

Environmental and Social Considerations in Detailed Planning Survey (Technical Cooperation for Development Planning)

1. Full title of the project

The Project for Assessing and Integrating Climate Change Impacts into the Water Resources Management Plans for Brantas and Musi River Basins

2. Type of the study (e.g. Master Plan, Feasibility Study, Detailed Design, etc.)

Master Plan

3. Categorization and its reason

The Project is classified as a “Category B” due to the following reasons.

- 1) Formulation and recommendations of adaptation and mitigation strategies and measures (both structural and non-structural) through hydrological model development and simulation of stream flows under evaluation of climate change effects will greatly contribute to conserve natural and social environments in the target river basins.
- 2) The adaptation and mitigation strategies and measures are still unclear before the Project and the structural measures can cause adverse impacts.

4. Agency or institution responsible for the implementation of the project

Directorate General of Water Resources (DGWR), Ministry of Public Works

5. Outline of the Project

5.1 Expected Goals which will be attained after the Project Completion

(1) Goal of the Proposed Plan

- Climate change impacts shall be reflected to water resources management plans.
- The proposed guidelines shall be approved and applied in other river basins in Indonesia.

(2) Goal which will be attained by utilizing the Proposed Plan

- The capacity of river basin management in Indonesia is developed and strengthened, taking climate change impacts into account

5.2 Study Area

- Brantas River Basin in East Java Region
- Musi River basin in South Sumatra Region

5.3 Outputs

1. To simulate future rainfall for hydrological simulation under projected climate change in the target

river basins

2. To assess water resources vulnerability and resilience under the climate change particularly in terms of flood and drought in the target basins (effect of mitigation in terms of CO₂ reduction from peat lands also to be examined)
3. To formulate recommendations for reflecting climate change impacts on water resources management plans (POLA and RENCANA)
4. To prepare guidelines to be applicable to water resources management plans in other river basins in Indonesia taking climate change issues into account
5. To strengthen the capability of Ministry of Public Works to formulate water resources management plans with strategies for climate change (investigation of a planning theory through the discussions, training for climate change prediction and water resources management plan, preparation of training module and materials.)

5.4 Activities

For the Output 1:

1. Collection of natural condition data including rainfall and air temperature (additional field observation in case existing data are insufficient).
2. Collection of climate prediction simulation results (outputs of selected General Circulation Models (GCMs)).
3. Evaluation of climate change effects in the target river basins in 2050.
 - Evaluation of the validity of the simulations of the current status by comparing statistical values produced by GCMs with actually observed data.
 - Examination of future trends in climate change using the simulation results of the GCMs.
 - Bias-correction of the GCM outputs.
 - Climate change impact assessment by merging the climate change trend with the bias corrections.
4. Hydrological model development expressing climate change impacts properly and river runoff simulation.
5. Simulation of stream flows under the effects of climate change at some representative computation points until 2050.

For the Output 2:

1. Collection and review of data with regard to water resources management such as water related structures, current water use and water demand projection.
2. Water balance analysis, flood analysis and inundation analysis.
3. Evaluation of flood and drought safety levels under the future climate conditions.
4. Assessment of overall water resources vulnerability and resilience under the future climate conditions.

For the Output 3:

1. Investigation of a planning theory for integration of climate change effect to water resources management plans through the discussions.
2. Implementation of strategic environmental assessment (SEA).
3. Recommendations for optimizing the operations of existing water storage facilities to mitigate climate change impacts on flood and drought.
4. Identification and evaluation of other adaptation and mitigation measures (both structural and non-structural).
5. Formulation of adaptation and mitigation strategies with priority actions, cost estimation and implementation schedules.
6. Recommendation of the adaptation and mitigation strategies to be incorporated into POLA and RENCANA.

For the Output 4:

1. Identification of important aspects related to climate change to be considered in the planning of water resources management, reviewing the whole process from the evaluation of climate change effects to the formulation of adaptation and mitigation strategies in the Project.
2. Incorporation of the identified aspects into the guidelines for elaboration of POLA and RENCANA.

For the Output 5:

1. On-the-job training of Indonesian counterpart personnel for activities related to Output 1 to 4
2. Discussion with the Indonesian counterparts about a planning theory for integration of climate change effect, and investigation for reflection to policies
3. Training in Japan related to climate change prediction and water resources management plan.
4. Preparation of training module and materials.
5. Dissemination seminars for related Indonesian institutions, development partners and the persons concerned.

* Above activities will be carried out jointly by JICA experts and Indonesian counterpart personnel with support from related institutions of the both countries.

6. Description of the project site

6.1 Brantas River Basin

Brantas River Basin is highly populated area where there are many cities including Surabaya which is located at the mouth of Brantas River with about 2.8 million populations. Many dams are constructed in the Brantas River to manage river water flow and quantity especially for economic uses. The river basin has been prosperous in agriculture by using the river water. Specific physical feature is that there are four volcanoes in Malang District and three of them are active ones. Regarding forest reserves, four types such as National Park, Protected Forest, Forest Park and Production Forest are located in the river basin and Bromo Tengger Semeru National Park is in Malang District. Major industrial sector



Figure 2 Location of the Project Sites: Musi River Basin

7. Legal Framework of Environmental and Social Considerations

7.1 Legislations for EIA

“Law for Basic Provision for Environment, No.4, 1982” was legislated for the first environmental organic law in Indonesia and it was revised as “Law for Environmental Management, No.23” consists of 52 articles in 1997. The law states importance of sustainable environment with waste management, environmental assessment and hazardous substance management. It also stipulates to give permission by implementation of environmental impact assessment for a project which severely and seriously affect on environment.

Meanwhile, “Government Regulation for EIA, No.51, 1993” requires reports of environmental impact assessment (ANDAL) with environmental management and monitoring plans (RKL/RPL) in EIA, environmental impact assessment (AMDAL), to manage development projects from environmental perspective.

Furthermore, “Law for Environmental Protection and Management, No.32” was stipulated in 2009, which is the organic law on environmental conservation in Indonesia. In the law, *Kajian Lingkungan Hidup Strategis*, KLