIC DESASTER STRUCTURAL MEASURE PLANNING (hereinafter referred to as "the Project") was signed on October 4, 2023 between the Indonesian Side (Ministry of Public Works and Housing) and Japan International Cooperation Agency (hereinafter referred to as "JICA") (collectively hereinafter referred to as "Both Parties"). Based on the R/D, the Project commenced on December 25, 2023. In accordance with the Implementation Schedule of the Project, the Project Monitoring Meeting (hereinafter referred to as "PMM") was held on January 20, 2025.

During the meeting, both parties discussed the main points on the PMM as given in Appendix 1.

Appendix 1: Main Points Discussed Appendix 2: Q & A Annex 1: Project Design Matrix (PDM) Attendant List Presented materials by the Japanese expert

Main Points Discussed

- 1. In this PMM meeting, The Japan Expert Team (hereinafter, the Team) reported on the Project activities. Following points were discussed and confirmed (Refer to PDM in Annex 1):
 - (1) Achievement of Output 1~4
 - 1) As a result of analyzing and evaluating the verifiable indicators provided by PDM, it was confirmed that Output 1~4 has been achieved.
 - 2) In order to evaluate "Understanding of the related counterpart personnel on the knowledge and process on the activities for the respective outputs", which is defined as a verifiable indicator in PDM, baseline survey and an endline surveys were conducted on C/P, to analyze the change in capacity before and after the project implementation.
 - (2) Achievement of Project Purpose As a result of analyzing and evaluating the verifiable indicators described in the PDM, it was confirmed that the project purpose has been achieved.
 - (3) Recommendation for achieving the overall goal Recommendations for achieving the Overall Goal were explained by the expert team from Japan and agreed upon by the participants. Major points of the recommendations are as follow:

For Indicator 1

- 1) Sharing and accumulation of technology strengthened through this project:
 - Dissemination of knowledge acquired within the Ministry of Public Works
 - Development of guidelines for planning, design and maintenance
- 2) Human resource development

For Indicator 2

- 1) Securing the necessary personnel
- 2) Securing the budget:
 - Positioning disaster prevention as a priority development policy in RPJMN and allocating the national budget accordingly.
 - Investing in SABO within DGWR.
 - Utilizing diverse external funds in addition to the national budget.
- (4) It was reported that the management of sand mining is important for the maintenance of the facility, and that measures were recommended to the BBWS during the implementation of the project. This issue needs to be addressed with caution in the future.
- 2. Support for STC roadmap development is provided as an additional activity to the Project activities described in the PDM. A draft report on STC roadmap development will be submitted in early February, and a seminar will be held in late February. The Team requested the Indonesian side to input their ideas/opinions into the draft report.

1. Technology transfer and human resources development

Mr. Takumi Tsuchiya (JICA HQ) inquired whether the technology transfer and human resource development achieved through this project have been applied to the relevant areas.

Ms. Anggun (Directorate of River and Coasts) explained that the knowledge and technology acquired during this project will be utilized in the upcoming loan project. Additionally, human resource development will be further enhanced in alignment with the STC subproject. To ensure successful implementation, inputs and feedback from both parties are considered essential.

2. Technical guidelines

Ms. Anggun asked if the planning and design guideline for sabo facilities will be prepared in the near future. Preparation for the operation and maintenance guideline of sabo facilities is also needed, and asked which organization will prepare the guideline.

Mr. Leem (JICA Project Team) explained that for the time being, only the guidelines of Japan are available as reference. DGWR need to develop the guidelines.

3. **Preparation for implementation of the sector loan**

Mr. Machida (JICA Indonesia) explained that the Volcanic Disaster Risk Reduction Sector Loan Project has been agreed on December 24. Preparation for its implementation is expected to be started immediately.

Annex 1

Ver.1, Dated May 31th, 2024

Project Design Matrix (PDM) Project title: The Project for capacity development of Mt. Semeru volcanic disaster structural measures planning Duration: 1 Year Implementing Agencies: Directorate General of Water Resources, Ministry of Public Works and Housing (hereinafter referred to as "DGWR-MPWH") River Basin Organization for Brantas/Bala Besar Wilayah Sungai (hereinafter referred to as "BBWS") Brantas Target Areas: Jakarta (HQ of DGWR-MPWH) and Selected Pilot River Basin in Mt. Semeru Target Group: DGWR-MPWH and BBWS Indirect beneficiaries : Indonesian Citizens

Narrative Summary	Verifiable Ind	icators	Means of Verification	Important Assumption
[Overall Goal] Sabo facilities are properly planned, designed and maintained in Indonesia	 In other areas outsi including the other two Sector Loan, plans implemented applying construction methods Project. Number of personnel necessary for maini facilities(*1) based on design and constru- provided as the Proje secured and increase those before the Projet 	de Mt. Sumeru, o mountains in the and designs are the processes and introduced in the and the budget tenance of sabo renewed / revised ction technology ct's result will be e compared with ct.	 Project reports/documents of MPWH/DGWR Annual national budget report 	The economy growth of Indonesia is unchanged drastically from the current situation
[Project Purpose] Capacity for formulating detailed design of sabo facilities in the Semeru Volcano area will be strengthened.	I. Understanding of the related counterpart personnel on the knowledge and processes to formulate detailed design for sab facilities is enhanced (*2). The draft bidding document / draft detailed designs officially approved by MPWH/DGWR Gonstruction permit is obtained with the updated environmental investigation report		 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff The final report of the Project Finalized/ Authorized bidding document Construction permit obtained with the updated environmental investigation report 	Current sediment control policies/strategies in Indonesia are not changed, and maintained.
[Outputs] The capacity to conduct basic research and information gathering necessary to implement the detailed design of sabo facilities will be strengthened. 	 Understanding of the r personnel on the processes to conduct l information gatherin implement the detail facilities is enhanced (Topographic survey survey is completed. 	elated counterpart knowledge and basic research and ig necessary to ed design of sabo (*2), and geological	 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff Topographic survey report and geological survey report 	Turnovers of technical personnel who are trained do not much occur.
 The capacity to review sabo facility specifications and facility locations based on field survey results is strengthened. 	 2.1 Understanding of the r personnel on the processes to review specifications and based on field survey r (*2). 2.2 Sabo facility specifications are identified 	elated counterpart knowledge and w sabo facility facility locations results is enhanced ations and facility d.	 2.1 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff 2.2 Design Report 	
 The capacity to prepare detailed design for sabo facilities is strengthened. 	Iocations are identified. yr 3.1 Understanding of the related counterpain personnel on the knowledge and processes to prepare detailed design for sabo facilities is enhanced (*2). 3.2 Draft detailed design, construction plan cost estimate and draft biddin		 3.1 Baseline survey and end line survey with questionnaire and interview to BBWS Brantas staff 3.2 Design report, Engineering estimation, Draft bidding document 	
4 The capacity to prepare environmental and social considerations is strengthened	 4.1 Understanding of the r personnel on the processes to prepare environmental and so are enhanced (*2). 4.2 The existing environm report is updated guideline. 	elated counterpart knowledge and the document of cial consideration ental investigation based on JICA	 4.1 Baseline survey and end line survey with questionnaire and interview toBBWS Brantas staff 4.2 Updated environmental investigation report based on JICA guideline 	
 [Activities] (Activities for achieving Output 1) Field survey, information gathering and basic invsurveying, geological survey, laboratory testing, etc 1.1Understanding current situation through field additional basic data from the Master Plan ar eruption data 1.2 Analysis of the data (sediment, hydrological, Semeru Sabo Master Plan", which is being preceding project "Data Collection Surva Reduction in East Java and Bali Islands" 1.3 Assessing the current condition of sedimentatifield survey. 1.4 Assessing the implementation plan and pr response work that has been underway sir December 2021 eruntion. 	restigation (topographical) surveys, and collection of d from the 2021 and 2022 etc.) collected in the "Mt. carried out as part of the ey on Volcanic Disaster ion and facility damage by ogress of the emergency ice immediately after the	[Inputs] [Indonesian Sidd 1. Counterparts 1) Staff of Direct Development 3) Staff of Direct System and Str 4) Staff of Direct System and Str 4) Staff of Rive Dams 5) Staff of Riv (BBWS Branta 2. Project Office 1) Office space Jakarta and F Surabaya. 2) Utilities (ele	e] orate of Rivers and Coasts orate of Water Resources Engineering prate of Water Resources Management rategy nical Implementation Unit for Sabo er Basin Organization for Brantas (s) and necessary utilities in DGWR-MPWH office space in Brantas office space in Lumajang and ctricity, water, tele communication /	 [Pre-conditions] Activities of the Project are not restricted due to COVID-19. Disasters which cause serious damages do not occur.

Ver.1, Dated May 31th, 2024

 S Updating data and collection of additional materials Topographical surveys, existing facility measurements, and geological surveys are conducted for the purpose of rehabilitation and improvement planning and design of the facilities. A Analysis of the sediment, hydrological, etc. collected from the field surveys mentioned in 1.6 activities. Revision of the survey implementation plan, if necessary (Activities for achieving Output 2) Reviewing of sabo facility specifications and facility locations based on field survey results Based on the results of the activities in output 1, as well as the planning conditions for structural measures established in the "Semeru Volcano Master Plan", sabo facility specifications and facility locations are reviewed. Procedures, methods, and schedules for incorporating field survey results into facility planning are considered. (Activities for achieving Output 3) Detailed Design 1.1 Design 3.1.1 Dre appropriateness of each construction of facilities is explained, the design conditions of each facility are studied, and stability / structural calculations are conducted. 3.1.2 Draft detailed design is conducted for each package of facilities (seven facilities from two packages are assumed). 3.1.3 Altemative consideration such as facility layout, scale and effective amount are conducted as value engineering by taking into account environmental and social impacts. 2.2 Dased on the detailed design results, a construction plan for each facilities is developed. 3.2.1 The construction schedule, materials / equipment delivery method, temporary works, safety measures, and construction plan for each facilities is developed. 3.2.2 Dast of construction is estimated and compiled as an engineering cost estimate. 3.4.1 The conditions of the bidding documents are determined by dis	internet, security) for the office spaces 3. Local Project Expenses 1) Expenses for Project activities including allowance/travel costs for C/Ps 2) Expenses for Project Monitoring Meeting and Technical Working Unit such as venues and travel costs for lecturers and participants 3) Data provision [Japanese Side] 1. Dispatch of Experts 1) Leader/Sabo Facilities Planning Engineer/ Environmental and Social Consideration 2) Sabo Facilities Design Engineer 3) Topographic/Geological Specialist 4) Cost/Bidding Document Specialist 5) Project Coordinator 6) Environmental and Social Consideration Specialist	
meeting, if necessary. (*1): "Budget necessary for maintenance of sabo facilities" will be determined	through the implementation of Detailed Design in the Project.	
(\$2): "Enhanced" means VV % of related counter personnel in DDWC Denter	staff properly answers the questions of the questionnain and interview.	373710

(*2): "Enhanced" means XX % of related counter personnel in BBWS Brantas staff properly answers the questions of the questionnaire and interview. "XX" will be determined through the baseline survey.

Attendance List:

No	Name	Institutions/ Division	Position
DGWR – Directorate General of Water Resources			
1	Ms. Anggun Etika	Directorate of River and Coastal <i>(Supan)</i>	Staff
2	Mr. Farhan Putra Riyadi		Staff
3	Mr. Irvandi		Staff
4	Mr. Savira A		Staff
5	Mr. Hatta Putra		Staff
6	Ms. Gauri A Kartika	Directorate of System and Strategic Management (SS PSDA)	Staff
7	Ms. Ari Setyorini		Head of Sub Directorate for
			Management of Foreign Loans and
			Grants
8	Ms. Sri Handini Suprapti Ms. Ima Solikhati	BBWS Brantas	Head of Sub Directorate for River
			and Coastal BBWS Brantas
9			Commitment Making Officer (PPK)
			River and Coastal 01
10	Mr. Gantar Musi Chandra		Technical Staff
11	Ms. Rifatul Ummah		Chair of the Implementation Team for
			the River and Coastal
			Implementation Control
12	Ms. Dini Wulandari Ramadhani		Technical Staff
13	Ms. Devi Eka		Technical Staff
14	Mr. Radia Zulfikar		Technical Staff
15	Mr. Habibur Rohman		Technical Staff
JICA (Japan International Cooperation Agency)			
16	Takumi Tsuchiya	JICA HQ	
17	Soichiro Machida	JICA INDONESIA	
JICA Project Team			
18	Junji Yokokura	JICA Project Team	
19	Leem Jihoon	JICA Project Team	
20	H. Takeshima	JICA Project Team	
21	Izumi Shiraishi	JICA Project Team	
22	Junichi Fukushima	JICA Project Team	
23	Hefryan Sukma Kharismalatri	JICA Project Team	
24	Ryan Muhammad Az-zuchruf	JICA Project Team	
25	Moh. Sultan	JICA Project Team	

Presentation Materials:

It will be attached

Annex-6 Other Activity Records
Date	Place	Activities	Participants from
2024	1 1000		Indonesian side
Jan.16	BBWS Brantas.	Coordination Meeting for Capacity	Head of BBWS
U uniti o	Surabaya	Development	Brantas, PPK of BBWS
	2	I I I I I I I I I I I I I I I I I I I	Brantas
Jan.30	BBWS Brantas,	Discussion for Site Survey Results	Head of BBWS
	Surabaya	and Design Policy	Brantas, PPK of BBWS
	2		Brantas
Feb.26	BBWS Brantas,	Kick Off Meeting for Geological and	PPK of BBWS Brantas,
	Surabaya	Topographical Survey	C/P of BBWS Brantas
Mar.4	BBWS Brantas,	Follow-up Meeting for Geological	PPK of BBWS Brantas,
	Surabaya	and Topographical Survey	C/P of BBWS Brantas
Mar.28	BBWS Brantas,	Discussion for Basic Policy Design 1	PPK of BBWS Brantas,
	Surabaya		C/P of BBWS Brantas
May.6	BBWS Brantas,	Discussion for Basic Policy Design 2	PPK of BBWS Brantas,
-	Surabaya		C/P of BBWS Brantas
May.8	Lumajang,	Meeting with Local Government	Local Government,
•	East Java	(Agencies) related to Land	PPK of BBWS Brantas,
		Ownership	C/P of BBWS Brantas
May.15	BBWS Brantas,	Discussion for Basic Policy Design 3	PPK of BBWS Brantas,
-	Surabaya		C/P of BBWS Brantas
Jul.1	East Java Province	Discussion with the Energy and	East Java Province
	Public Works Office	Mineral Resources Agency for East	Public Works Office for
	for Water Resources,	Java Province for Area	Water Resources,
	Surabaya, East	Package S2 and S4: Mining and	ESDM Office of East
	Java	Construction Strategies	Java Province, PPK of
			BBWS Brantas, C/P of
			BBWS Brantas
Aug.29	East Java Province	Technical Recommendation/ Request	East Java Province
	Public Works Office	for Water Resource Use Permit for	Public Works Office for
	for Water Resources,	the Reconstruction of the Sabo Dam	Water Resources,
	Surabaya, East	in Rejali River by BBWS Brantas	ESDM Office of East
	Java		Java Province, PPK of
			BBWS Brantas, C/P of
			BBWS Brantas
Sep. 4	Lumajang Regency	Coordination meeting related to	Environmental Services
	Environmental	UKL-UPL documents for the	of Lumajang Regency,
	Services, Lumajang,	Reconstruction of the Sabo Dam in	C/P of BBWS Brantas
	East Java	Rejali	
a 15	DDUIGD	River by BBWS Brantas	
Sep. 17	BBWS Brantas,	Follow-up on capacity building	PPK of BBWS Brantas,
	Surabaya	activities related to Output 1	C/P of BBWS Brantas
		(survey) and Output 2 (basic	
		design)	
Sep. 18	BBWS Brantas,	Follow-up on capacity building	PPK of BBWS Brantas,
	Surabaya	activities related to Output 3	C/P of BBWS Brantas
Sep. 19	East Java Provincial	Administrative coordination on sand	BBWS Brantas
	Government, Surabaya	mining activities in Mt . Semeru	East Java Provincial
			Government
Dec. 20	BBWS Brantas,	Capacity building activities related	PPK of BBWS Brantas,
	Surabaya	to Output 4 (Environmental	C/P of BBWS Brantas
		considerations)	

1 Coordination Meeting for Capacity Development with Head of BBWS Brantas						
Corresponding Activity in PDM			All Ou	itputs		
Year, month,	2024	Jar	nuary	16		
date						
Location	BBWS B	ranta	as Head's	s Meeting Room		
Participants						
Nam	ie			Organization, Department, Section, Position		
Hendra Ahyadi S	S.T, M.T,		Head of BBWS Brantas			
Yubra Arnasa			BBWS Brantas			
Sri Hardini Suprapti			BBWS B	Brantas		
Ima Sholikhati			BBWS E	Brantas		
Junichi Fukushima			JICA Pro	oject Team		
Jihoon Leem			JICA Pro	oject Team		
Goldman Dalinsi			JICA Project Team			
Hefryan K			JICA Project Team			
Ryan Az-Zuchruf			JICA Project Team			
Moh Arif			JICA Project Team			
Moh Sultan			JICA Project Team			
Contents of Activities						

This meeting was held between Head of BBWS Brantas with staff and The JICA Project Team for the Capacity Development of Mt. Semeru Volcanic Disaster Structural Measure Planning Project, the main points from the discussion are as follows:

- BBWS Brantas expected the completion of the necessary documents necessary for tender preparation of the S2 and S4 packages by August 2024. This timeline will ensure that the mentioned packages can be tendered and executed promptly. However, acknowledging the challenging timeline, it has been mutually agreed to proceed with the S2 by August 2024 and subsequently finish the S4 documents by the conclusion of TA Services at the end of 2024.
- BBWS Brantas expected the Basic Design to be used as a procurement document as this case has been applied for JICA Loan IP:580 work schemes. The environmental documentation (UKL-UPL) for this project has been completed by BBWS Brantas.
- The Mt. Semeru Review Master Plan (RMP) is in its final preparation stages. However, the JICA Project Team proposed that there is an urgent need to initiate the RMP for Mt. Kelud and Mt. Agung, as the existing Master Plan no longer accurately reflects the current conditions at these sites.
- BBWS Brantas agreed to use the LiDAR data from BINTEK for the design phase, but the formal release of this data is still pending. To accelerate the process, it is recommended that BBWS Brantas communicate with BINTEK so that JICA Project Team can proceed and subsequently report to JICA accordingly.
- BBWS Brantas requested the additional contract value (10% additional from its initial value) does not need to be explicitly specified in procurement documents, allowing for flexible interchangeability within packages.
- BBWS will provide offices for the site and main office. However, BBWS is unable to cover the running costs due to budget constraints within the organization.

PHOTOGRAPH



1	1 Meeting for Site Survey Results and Design Policy						
Corresponding Activity in PDM				I Outpu	it 1, Output 2		
Year,	month,	2024	Jar	nuary	30		
date							
Locati	ion	Meeting	Roo	m, BBWS	S Brantas		
Partic	ipants						
	Name	9		Organization, Department, Section, Position			
Mr. H	endra			BBWS Brantas			
Mrs. Ima				BBWS Brantas			
Mrs. Dini				BBWS E	Brantas		
J. Yokokura				JICA Pr	oject Team		
J. Lee	m			JICA Project Team			
H. Fu	ruichi			JICA Project Team			
Hefryan K				JICA Project Team			
Goldman D				JICA Project Team			
M. Arif				JICA Project Team			
M. Sultan				JICA Project Team			
Conte	Contents of Activities						

This meeting was held between the Head of BBWS Brantas with staff and the JICA Project Team for the Capacity Development of Mt. Semeru Volcanic Disaster Structural Measure Planning Project, the main points from the discussion are as follows:

Site Survey Condition Report							
Location	Outlines	Correspondence					
S2-1	JICA Project Team reported that: - There are no significant change since last survey conducted on July 2023 - Dam on right bank side completely washed out						
S2-2	 JICA Project Team reported that: No significant changes have been observed since the last survey in July 2023. The dam exhibits relatively good concrete, with a well-exposed basement rock. Two points of discussion with the experts in Japan: Selecting the conduit type based on site conditions. Determining whether the dams will undergo reconstruction or rehabilitation. 	BBWS Brantas suggests continuing the use of bypass facilities, with the JICA Project Team determining the position based on a safety approach. The current plan is to construct the in the upstream side behind the wing, with a plan similar to the Omu dam in Palu Loan Project					

S2-3	 JICA Project Team reported the following: No significant changes have been noted since the last survey in July 2023. A temporary conduit dike was initially constructed but washed out. It was later rebuilt in its present location. JICA Team explained that the issue with S2-3 is determination of the dike's height and type. Current dike height is 3 meters. Technical issues and other consideration will be discussed and presented later after consultation with the experts in Japan. BBWS Brantas suggest as follows: In the image of S2-3, the red line of the dike should not be present in 2014-2022. The dike was constructed in the end of 2022, therefore it shall not be present in the images prior to it. Hence, the chronology of the damage and emergency works will be clear and easy to understand. 	The counterpart (BBWS Brantas) comprehended these issues and have no objections.
S2-4	 JICA Project Team reported the following: No significant change since the last survey (July 2023) Dam is completely buried in sediment It is recommended not to construct "Tanggul Hulu Leprak" as the facilities may contribute to inundation. 	BBWS Brantas has no objection to the recommendation of the JICA Project Team not to construct Tanggul Hulu Leprak.

S4-1, S4-2 S4-3: DD Leprak 3	 JICA Project Team reported as follows: No significant change since the last survey (July 2023). Training wall will be repaired in the same location. The primary concern is that high sedimentation may impact the design height of the dams. This determination will be made later after discussions with the Technical team in Japan. The current conditions shows that the height of the sedimentation is as high as to the existing dike built by BBWS. It is assumed that the current rate of excavation by sand miners is insufficient to control the sedimentation rate, particularly given the unpredictable nature of sedimentation and flooding. If S2-4 is reconstructed, it will increase the deposition upstream and increase the risk of overflow to S2-3. JICA Project Team reported: Most sections are buried in sediment. The top of the DD are exposed in about half of the sections. 	BBWS Brantas understood this input well and has no objection to the recommendation of the JICA Project Team
S4-3: KD Leprak 3 (Regoyo suspension bridge)	 JICA Project Team reported: The dam and its sub-dams were already buried by sediment in the Aug 2022 survey The condition of the water passage is not known because it is buried in sediment. No significant change since the last survey (July 2023) 	The Head of BBWS suggests relocating the planned position upstream to avoid interference with the surrounding facilities during the construction stages. JICA Project Team will consider the input.

Boulder Diameter Survey

Other damages: Potential slope failure of Gladak Perak

	1
JICA Project Team: following BBWS' concern regarding this	BBWS Brantas: The explanation
slope failure area and the possibility of landslide dam	is well understood, but please
formation, JCIA Project Team conducted field survey.	confirm the riverbed gradient.
Landslide dam formation has 3 main factors i.e., inflow	
angle, riverbed gradient, and volume of the landslide/slope	
failure. If the inflow angle of a landslide is more than 60°	
and the riverbed gradient is less than 10°, there is high	
possibility of forming landslide dam. Indeed, this slope	
failure has inflow angle of approximately 90°. However, the	
riverbed gradient is considered more than 10°, but it needs	
to be confirmed using the DEM from Lidar survey.	
Further, based on the investigation by JICA Project Team	
geological expert, the top part of the slope with a depth of	
only several meters is prone to failure. Hence, it possibly	
will not develop to deep-seated landslide and does not	
possess extend impact. The approximate volume of slope	
failure is less than 100,000 m ³ . Therefore, this slope failure	
has low possibility of forming a significant landslide dam.	

Related topics and inputs from BBWS								
Topic	Outlines	Correspondence						
Redirection stream facilities in Gladak Perak	The Head of BBWS Brantas proposed the construction of facilities (initially the preference is for a groin, but alternative facilities are also acceptable) near the Gladak Perak Bridge in S4 packages. These facilities are intended to redirect the stream, allowing utilization of the right side of the river. Additionally, the initiative aims to provide protection to the left side of the planned dyke, as well to protect the residential and road facilities.	JICA Project Team recommended against constructing facilities, as it would result in a narrowing of elevations, potentially leading to overtopping of the embankment. This is particularly concerning given the already elevated ground level in the current situation. The concern will be duly acknowledged and will undergo further discussion with the experts in Japan.						

Environmental	BBWS Brantas: UKL-UPL has been	
documents	processed and approved by the	
	Environmental Agency.	
	JICA Project Team: this UKL-UPL is	
	not based on the Review Master Plan or	
	the basic design. Is there any update	
	required when the basic design differs	
	from the approved UKL-UPL?	
	BBWS Brantas: there are two opinions	
	from BBWS Brantas regarding this	
	UKL-UPL update	
	1) Update is required based on the basic	
	design result. Update of UKL-UPL need	
	to be formulated as soon as possible	
	after the basic design finished, to pursue	
	procurement process in August.	
	2) Update of UKL-UPL is not necessary.	
	The procurement process can use the	
	approved UKL-UPL. Instead, JICA	
	Project Team need to prepare a draft of	
	RKL-RPL based on the project's output.	
	This RKL-RPL is to be	
	processed/submitted to Environmental	
	Agency in the construction phase.	
Organizational	BBWS will provide organizational chart	
chart	as the counterpart	



Meeting for Geological and Topographical Survey					
ity in PDM		Output	1		
2024 I	Februa	ary	26		
PPK River and	d Coas	stal I Mee	ting Room, BBWS Brantas		
e		Or	ganization, Department, Section, Position		
	В	BWS Bra	ntas		
	J	JICA Project Team (YEC)			
	J	JICA Project Team (YEC)			
Jihoon Leem			ct Team (YEC)		
	J	ICA Proje	ct Team (YEC)		
	J	ICA Proje	ct Team (YEC)		
	J	ICA Proje	ct Team (YEC)		
	J	JICA Project Team (YEC)			
	J	JICA Project Team (IK)			
Denis			JICA Project Team (IK)		
Handoyo			JICA Project Team (IK)		
Amir			JICA Project Team (IK)		
	Ieeting for Ge ty in PDM 2024 1 PPK River an e	Image: Image for Geologic structure ty in PDM 2024 Februar 2024 Februar PPK River and Coar e Image: Image structure e Image structure e Image structure g Image structure Image structure Image structure	Image: Additional system of the system of		

Contents of Activities

Memo

Two packages require prioritization: S-2 and S-4. The geological and topographical survey work is anticipated to be completed by the end of March 2024. It is suggested to do the work in parallel to expedite the design progress.

Geology Survey Investigation

- 1. Please use the nomenclature accordingly to prevent confusion in the future between parties.
- 2. The selection of boring points is subject to change based on site visits, the available data, and recommendations from counterparts.
- 3. Indra Karya has agreed to the boring points provided by Yachiyo Engineering. Any changes must be discussed and communicated in advance.
- 4. It is recommended to conduct the geological survey work in the S-2 packages as it is the first priority.
- 5. Indra Karya will mobilize their personnel on February 29, 2024, and expects the permit to be issued by BBWS Brantas to facilitate the smooth progress of the survey work.
- 6. Indra Karya will deploy 4 (four) boring machinery to conduct the geological survey work, which is expected to be concluded by mid-May 2024. Accelerated or alternative processes will be considered.
- 7. The borrow area survey is not included in this contract agreement.
- 8. The construction materials can be sourced from anywhere as long as they meet the specified requirements, which will be determined later.
- 9. The construction materials will be determined later based on laboratory tests and permits issued by the relevant agencies.
- 10. It is suggested to use soil-cement for some countermeasure facilities, but prior approval from JICA is required.

Topography Survey

1. The topography data will utilize the LiDAR data provided by Bintek due to its high accuracy. The raw LiDAR data received by Bintek has been processed by the JICA Project Team.

- 2. Consequently, the scope of work for the Topography Survey Investigation in the Contract Agreement is subject to change and will be adjusted accordingly.
- 3. The elevation of the LiDAR data is not completely certain. A benchmark survey, GNS survey, and random points correction test will be necessary to accurately correct the elevation for the LiDAR data. This process will be discussed further later.
- 4. Indra Karya is expected to verify the LiDAR data to be used for the design process.



1 Follow-up Meeting for Geological and Topographical Survey					
Corresponding A	ctivity in I	PDM Outpu	at 1, Output 2		
Year, month,	2024	March	4		
date					
Location	PPK Riv	er and Coast	al I Meeting Room, BBWS Brantas		
Participants					
Name	e		Organization, Department, Section, Position		
Ms. Sri Hardini		BBWS I	BRANTAS		
Ms. Ima Sholikha	ati	BBWS I	BRANTAS		
Ms. Lucky Diah		BBWS I	BRANTAS		
Ms. Rif'atul Umr	nah	BBWS I	BRANTAS		
Mr. Gantar Musi		BBWS I	BRANTAS		
Ms. Dessy Puji A	rianti	BBWS I	BBWS BRANTAS		
Ms. Dini Wulan I	3	BBWS I	BBWS BRANTAS		
Ms. Atika Prabay	wati	BBWS I	BRANTAS		
Ms. Devi Eka		BBWS I	BRANTAS		
Ms. Puspita Man	dasari	BBWS I	BRANTAS		
Mr. J. Fukushim	a	JICA Pr	oject Team		
Mr. H. Furuichi		JICA Pr	oject Team		
Mr. A. Kusairi Sa	aleh	JICA Pr	JICA Project Team		
Mr. Sultan		JICA Pr	JICA Project Team		
Mr. Arif		JICA Pr	JICA Project Team		
Ms. Ayu Martia		JICA Pr	JICA Project Team		
Ms. Anila Rahma		JICA Pr	JICA Project Team		
Mr. A. Widarto		Indra K	Indra Karya		
Mr. Agung Wahy	u	Indra K	Indra Karta		
Mr. Hanung Ram	nadhan	Indra K	Indra Karya		

Contents of Activities

This meeting is hold based on the findings after the initial geological survey and progress updates of the Project progress, as follows:

- 1. To accelerate the progress of the work, the Basic Design will be carried out in parallel with the topography survey and geology survey.
- 2. Progress delays are predicted due to the late commencement of services by the subconsultant.
- 3. Indra Karya needs to confirm the schedule for the boring survey they will conduct.
- 4. The additional request for the boring survey is not in the targeted area, requiring further meetings and confirmations.

N	Inquiry	Response	Remark
5.	Mrs. Ima (BBWS): Will the Tanggul Curah Lengkong be incorporated into the ongoing detailed design? Meanwhile, many existing dike are damaged. Is there no need to rehabilitate these existing facilities?	JICA Project Team: S2-3 is located in an alluvial fan area. The current condition is only gabions. It is necessary to construct a 10- meter-wide training dike with a height of approximately 5 meters. Total length of the extension could be around 300 meter long	JICA Project Team: Design policy will be referring to Review Masterplan Document
	facilities?	be around 300 meter long	

6.	Mrs. Ima (BBWS): In line with point previous point, Mrs. Ima stated that, according to the local agency, there will be no residential area near the Curah Lengkong embankment. This indicates that there is no urgency to construct the dike and the resources could be allocated to other facilities with higher priorities. Mrs. Ima recommends to not construct the Curah Lengkong embankment if it is not urgently needed.	JICA Project Team: The design policy is based on the RMP recommendation. The Tanggul Curah Lengkong facility remains within the target area plan. However, considering Mrs. Ima's recommendation, the priority of this facility can be lowered. It will still be constructed if there is a budget allocation available after addressing higher- priority facilities.	Mrs. Ima (BBWS): The lowering in priority leading to the not constructed of the Tanggul Curah Lengkong embankment must be supported by a technical justification such as hydrology and hydrodynamics numerical modelling.
7.	Mrs. Ima (BBWS): the recommendation is to conduct borehole drilling both upstream and downstream of the Sabo facilities. For CD Curah Kobokan 5, please relocate the boring point to the upstream area without adding any additional boring points.		Mrs. Ima (BBWS): All decision should be proved by technical analysis
8.	JICA Project Team: Can road alignment in Curah Kobokan change due to adjustments with the new Sabo design?	Mrs. Ima (BBWS): Yes, it can be changed, but the design policy/basic design should be exposed to the relevant agencies (Pemda) to check the land ownership status, or alternative options should be proposed by the JICA Project Team. The other concern also about public infrastructure in this area including lifeline telecommunication aerial cable, electricity cable and raw water supply pipeline. This matter also needs to coordinate with each agency (PLN, Telkom and others)	JICA Project Team will provide the Basic Policy once it finished
9.	JICA Project Team: For S4-2 Krib Beton Sumberwuluh (4), does the rate of sedimentation still high?	BBWS Brantas: There is a permit for mining activities around that area, so BBWS Brantas is unable to carry out Operations and Maintenance in that area. However, BBWS Brantas does not have information/maps for mining activities in the area; this	JICA Project Team: It is advisable to excavate or normalize that area before construction. If that is not possible, excavation can be done in the

		information may be held by the ESDM. BBWS Brantas will coordinate regarding this matter.	construction area first. The purpose of dredging in that area is to ensure that the storage facilities are in accordance with the design specifications.
10.	Mrs. Ima (BBWS): Prior to conducting geological boring work on existing facilities, it is recommended to create a priority rank of the facility plan based on hydrological and hydraulics analysis and simulation.	JICA Project Team: The geological boring work will be postponed, and the requested analysis will be conducted with the assistance of the subcontractor Indra Karya. Indra Karya stated that the simulation will be completed within this week (08 March 2024).	
11.	Mrs. Ima (BBWS): Inside Leprak Sand Pocket area, there should be an analysis and prioritizing in each package.	Indra Karya will immediately analyse the situation in sand pocket area based on existing clear data	



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1	Discussio	on for Basi	c Policy Des	ign	
Corre	sponding A	ctivity in l	PDM Outp	ut 1, Output 2	
Year,	month,	2024	March	28	
date					
Locat	ion	BBWS B	rantas, Mar	yar Office	
Partic	cipants				
	Name	Э		Organization, Department, Section, Position	
Ima S	Ima Sholikhati, ST., MT. BBWS Brantas				
Dini V	Wulan Ram	adhani, S.	T. BBWS	Brantas	
Junic	Junichi Fukushima JICA Project Team				
Jihoo	hoon Leem JICA Project Team				
Hefry	Hefryan K JICA Project Team				
Ryan	Ryan JICA Project Team				
Moh S	Moh Sultan JICA Project Team				
Moh A	Arif		JICA P	roject Team	
Conto	nts of Activ	ition			

Corresponding Activity in PDM: 1.6

- The geological survey has been delayed by one month, so the target has been extended until April 2024.
- The base map must be completed by April at the latest to be brought to the local government for checking if there is potential for LARAP (the document will be in the form of layer maps, ground maps of facilities, typical sections, with Indra Karya as the PIC).
- The JICA Project Team suggested to BBWS Brantas: If there are any changes regarding UKL UPL, please update the JICA team.

Corresponding Activity in PDM: 2.1

- JICA Project Team suggested: For the existing emergency dike, an additional 1-meter concrete mantle will be added to the existing gabion for casing. The current gabion is being reinforced with concrete, making it a permanent structure.
- JICA Project Team: Given the highly dynamic field conditions, the design process should include several simulation cases.
- BBWS Brantas: Mining zone maps are needed as a consideration for the Ministry of Energy and Mineral Resources (ESDM). The output will consist of zoned areas that can be mined while ensuring the safety of existing structures from the dangers of lahars issued by the JICA Project Team.
- BBWS Brantas: The concept presented for CD Kobokan 5 and Pelintas Curah Lengkong provides options for the crossing road, either through a sub-dam or a main dam. The option will be discussed and determined by whether the local government is able to issue the Land Acquisition and Resettlement Action Plan (LARAP)
- JICA Project Team: There is a gap in Tanggul Leprak, and the plan is to extend it so that it can cover Tanggul Leprak 2 to maximize the sediment control facilities.
- JICA Project Team: A draft of the proposed changes to the facility nomenclature will be prepared first.
- BBWS Brantas: The hill around the Tanggul Leprak Sumber Wuluh on the right side is suggested to be cut, allowing for a straight flow pattern and avoiding damage to existing facilities on the left side. A total of 6.65 million cubic meters needs to be cut, covering an area of 10 hectares (Based on data from IK). JICA Project Team will explore alternative options through internal discussions, as with Indra Karya assisting in simulations and analysis to determine the most suitable approach.
- BBWS: The mining permit in the downstream area of the Gladak Perak Bridge will be coordinated with the local government. The JICA Project Team is expected to promptly issue

recommendations for the mining zoning.

- JICA Project Team: The maintenance road on the Tanggul Leprak will be improved and repaired to ensure safety and allow mining trucks to pass over the top of the dike.
- BBWS: It is necessary to have a facility like a Krib (groin) after the Gladak Perak Bridge to ensure that the flow is directed to the existing river and protecting the existing facilities on the left side of the river. The work area will be coordinated with Bina Marga to determine the boundary between their road work plan and BBWS area of work.

1 Discussion on Basic De	esign of S2 a	und S4, M	t. Semeru			
Corresponding Activity	Output 2					
Year, month, date	2024	May	6 th			
Location	Semeru M	eeting Ro	om, BBWS Brantas			
Participants	•					
Name	Organization, Department, Section, Position					
Mr. Radia Zulfikar, ST. MT	BBWS Bra	antas				
Mrs. Sri Hardini	BBWS Bra	antas				
Mrs. Ima Sholikhati	BBWS Bra	intas				
Mrs. Rif'atul Ummah	BBWS Bra	antas				
Mrs. Dini Wulan R	BBWS Bra	antas				
Mr. Irfan Nurdiansyah	BBWS Bra	antas				
Mr. Purnomo Sodiq	BBWS Bra	antas				
Mrs. Devi Eka	BBWS Brantas					
Mr. M. Wildan	BBWS Bra	antas				
Mr. Leem	JICA Proj	ect Team				
Mr. Takeshima	JICA Proj	ect Team				
Mr. Tsujimoto	JICA Proj	ect Team				
Mr. Kusairi	JICA Proj	ect Team				
Mr. Goldman	JICA Proj	ect Team				
Mrs. Hefryan Sukma	JICA Proj	ect Team				
Mr. Ryan	JICA Proj	ect Team				
Mr. Arif	JICA Proj	ect Team				
Mr. Sultan	JICA Proj	ect Team				
Mr. Achmad Widarto	Indra Kar	ya				
Mr. Muflikhin	Indra Kar	ya				
Contents of Activities						

Memo:

1) Topography and geology survey

- Surveys are currently behind schedule due to changes of condition on field and the risk of surveyors' safety due to rainfall, flood, etc.
- Curah Kobokan 5 should be prioritized as the most urgent facility for boring test

2) Priority of design :

- First priority : S2 package of CD Kobokan 5 and Pelintas Curah Lengkong 2. Priority of Tanggul Curah Lengkong is lower.
- Second priority : S4 package
- BBWS requested the consultant to prepare technical justification on this priority level.

3) Bidding document based on Basic Design:

- BBWS hoped that the Tender Documents can be finished on June, at least for S2.
- BBWS will discuss with Supan whether it is allowed to make Tender Document based on Basic Design or not.

4) Comments on Basic Design:

- BBWS does not agree if the top of the tanggul is being used for truck road.
- BBWS is concerned that the old foundation of the existing CD Kobokan 5 may be not strong enough to be used as new dam. YEC explained that the existing dam will be reconstructed as

subdam, hence the load will be smaller. Further, the cohesion between the old foundation and the new structure will be increased.

- The freeboard between KD Leprak 3 and the suspension bridge need to be checked, whether the bridge is safe or not. If the freeboard is not enough, consultant need to prepare a technical judgement. Therefore, BBWS can propose this technical judgement to Bina Marga as the owner of the bridge as a consideration for bridge improvement/heightening.
- Name of facility : Tanggul Leprak XVII Kebondeli 2021 shall be Tanggul Leprak XVII
- BBWS will check the as built drawing of Tanggul emergency (upstream of Regovo, right side) with OP.
- 5) Land ownership :
 - Tanggul Curah Lengkong : no land is available at the resident side, the land is owned by Perhutani.
 - Tanggul Leprak : BBWS has 3 m land from the toe of the tanggul to the resident side. But need to be confirmed with Local Government.

6) Hill cutting at Leprak sandpocket :

- It is an optional plan, not a certain/fixed plan.
- Will be discussed with Local Government of Lumajang.
- Many issues remain with this plan, such as the land acquisition, response from residents, dump site, etc.

7) Maintenance & OP :

- BBWS requested consultant to prepare guideline for maintenance and OP.
- However, the scope of this Grant does not include such guideline. At most, this Grant can only give comment or suggestion.
- Detailed guideline may be established in the Loan.

8) Sediment excavation :

- As discussed previously, the sediment in front of Tanggul Leprak need to be excavated.
- However, it is still not clear how much sediment need to be excavated.
- This sediment excavation issue needs to be discussed with Local Government and Ministry of ESDM in correlation with sand mining permit at this location.



1 Meeting with Local G	overnment (Agencies) related to Land Ownership			
Corresponding Activity in PD	M Output 4			
Year, month, 2024 M	lay 8			
date				
Location Lumajang,	East Java, Indonesia			
Participants				
Name	Organization, Department, Section, Position			
Ms. Ima Solikhati	BBWS BRANTAS			
Ms. Dini Wulan R.	BBWS BRANTAS			
Mr. M Wildan	BBWS BRANTAS			
Mr. Dimas Noor	Public Works and Water Resources Department, East Java Province			
Mr. M. Yunus Public Works and Water Resources Department, East Java Provin				
Mr. Ames	Public Works and Water Resources Department, East Java Province			
Mr. Kirman	Public Works and Water Resources Department, East Java Province			
Mr. Ledib A.	Technical Implementation Unit of Public Works and Water			
	Resources Department, East Java Province			
Mr. Hermawan	Technical Implementation Unit of Public Works and Water			
	Resources Department, East Java Province			
Mr. Joko				
Mr. Riefki N	Public Works and Water Resources Department, East Java Province			
Mr. Leo Ardiant	Public Works and Water Resources Department, East Java Province			
Mr. Faiz Fadillah	Public Works and Water Resources Departement, East Java			
	Province			
Mr. Seto	Public Works and Water Resources Departement, East Java			
	Province			
Mr. Rizki Nur	BAPPEDA Lumajang			
Mr. Budiyanto	BAPPEDA Lumajang			
Mr. Vendi RW	BAPPEDA Lumajang			
Mr. Januar S	Perhutani			
Mr. Gatot	Perhutani			
Mr. Reza	Regional Disaster Management Agency of Luma jang District			
Mr. M. Anwar	Economic Section of Lumajang District			
Mr. K. Tsujimoto	JICA Project Team			
Mr. H. Takeshima	JICA Project Team			
Mr. Goldman	JICA Project Team			
Mr. Arif	JICA Project Team			
Mr. Sultan	JICA Project Team			
Mr. A. Widarto	Indra Karya			
Mr. Muflikhin	Indra Karya			
Mr. Agung	Indra Karya			
Contants of Activitias				

a) Perhutani needs location coordinates to confirm the area's status.

- b) The Department of Energy and Mineral Resources (ESDM) request's location coordinates to confirm the area's status.
- c) Confirmation from the ESDM regarding land for the planned structures, if it within the Business License for Production Operation Mining (IUP OP) area, it will not pose any problems for construction implementation.
- d) Regarding the issue of several private mining locations intersecting to planned buildings, the

ESDM cannot relocate existing IUPs due to its regulation/policy.

- e) Regarding the use of local materials as construction materials, no additional permit is required, but in the cost estimation, the cost for materials must be removed or included at the value of the tax (local retribution).
- f) Based on preliminary information from Perhutani, the hill area between CD Pelintas Curah Lengkong 2 and CD Kobokan 5 is classified as community land.
- g) The land around the Curah Lengkong dike is part of the Perhutani land.
- h) Sediment deposition in the front of the Leprak dike is intersecting within a private mining IUP area.
- i) The consultant is requested to send planned structures coordinates to the relevant agencies in order to overlay with spatial planning and determine land ownership status.
- j) Due to budget constraints in package S2, it is agreed to prioritize the construction of the crossing structure.



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1 Meeting with Local G	overnment (Agencies) related to Land Ownership			
Corresponding Activity in PD	M Output 4			
Year, month, 2024 M	lay 8			
date				
Location Lumajang,	East Java, Indonesia			
Participants				
Name	Organization, Department, Section, Position			
Ms. Ima Solikhati	BBWS BRANTAS			
Ms. Dini Wulan R.	BBWS BRANTAS			
Mr. M Wildan	BBWS BRANTAS			
Mr. Dimas Noor	Public Works and Water Resources Department, East Java Province			
Mr. M. Yunus Public Works and Water Resources Department, East Java Provin				
Mr. Ames	Public Works and Water Resources Department, East Java Province			
Mr. Kirman	Public Works and Water Resources Department, East Java Province			
Mr. Ledib A.	Technical Implementation Unit of Public Works and Water			
	Resources Department, East Java Province			
Mr. Hermawan	Technical Implementation Unit of Public Works and Water			
	Resources Department, East Java Province			
Mr. Joko				
Mr. Riefki N	Public Works and Water Resources Department, East Java Province			
Mr. Leo Ardiant	Public Works and Water Resources Department, East Java Province			
Mr. Faiz Fadillah	Public Works and Water Resources Departement, East Java			
	Province			
Mr. Seto	Public Works and Water Resources Departement, East Java			
	Province			
Mr. Rizki Nur	BAPPEDA Lumajang			
Mr. Budiyanto	BAPPEDA Lumajang			
Mr. Vendi RW	BAPPEDA Lumajang			
Mr. Januar S	Perhutani			
Mr. Gatot	Perhutani			
Mr. Reza	Regional Disaster Management Agency of Luma jang District			
Mr. M. Anwar	Economic Section of Lumajang District			
Mr. K. Tsujimoto	JICA Project Team			
Mr. H. Takeshima	JICA Project Team			
Mr. Goldman	JICA Project Team			
Mr. Arif	JICA Project Team			
Mr. Sultan	JICA Project Team			
Mr. A. Widarto	Indra Karya			
Mr. Muflikhin	Indra Karya			
Mr. Agung	Indra Karya			
Contants of Activitias				

a) Perhutani needs location coordinates to confirm the area's status.

- b) The Department of Energy and Mineral Resources (ESDM) request's location coordinates to confirm the area's status.
- c) Confirmation from the ESDM regarding land for the planned structures, if it within the Business License for Production Operation Mining (IUP OP) area, it will not pose any problems for construction implementation.
- d) Regarding the issue of several private mining locations intersecting to planned buildings, the

ESDM cannot relocate existing IUPs due to its regulation/policy.

- e) Regarding the use of local materials as construction materials, no additional permit is required, but in the cost estimation, the cost for materials must be removed or included at the value of the tax (local retribution).
- f) Based on preliminary information from Perhutani, the hill area between CD Pelintas Curah Lengkong 2 and CD Kobokan 5 is classified as community land.
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- j) Due to budget constraints in package S2, it is agreed to prioritize the construction of the crossing structure.



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1	Mr. Wildon 7				Minik -
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1	Handover of Basic Design								
Corresponding Activity in PDM 2									
Year,	month,	2024	May		15				
date									
Location Online meeti			eeting	g held v	ia Zoom Workplace				
Participants									
	Name	e		Organization, Department, Section, Position					
Ms. Ima Solikhati				BBWS BRANTAS					
Ms. Dini Wulan R.				BBWS BRANTAS					
Mr. M Wildan				BBWS BRANTAS					
Hidehiro Takeshima				JICA Project Team					
Kazuki Tsujimoto				JICA Project Team					
Junichi Fukushima			ē	JICA Project Team					
Jihoon Leem				JICA Project Team					
Hefryan Kharismalatri				JICA Project Team					
Julius				JICA Project Team					
Moh Arif				JICA Project Team					
Moh Sultan				JICA Project Team					
Goldman D				JICA Project Team					
Ryan Azzuchruf			ં	JICA Project Team					
Agung				Indra Karya					
Muf Likhin				Indra Karya					
Conten	Contents of Activities								

Mr. Takeshima (JICA Study Team)

- 1. Although land acquisition is not an issue, the JICA Project team suggests not constructing a road directly from Curah Kobokan to Pelintas Curah Lengkong, as the hill elevation does not allow for it. Therefore, it needs to reroute to a safer elevation.
- 2. Non-woven geotextile is being used as a separator for the concrete dyke.
- 3. The concrete cover in the dyke section is constructed without rebar.

Mr. Tsujimoto

- 1. For the handover, the following files are being shared with Indra Karya: sample of Detail Design Data (Case of Mt. Merapi), basic design drawing data, and stability calculations.
- 2. Stability calculations have been carried out by the JICA Project Team and cover only the dams.
- 3. Per the contract, Indra Karya is responsible for creating detailed design drawings, a Bill of Quantities, cost estimates, tender documents, environmental documents, and the report.

Mr. Likhin (IK)

- 1. Please confirm about the connection between the existing structure with the new planned structure.
- 2. BBWS Brantas would like to propose an alternative material usage with pre-cast concrete (concrete block) as an alternative design and the vendor would analyze its stability and cost and made comparison with the JICA Project Team's design.

Mr. Leem

1. BBWS Brantas expects the S2 Package to be completed by June 2024. Please discuss this with IK to develop a feasible schedule.

1 Discussion with the Energy and Mineral Resources Agency for East Java Province for Area									
Package S2 and S4: Mining and Construction Strategies									
Corresponding Activity in PDM Overall Goal									
Year, mont	h, 2	2024	Jul	y 1					
date		<u>م</u>							
Location Meeting Roc			Kooi T	m Mining Department, The Energy and Mineral Resources Agency					
	1	tor East (Java	a Province					
Participants									
NE X I A	ame			Organization, Department, Section, Position					
Mr. Yubra Arr	nasa			BBWS Brantas					
Mrs. Ima Soh	likha	<u>iti</u>		BBWS Brantas					
Mrs. Rif'atul	Umn	nah		BBWS Brantas					
Mr. Gantar M	usi (2		BBWS Brantas					
Mrs. Dini Wu	lan R	R		BBWS Brantas					
Mr. Oni Setiawan				Energy and Mineral Resources Department, East Java Province					
Mr. Wazurudin				Public Works and Water Resources Department, East Java					
				Province					
Mrs. Suratmi				Energy and Mineral Resources Department, East Java Province					
Mr. Marta				Public Works and Water Resources Department, East Java					
				Province					
Mr. Yuga				Public Works and Water Resources Department, East Java					
				Province					
Mr. Taufik				Public Works and Water Resources Department, East Java					
				Province					
Mr. Goldman				JICA Project Team					
Mr. Arif				JICA Project Team					
Mr. Sultan				JICA Project Team					
Mr. A Widarto)			Indra Karya					
Mr. Muflikhin				Indra Karya					

Contents of Activities

A discussion on WIUP for Area Package S2 and S4 Loan Semeru was conducted at the office of the Energy and Mineral Resources Agency, East Java Province.

The meeting was chaired by Mr. Oni Setiawan, Head of the Mining Division of the Energy and Mineral Resources Agency, East Java Province. The discussion concluded with the following points:

- 1. The Energy and Mineral Resources Agency supports the planned work and is ready to provide inputs and solutions regarding applicable permits or regulations.
- 2. The mining area recommendations presented by the JCIA Project Team indicated that the planned structure has a safe distance (attached design), but there is a special area downstream of the Sabo dam structure that should not be mined due to the steep slope of the river, which could lead to significant erosion and damage to the planned structure.
- 3. The Head of the Mining Division of the Energy and Mineral Resources Agency explained that the WIUP in the upstream area of CD Kobokan 5 is still in the exploration stage and therefore can be reduced in size to comply with the design specifications.
- 4. The mining technique was agreed upon by BBWS Brantas, the Public Works and Water Resources Agency of East Java Province, and the Energy and Mineral Resources Agency. The

downstream area of CD Kobokan 5 will undergo further review and discussion to find the best solution for future plans. Technically, new WIUP issuances will be held off based on technical reviews from BBWS Brantas.

- 5. Construction in the S4 package area can proceed with mining management following the design specifications.
- 6. BBWS Brantas will construct access roads for mining when miners are relocated to the designated planned location.
- 7. The JICA Project Team is requested to create a work plan map and calculate the area overlapping with the existing WIUP in the mining area so that the Energy and Mineral Resources Agency can manage the RKB document.
- 8. Permit issuance will take 7 days from the Public Works and Water Resources Agency of East Java once the Technical Recommendation (Rekomtek) document is submitted.

This document is the translated version, the original version is in Bahasa Indonesia and this document issued by BBWS Brantas. Please find the attached document as a reference.



PHOTOGRAPH

	NO	NAMA	INSTANSI	JABATAN	L/P	TTD	
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	8	Dini w.r.	BBWS BRANTAS			* too.	
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1 Technical Reconstrue (Addressin	Technical Recommendation/ Request for Water Resource Use Permit for the Reconstruction of the Sabo Dam in Rejali River by BBWS Brantas (Addressing Mining Overlaps and Safety Concerns in the Semeru Project Area)							
Corresponding Activity in	PDM Output 2, Output 3							
Year, month, date	2024 August 29							
Location	East Java Province Public Works Office for Water Resources, Surabaya, East Java.							
Participants								
Name	Organization, Department, Section, Position							
Mr. Baju Tri Haksoro	Head of Public Works Office for Water Resources, East Java							
	Province							
Mr. Oni Setiawan	Energy and Mineral Resources Department, East Java Province							
Mrs. Novita Andrianie	Water Resources Development Division, Public Works Office, East							
	Java Province (PU SDA)							
Mrs. Dian Dwi	River, Dam and Coastal Division, Public Works Office, East Java							
Ernawati	Province							
Mr. Prabowo	Bondoyudo Baru Water Resources Management Unit in Lumajang							
Mr. Yubra Arnas	BBWS Brantas							
Mrs. Ima Sholikhati	BBWS Brantas							
Mr. J. Leem	JICA Project Team							
Mr. Goldman Dalinsi	JICA Project Team							
Mr. A. Widarto	Indra Karya							

Contents of Activities

BBWS Brantas

- The Mt. Semeru project is integrated into one loan financial system along with Mt. Agung and Mt. Kelud.
- A road map for lahar control at Semeru will be implemented in the near future. This requires coordination with relevant agencies for effective sand management and addressing other related issues.

PU SDA Jatim Province

- The authority of the Rejali River is managed by the SDA Province, so all activities must obtain a permit from the SDA Province.
- Many completed facilities or projects carried out by other agencies have not been handed over and were only discovered during joint inspections by BPK. It is expected that a handover from this project will be conducted promptly after construction is completed.
- The issuance of WIUPs often overlaps with one another. To resolve this issue, there should be a unified mapping system between ESDM and the SDA Province to prevent further overlaps.
- Illegal miners are abundant in the planned S2 and S4 area, so a stricter monitoring is necessary to ensure the stability and safety of the planned structures.
- Sand mining companies can be instructed to create a river channel as they mining, establishing a designated path for the river that aids in monitoring and to control potential disasters.
- Information dissemination/PKM with miners is necessary to ensure they are informed about safe boundaries.

ESDM Jatim Province

• ESDM is ready to coordinate with the affected miners by this project, if necessary and

required.

- Controlling and stricter monitoring need to be conducted to prevent any concerns regarding the building's stability.
- For WIUP mining areas with exploration permits, one of the action plans is to relocate the area accordingly.
- For WIUP mining areas with production operation permits, more persuasive actions will be taken by the ESDM Office, and coordination with the mining companies will be necessary.

END

Photographs




1	Coordinat River by I	tion relate BBWS Bra	related to UKL-UPL documents for the Reconstruction of the Sabo Dam in Rejali			
Corres	Corresponding Activity in PDM Output 4					
Year,	month,	2024	September	eptember 04		
date						
Locati	on	Lumajan	g Regency En	vironmental Services, Lumajang, East Java.		
Partic	ipants					
	Organization, Department, Section, Position					
DLH I	Lumajang S	taff	Environm	ental Services of Lumajang Regency		
DLH I	Lumajang S	taff	Environm	ental Services of Lumajang Regency		
Mr. Goldman			JICA Proj	JICA Project Team		
Mr. Arif			JICA Proj	JICA Project Team		
Mr. A. Widarto			Indra Kai	Indra Karya Team		
Ms. Wulan			Indra Kai	Indra Karya Team		
Contents of Activities			Coordinat the Sabo	Coordination related to UKL-UPL documents for the Reconstruction of the Sabo Dam in Rejali River by BBWS Brantas		

DLH of Lumajang Regency

- The procedure for changing environmental documents refers to PERMEN LHK No. 4 of 2021 article 9.
- If there is only a change in dimensions at the location that has been included in the previous UKL-UPL document, the UKL-UPL initiator only needs to report through an official letter regarding the change in dimensions.
- $\circ~$ For planning locations that are not included in the previous UKL-UPL document, it is mandatory to make a new UKL-UPL document.
- DLH Lumajang advised to coordinate with the PUTR Office of Lumajang Regency to obtain the latest spatial pattern related to the facilities to be built.
- Make a map of the layout of each location to be built complete with the dimensions of the building.
- Regarding the UKL-UPL 2023 document, in this case the PUTR Office has not yet conducted environmental reporting for the work that has been completed.
- Land acquisition information must be coordinated with PUSDA East Java Province and BBWS Brantas.
- BBWS BRANTAS is required to send an Official Letter regarding the proposed changes of the UKL-UPL documents, so that the Environmental Service (DLH) of Lumajang Regency will respond officially in the form of a letter regarding what needs to be done regarding the proposal.

END

Photographs



1 Follow-up Output 2 (on capacity basic design)	building activities related to Output 1 (survey) and			
Corresponding Activity		Output 1, Output 2			
Year, month, date	2024	September 17			
Location	BBW BRAN	VTAS Office, Surabaya, East Java			
Participants					
Name		Organization, Department, Section, Position			
Ms. Dini Wulan		BBWS Brantas			
Mr. Gantar Musi		BBWS Brantas			
Ms. Rif'atul Ummah		BBWS Brantas			
Mr. Purnomo Sodiq		BBWS Brantas			
Mr. Irfan Nurdiansyah		BBWS Brantas			
Ms. Devi Eka		BBWS Brantas			
Mr. M. Wildan		BBWS Brantas			
Mr. J. Yokokura		JICA Project Team			
Mr. Jihoon Leem		JICA Project Team			
Mr. H. Takeshima		JICA Project Team			
Mr. Kazuki Tsujimoto		JICA Project Team			
Ms. Hefryan Sukma		JICA Project Team			
Mr. Goldman		JICA Project Team			
Mr. Moh. Arif		JICA Project Team			
Mr. Moh. Sultan		JICA Project Team			
Mr. A. Widiarto		Indra Karya Team			
Contents of Activities		Workshop for The Project for Capacity Development of Mt. Semeru Volcanic Disaster Structural Measures Planning			

INDRA KARYA TEAM

Progress of Environmental Document.

- Basically, the previous environmental document will be changed by updating some items or volumes following to the latest design.
- Our team has coordinated with PUTR Lumajang Regency as the initiator of the environmental document and PUTR Lumajang Regency has agreed to coordinate the changes and has submitted the updated documents to the Environmental Agency of Lumajang Regency through an official letter.
- For the next schedule, it is just a matter of waiting for a reply letter from Environmental Agency Lumajang Regency.

BBWS BRANTAS

Review Master Plan:

- Where does debris flow data that occurred in 2021-2022 come from?
- If the sediment excavation cannot be maximized properly, what steps should we take to meet the sediment capacity of 4 million m³?
- Please make a priority scale related to the location of the excavation of several rivers, so that it can be used as a reference for the future.

JICA PROJECT TEAM

- $\circ~$ The debris flow record is collected based on rainfall data at each nearby rain station and also from online news.
- It is hoped that all the sediment excavations can be carried out. So that they can meet the existing capacity criteria.





NO.	Name	Institutions	Telp. No.	Email	Sign
1.					
2.					
3.					
4.	Heggyon Silver K	JICA President Tem			Hale
5.	A. Nidarto	17 Mara 19975			Zim
6.	Dini wulan K	BIBLUS Branhas			1200
7	Purnomo Sodig	BRUS Branks			Here
8	Irfon Hurtingah	Bissus Brandras			GA
3-	Goldmon Dalini	Sice project Team			Get
10	M. Wildon A	DBug Brankay			Aund
11.7	Devi Eka V.	BBINS BRANDS			
12	Gantar Musi C	BBrus Brantas			fantien
13	Rigiatul Ummah	BBWS BRANKAS			kim
14	Kazuki Tsujimot.	JICA Project Tram			20082
15	Usehin Taken	JICA			11331
16) Yokokung	"CA Project how			
17	Mich. Sultan	JIGA Project Town			Mff.
18	LICH ARG	Show Project Team			the.
17	Anilo Rahma	JICA project Ferm			1
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	1				~

1 Follow-up	1 Follow-up on capacity building activities related to Output 3				
Corresponding Activit	y	Output 3			
Year, month, date 2024		September 18			
Location	BBW BRA	NTAS Office, Surabaya, East Java			
Participants	•				
Name		Organization, Department, Section, Position			
Ms. Ima Sholikhati		PPK SUPAN 1, BBWS Brantas			
Ms. Dini Wulan		BBWS Brantas			
Mr. Gantar Musi		BBWS Brantas			
Ms. Rif'atul Ummah		BBWS Brantas			
Mr. Purnomo Sodiq		BBWS Brantas			
Mr. Irfan Nurdiansya	h	BBWS Brantas			
Ms. Devi Eka		BBWS Brantas			
Mr. M. Wildan		BBWS Brantas			
Mr. J. Yokokura		JICA Project Team			
Mr. Jihoon Leem		JICA Project Team			
Mr. H. Takeshima		JICA Project Team			
Mr. Kazuki Tsujimoto		JICA Project Team			
Ms. Hefriyan Sukma		JICA Project Team			
Mr. Goldman		JICA Project Team			
Mr. Moh. Arif		JICA Project Team			
Mr. Moh. Sultan		JICA Project Team			
Mr. Widiarto		Indra Karya Team			
Mr. Muflikhin		Indra Karya Team			
Contents of Activities		Workshop for The Project for Capacity Development of Mt.			
		Semeru Volcanic Disaster Structural Measures Planning			

OUTPUT 1 BBWS BRANTAS

- Some people have not fully recognized the characteristics of the Rejali river in terms of sediment, river width, and others.
- The morphological state of Mount Semeru before the eruption did not change much. However, at the time of the eruption in 2021, the Rejali River experienced many changes. The 1984 Master Plan is highly possible to be irrelevant with the current conditions. Therefore, a review of the master plan must be carried out by conforming with the current conditions.
- What are the recommendations from JICA Project Team regarding Sabo facilities that are not included in the S4 package such as DD Leprak 1, KD Leprak 1, and KD Leprak 2? Please make a Technical Justification if the facilities will not be rebuilt.
- It is hoped that the JICA Project Team can explain to the East Java Provincial Government, in this case the Energy and Mineral Resources Agency (ESDM) and the Public Works and Water Resources Agency (PU SDA), regarding the policy or directions that must be carried out around the Sabo dam area. So that the provincial government can propose regulation related to mining around the area to maintain the function of the Sabo dam.
- The probable rainfall value in the Glidik River is very high compared to the Rejali River and Mujur River. What causes this?
- Why is the amount of unstable sediment in the river flow fortunately at 0 (zero)?
- We recommend making a note on the unstable sediment data in the RMP that the data is data as of July 2023.

• As additional information, part of the direction of the lava tongue has led to the river area.

JICA PROJECT TEAM

- The DD Leprak 1, KD Leprak 1, and KD Leprak 2 are still included in the list of Mt. Semeru RMP but with the function of the facilities is eliminated. This due to the current condition of the location of the facilities is not visible or buried in sediment that is deep enough. Therefore, it cannot be concluded that the facilities can be repaired or not.
- Glidik River has a high probable rainfall value due to the very high climatology difference in the Glidik River area.
- Mujur River has a value of 0 (zero) on the amount of unstable sediments because of the results of a field survey where the damage to the Sabo facilities that occurred in the Mujur River was due to scouring in the area and not from debris flow events such as the example of the Mujur II bridge.

OUTPUT 2

BBWS BRANTAS

- Why the Sabo dam facility is changed to the open type?
- What data is used to calculate the stability of a Sabo facility?

JICA PROJECT TEAM

- The open dam type is used because the diameter of the boulder that flows from upstream to downstream is large, which is more than 20 cm.
- The input in the calculation of facility's stability are hydrostatic pressure, debris flow, earth pressure, and self-weight.

OUTPUT 3

BBWS BRANTAS

• Why is the earthquake factor not included in the calculation of Sabo facility stability? And what if the location of the facility is in a fault area?

JICA PROJECT TEAM

- The earthquake factor should be calculated if the Sabo dam high is >15 m. On this project, the tallest dam facilities are 14,5 m, so the earthquake factor is not calculated.
- o As the basic principle, we should not establish Sabo dam facilities in a fault area.

END





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l.	Moh Sulten	JICA Project Team			MG.
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1 Administrative coordination on sand mining activities in Mt. Semeru					
Corresponding Activity in	PDM		Output 2, Output 3, Output 4		
Year, month, date	2024	September	19		
Location	Rejoso Meetin	ng Room, Dina	s Pekerjaan Umum Sumber Daya Air,		
	Surabaya				
Participants	1				
Name	Or	ganization, De	partment, Section, Position		
Mr. Baju Tri Haksoro	Public Work	and Water	Resources Department, East Java		
	Province (PU	ISDA Jatim Pr	ovince)		
Mr. Yubra Arnasa	River Basin (Organization fo	or Brantas (BBWS Brantas)		
Mrs. Ima Sholikhati	BBWS Brant	as			
Mr. Oni Setiawan	Head of Ene	Head of Energy and Mineral Resources Departmen, East Java			
	Province				
Mr. Moh Wizaruddin	Head of River, Reservior and Coastal Division of Public Works and				
	Water Resources Department, East Java Province				
Mr. Ruse Rante	Head of Util	ization Develo	pment Division of Public Works and		
	Water Resou	rces Departme	nt, East Java Province		
Mrs. Novita Andrianie	Head of Water Resources Managament Division of Public Works				
	and Water Resources Departmen, East Java Province				
Mr. Prabowo	Head of UPT PSDA WS Bondoyudo Baru in Lumajang, Public				
	Works and Water Resources Departmen, East Java Province				
Mr. J. Yokokura	JICA Project Team				
Mr. J. Leem	JICA Project Team				
Mr. Takeshima	JICA Project Team				
Mr. Tsujimoto	JICA Project Team				
Mrs. Hefryan	JICA Project Team				
Mr. Goldman	JICA Project Team				
Mr. Moh Arif	JICA Project Team				
Mr. Moh Sultan	JICA Project Team				
Mr. A. Widarto	Indra Karya				

Contents of Activities

1. JICA Project Team

- Maintain a safe distance from structures, following the guidelines used in Toyama Prefecture, Japan.
- For buried structures, sand mining is currently allowed. However, once a structure is discovered, mining must be stopped and BBWS Brantas must be notified.
- BBWS Brantas should create policies based on an evaluation of the structure's condition, determining whether it should be rehabilitated or removed from the asset list after a detailed assessment.
- The depth of sand mining should not exceed the original riverbed elevation.
- A request has been made for maps/data regarding land availability behind the dike for construction purposes.

2. PUSDA Jatim Province

- The previously signed BA must be followed and cannot be neglected.
- SDA Province regulations or policies should not cause issues for the sand miners.
- The permitted excavation depth for sand miners is 2 meters.
- SDA Province can regulate legal sand miners with permits. However, they cannot control illegal miners operating in the Rejali River.

- The "Sempadan Sungai" (river boundary) has changed due to volcanic eruptions, meaning existing data might not reflect current conditions.
- Sand mining companies operating near planned facilities will be invited to a discussion on sand mining policies.
- Mining companies will be informed to notify authorities if any structures are discovered during excavations.

3. UPT Lumajang

- Mining methods involving heavy equipment should be reconsidered.
- The boundary regulations upstream and downstream of the Sabo dam are 100 m and 200 m, respectively.

4. ESDM Jatim Province

• Exploration permits overlapping with planned facilities will be reviewed, and no permits will be granted within the defined boundaries. Applications for O&P permits will not be processed for these areas.

5. BBWS Brantas

Photographs

- Sand miners should clear the construction area to prevent future flooding.
- Improper sand mining management may alter river flow, so miners must adhere to government instructions on the methods allowed.
- Some existing dams are now buried. Sand miners must notify relevant agencies if they discover any buried structures.
- BBWS Brantas is unaware of the exact location of buried Sabo dams, and a 2-meter excavation depth may not be sufficient. BBWS, with the JICA Project Team help, needs to check the elevation of buried structures as a reference for the local government.

END





1 Environment and Social Considerations for the Semeru Project Capacity Development.				
Corresponding Activity in PDM	Capacity Development for Semeru Project			
Year, month, date 2024	December 20			
Location Online Meet	ing			
Participants				
Name	Organization, Department, Section, Position			
Gantar Musi Candrayana, ST.	BBWS, SNVT Staff Water Resources Network Implementation			
Rif'atul Ummah, ST., MT.	BBWS, Head of the Implementation Team for River and Coastal			
Dini Wulan Ramadhani, S.T	BBWS, SNVT Staff Water Resources Network Implementation			
Ima Sholikhati, ST., MT	BBWS, Commitment Making Officer River and coastal I			
Irfan Nurdiansyah	BBWS, Commitment Making Officer River and coastal I Staff			
M Wildan Arizal	BBWS, Commitment Making Officer River and coastal I Staff			
Pramudya Widianto	BBWS, Staff of Water Resources Network Implementation Sector			
Sodiq Purnomo	BBWS, Commitment Making Officer River and coastal I Staff			
Devi Eka Vinatalia, S.T	BBWS, Commitment Making Officer River and coastal I Staff			
Junji YOKOKURA	JICA Project Team			
Izumi SHIRAISHI	JICA Project Team			
Jihoon LEEM	JICA Project Team			
Hidehiro TAKESHIMA	JICA Project Team			
Kazuki TSUJIMOTO	JICA Project Team			
Hefryan K.	JICA Project Team			
Ryan Muhammad Az-Zuchruf	JICA Project Team			
Moh Sultan	JICA Project Team			
Moh Arif	JICA Project Team			
Goldman D	JICA Project Team			
Rino Agaswi Pratama, S.Tr	JICA Project Team (Indra Karya)			
Mochammad Syubbanul Muflikhin, S.T.	JICA Project Team (Indra Karya)			
Bintang Akbar Timur, S.Tr	JICA Project Team (Indra Karya)			
Ir. Achmad Widarto, M.T.	JICA Project Team (Indra Karya)			

Contents of Activities

Opening Remarks

JICA Project Team (Mr. Ir. Achmad Widarto, M.T.)

The UKL-UPL documents as one of the requirements that should be fulfilled was created by Indra Karya. There are some updates and explanations regarding with the UKL-UPL approval.

- The unchanged sites is the basis for not preparing a new environmental document. The follow-up action is to update the document according to the final detailed design.
- The initiator for the submission of environmental documents has been changed from the Lumajang PUTR service to the Brantas BBWS.
- Currently, the document status has been approved by the Lumajang Regency Environmental Agency and the PKPLH (statement of commitment to environmental management) has been issued.

JICA Project Team (Ms. Izumi Shiraishi)

- The preparation of environmental documents based on the JICA Guidelines aims to minimize the impact of project activities and measures to be implemented.
- All projects under the auspices of JICA must comply with the regulations and laws of each country, but must still incorporate the points of the JICA Guidelines.
- Some Important points from the JICA Guidelines are:
 - Compliance with laws, standard and plans
 - Social Acceptability
 - Biodiversity
 - Indigenous People
 - Involuntary resettlement and loss of livelihood
 - Monitoring
 - Grievance redress mechanism
- There are some aspects that could be escalated in the further implementation such as:
 - Specify more on measuring environmental management standard
 - Feasibility of monitoring
 - Social environment issues
 - Establishment of a grievance redress mechanism
- Based on the UKL-UPL matrix, there are some points that should be further considered. Some of the JICA Guidelines references could not be carried out in UKL-UPL documents because UKL-UPL already settle with its format
- Strategy to minimize soil excavation and its implementation. This matter also related to sandmining activity inside S2 and S4 area
- Considerations regarding use of road access adjacent to residential area. This is important because of all activity will meet in this road.
- Gender mainstreaming in DRR sector is important in this project.

Comments, Q&A

- Is it necessary to officially report the result of items in the Recommendation to JICA after starting the construction? (BBWS)
 - -> No, you don't have to report them to JICA.
- Most of the JICA guidelines will possibly to be applied to socio-environmental activities in the future. (BBWS)



Annex-7 Final Report

Note: Attached as a separate document

Annex-8 Capacity Development Materials

- Preliminary Detailed Design (Draft)
- Preliminary Bidding Document (Draft)

Note: Refer to Appendix-4 and Appendix-6 of Annex-7 Final Report

Annex-9 Points to be communicated for the following Project

Points to be communicated for the following Project

To ensure that the successful bidder for the consulting services (C/S) can smoothly begin bidding support and construction management, the following notes and related information are provided.

1. <u>Utilization of Existing Data</u>

This project focuses on capacity-building activities, particularly in the S2 and S4 areas of the Semeru volcano. On the other hand, the areas covered by the "Volcanic Disaster Risk Reduction Sector Loan Project" (hereafter referred to as the "Sector Loan Project") include not only the Semeru volcano, which is the focus of this project, but also Mount Kelud in East Java and Mount Agung in Bali. The design, bidding, and construction schedules vary by region and package. Furthermore, at the Semeru volcano, in addition to the emergency works in the S2 and S4 areas, four additional packages are planned for implementation. Therefore, it is essential to exercise utmost care in personnel allocation, operations, and risk management during the execution of the consulting activities. The consultant service contractor must review the RFP (Request for Proposal) submitted during the bidding process before commencing consulting activities. They should promptly obtain the IP (Implementation Program) for the Volcanic Disaster Risk Reduction Sector Loan Project, issued in 2023, as well as the previously published report from 2024 titled "Data Collection Survey on Volcanic Disaster Reduction in East Jawa and Bali Islands in The Republic of Indonesia " from the client to ensure a clear understanding of the project scope.

Related Data: IP (Implementation Program) for Volcanic Disaster Risk Reduction Sector Loan Project Previous report titled " *Data Collection Survey on Volcanic Disaster Reduction in East Jawa and Bali Islands in The Republic of Indonesia* "

2. Verification of Sediment Removal Status and Regular Monitoring

To construct Sabo facilities, it is essential to remove the accumulated sediment. The Ministry of Public Works, BBWS Brantas, the Water Resources Agency of the East Java Provincial Government, the Energy and Mineral Resources Agency, and other stakeholders are collaborating to coordinate the removal of sediment to the planned bed elevation required for this project. On the other hand, unstable sediment is still accumulating upstream in the S2 and S4 areas, and continuous sediment inflow due to rain is expected. Before construction begins (typically referred to as the Manual Check-0) a topographical survey is conducted in accordance with the contract to assess the status of earth and sand removal. If necessary, the potential for design changes at the start of construction is acknowledged, including the option of phased construction for the embankments. Furthermore, during construction, regular monitoring of sediment movement will be conducted using LiDAR observations and other methods. The results will be utilized for safety management during construction and will be analyzed and organized to inform the design of other packages (S1, S3, S5, S6), including those related to the Semeru Volcano, as well as for future operation and maintenance management by the implementing agency.

Related Data: Preliminary Detailed Design Drawing (Draft)

3. Adjustment of construction costs and classification of packages.

The maximum project cost for each target area is clearly outlined in the Implementation Plan (IP) for Sector Loan Project. The construction costs for the S2 and S4 areas designed in this project exceed the estimated costs in the IP, indicating that an adjustment of the project costs will be necessary in the future. It is possible to adjust project costs between target packages within the maximum amount of Loan; however, it is essential to update these costs while evaluating the necessity and priority of the facilities and maintaining a balance with other volcances. When proposing construction packages with adjusted costs, careful consideration must be given to selecting a contractor capable of responding appropriately and flexibly to local conditions, not only during the construction period but also throughout the defect liability period (usually one year), especially in light of the ongoing issue of unstable sediment inflow.

Related Data: IP (Implementation Program) for Volcanic Disaster Risk Reduction Sector Loan Project

4. Handover of construction supervision due to time lag

The scope of the Sector Loan Project includes construction and supervision for the S2 and S4 areas. However, there is a possibility of a time lag between the start of construction in these areas and the commencement of the consultant services responsible for construction supervision. If the start of the consultant services is delayed, the construction supervision responsibilities will need to be transferred from the executing agency, BBWS Brantas, as they will have to begin in the middle of the construction process. The following concerns may arise during this transition.

- Unclear Responsibility: If a problem arises after the handover, it may be unclear who is responsible, potentially leading to complications.
- ➢ Incomplete Information: If the handover materials are insufficient or lack important information, there is a risk that the work may not be carried out properly.
- Changes in Site Conditions: Depending on the timing of the handover, site conditions may change rapidly, and there is a possibility that the latest information is not being taken into account.
- Inadequate Project Progress Management: If progress is not properly monitored after the handover, it could result in schedule delays or budget overruns.

These concerns must be addressed, and the handover of construction supervision must be executed effectively. To ensure a smooth handover process, it is essential to share detailed information and clarify responsibilities in advance.

Related Data : Contract documents, submissions from the construction company (including the construction plan, safety plan, and construction schedule, etc.)

5. Safety Measures in Particular Construction Conditions

The construction work is taking place on an active volcano, which presents dangers associated with volcanic activity that are not typically encountered in general civil engineering projects, such as eruptions, lava flows, volcanic earthquakes, volcanic ash, and volcanic gas. It is essential to be fully aware of these safety risks and to conduct thorough construction supervision. In particular, ensuring safety during construction in the event of flooding (due to rainfall) is the top priority. This includes establishing an emergency contact system and confirming evacuation routes and locations in advance. Additionally, information will be gathered by utilizing local BNPB volcano monitoring facilities, installing monitoring cameras, and setting up rain gauges and other measuring equipment. Furthermore, this construction work is based on the assumption that the existing road will be used, so it is crucial to ensure safety for existing traffic, including sand mining vehicles. To address these concerns, security guards will be stationed before, after, above, and below the construction area during work hours, and necessary safety measures, such as barricades, will be implemented.

6. Establishing Communication Rules

The contractor for the consulting services related to the Sector Loan Project is expected to be the Ministry of Public Works, specifically the River and Coast Department (Planning Division). In contrast, the primary counterparts for construction supervision are the construction agency, BBWS Brantas, and the Ministry of Public Works, River and Coast Department (Implementation Division). There are numerous departments and organizations that require reporting. Information and decisions from the site are often made quickly, which can lead to delays in sharing them with the consulting services contractor. Therefore, it is advisable to establish communication rules from the following perspectives.

- Set Up Regular Meetings: Schedule regular progress meetings with all relevant parties, either weekly or monthly, to review progress, address issues, and discuss next steps.
- Assign Clear Contacts: Identify key contacts for each team and ensure they are prepared to respond quickly in case of emergencies or when important communication is required.
- Ensure Documentation: Document all important communications and share them with all relevant parties. This includes meeting minutes, decisions made, and actions to be taken.
- > Utilize Information Sharing Platforms: Use project management tools and cloud-based

platforms to share information in real time, ensuring that all relevant parties have access to the latest updates.

Establish a Problem-Solving Process: Create a predefined process for addressing problems so that you can take swift action to resolve them.

Annex-10

Capacity Development of the Sabo Technical Center (STC)

Note: Attached as a separate document

Annex-11

Management of a Seminar to Present the Results of Support

Work of Capacity Development of STC

Attachment 11 Management of a Seminar to Present the Results of Support Work of Capacity Development of STC

Seminar Date:	21 February 2025
Venue:	Yogyakarta

The seminar was held in Yogyakarta on 21 February 2025 with the Indonesian Ministry of Public Works (PU) and other relevant parties to present the results of the support work of capacity development of Sabo Technical Center (STC).

As a result of coordination with PU, the seminar was held jointly with a report meeting on the results of a survey by the Japanese Society of Erosion Control Engineering, which visited Indonesia during the relevant period, and was coordinated with the aim of including case studies presented by Japanese academics and government officials.

The background, the objectives, the participants, and other details of the seminar are shown in the attached documents from the next page.



Proposal to visit Mt. Marapi flood and sediment disaster damage and hold a SABO technical seminar in Yogyakarta (STC) by the Japanese Society for Erosion Control Engineering

1. Background

Japan-Indonesia SABO technical cooperation has continued since the 1950s, and SABO projects have been implemented in volcanic areas such as Mt. Semeru, Mt. Kelud Mt. Merapi

Due to recent climate change, sediment disasters in both countries tend to become more severe, and it is necessary to further strengthen SABO technical cooperation between Japan and Indonesia countries to combat natural disasters through mutual cooperation. In December 2023, Mt. Marapi located in West Sumatra Province increased its eruption activity, resulting in loss of lives including visitors. Furthermore, in May 2024, heavy rains in the same area caused numerous debris flow and driftwood damage and flash floods, resulting in tremendous damage. The JSDE is closely monitoring the volcanic eruption and sediment disasters that have occurred in the Mt. Marapi area in a short period of time, and is planning to visit the Mt. Marapi area to collect information to analyze the damage and disaster occurrence. In addition, they are planning to hold a technical seminar in cooperation with officials of the Ministry of Public Works and Erosion Control to promote SABO technology exchange between the two countries, using the assessment of the disaster situation in Mt. Marapi as a subject for STC enhancement and SABO technology improvement activities planned on the Indonesian side.

2. Proposal Items

1) Inspection of sediment disaster affected areas in the Mt. Marapi area

2) Japan-Indonesia joint hosting of SABO technical seminar in Yogyakarta (STC)

3. Inspection of sediment disaster affected areas in the Mt. Marapi area

In response to the sediment disaster that occurred in May 2024, the Indonesian government is planning to construct a SABO facility as an emergency disaster response. The purpose of this project is to collect information on the current status of this sediment disaster, focusing on this planned site.

The sites visited are shown in Figure 1.

4. Members of the inspection team of the Japan Society for Erosion Control and other members

Members of the Marapi area inspection team are as follows

	Name	Affiliation / Position
1	Masaharu FUJITA	Chairperson, Erosion Control Society of Japan / Research Advisor, Erosion Control and Landslide Engineering Center / Professor Emeritus, Kyoto University
2	Shoki TAKAYAMA	Member of Erosion Control Society of Japan / Associate Professor, Institute for Disaster Prevention, Kyoto University
3	Motoki ITO	Member of Erosion Control Society of Japan / Senior Researcher, Volcanic and Debris Flow Team, Ministry of Land, Infrastructure, Transport and Tourism/Public Works Research Institute
4	Takamasa MATSUNAGA	Member of Erosion Control Society of Japan / Researcher, Volcanic and Debris Flow Team, Ministry of Land, Infrastructure, Transport and Tourism/Public Works Research Institute
5	Yasuhiro FUZISAWA	Member of Erosion Control Society of Japan / SABO and Landslide Technical Center (STC) Deputy Manager, Engineering Section, General Disaster Prevention Dept.
6	Hiroyuki YAMAMOTO	JICA Expert, Policy Advisor, Directorate General of Water Resources, Ministry of Public Works
7	Junichi FUKUSHIMA	Member of Erosion Control Society of Japan / General Manager of Jakarta Office, Yachiyo Engineering Co.,Ltd

Table-1: Japan Erosion Control Society Marapi Area Inspection Team



Figure 1 Location map: Inspection and accommodation locations

5. Outline Schedule

Date	Schedule		
February 15 (Saturday)	Movement : Tokyo – Jakarta (Stay in Jakarta)		
February 16 (Sunday)	AM : Movement Jakarta – Padang, PM : Site survey at ANAI River (Stay in Bukittinggi)		
February 17 (Monday)	Site survey at KATIK River (Stay in Bukittinggi)		
February 18 (Tuesday)	Site survey at MALANA River (Stay in Bukittinggi)		
Eshmany 10 (Wadnasday)	AM : Site survey at ANAI River Up Stream, PM : Movement : Padang Panjang – Padang(Stay in		
reditionary 19 (wednesday)	Padang)		
Eabruary 20 (Thursday)	AM : Courtesy visit to BWS Sumatera V, PM : Movement : Padang – Jakarta – Yogyakarta		
redituary 20 (Thursday)	(Stay in Yogyakarta)		
February 21 (Friday)	SABO Technical Seminar (Stay in Yogyakarta)		
February 22 (Saturday)	AM : Free time (Mt. Merapi site visit?), PM : Movement: Yogyakarta – Jakarta – Tokyo		
February 23 (Sunday)	Arrival at Tokyo		

6. Japan-Indonesia joint hosting of SABO technical seminar in Yogyakarta (STC)

Based on the results of the Mt. Marapi inspection, a seminar on SABO technology will be held jointly by Japan and Indonesia at the STC (Matsushita Hall), which is being planned for functional enhancement on the Indonesian side. The seminar will cover the following topics

Item	Time	Contents of presentation	Speaker
Registration	8:00 - 8:30		Balai Teknik SABO
Opening	8:30 - 8:40		Balai Teknik SABO
Keynote 1 Online	8:40 - 9:00	Ministry of Public Works/CoE Response to Climate Change	Director General, Directorate General of Water Resources, Ministry of Public Works
Keynote 2 Offline	Keynote 29:00 – 9:20Current status and future of SABO projects in Japan		Mr. Fujita Chairperson of Japanese Society for Erosion Control Engineering
Keynote 3 Online	9:20 - 9:40	Current status of SABO Technology in Indonesia	Head of Directorate of Water Resources Engineering Development (Bintek)
Session I Preparation	9:40 – 955		MC & Moderator (UGM)
Speech 1 (Offline?)	9:55 - 10:15	Current status of Sediment Disasters in Indonesia Sediment Disaster Management Plan for Sumatera Area and Mt. Marapi	Sub Directorate of River and Coastal Planning and Engineering Head of BWS Sumatera V
Speech 2 (Offline?)	10:15 - 10:35	Report on the inspection of the Mt. Marapi sediment disaster / Flood Disaster by the Japanese Society for Erosion Control and Prevention	To be Named Japan Erosion Control Society Marapi Area Inspection Team
Speech 3 offline	10:35 - 10:55	SABO Technology Development and Human Resource Development in Japan	Mr. Ito Ministry of Land, Infrastructure, Transport and Tourism, Erosion Control Department
Q&A and Discussion 1	10:55 - 11:30	Q&A and Discussion	Moderator
	11:30 - 13:15	Break & Lunch,	
Session II Preparation	13:15 – 13:30		MC & Moderator (UGM)
Discussion 2 Offline and Online	13:30 - 15:00	Progress Report on Strengthening SABO Technology in Indonesia Roadmap for STC Enhancement in Indonesia	JICA Team Balai Teknik Sabo Bintek
Closing	15:00 - 15:10		Head of Balai Teknik SABO

Table-2: SABO Technical Seminar Schedule

1) The seminar will be held at the SABO Information Center (Matsushita Hall) in Balai Teknik Sabo, Yogyakarta.

2) The seminar will be jointly hosted by the Ministry of Public Works' Directorate General of Rivers, the Japan Society of Erosion Control Engineering, and JICA.

3) The seminar will primarily be held offline, but will also be made available online. Online participants will be able to take part in the question and answer session.

4) Each presenter will be allotted approximately 15 to 20 minutes for their presentation.

5) The combined session will cover the activities of the CoE to be established on the Indonesian side and its sub-division, the STC Working Group, as well as the Japanese support for strengthening the STC. Reports and presentations will be made by representatives from both Japan and Indonesia, and opinions will be exchanged at the same time.

7. Request for Cooperation

- On-site coordination and accompaniment by River and Coastal Authority and BWS-Sumatera V staff for the visit to Mt. Marapi area.
- 2) Provision of existing disaster data and planned emergency disaster planning materials (SABO Facility Plan)
- SABO technical seminars are jointly organized by the Ministry of Public Works and the Japanese Society for Erosion Control. Cooperation in publicity and setting up the venue
- 4) Provision of Matsushita Hall under the jurisdiction of Balai Teknik Sabo as the venue for SABO technical seminars.
- 5) SABO Technical Seminars will be open to the public through the web, and will be held in both offline and webinar formats.
- 6) Provide information on STC strengthening and Centers of Excellence.

(END)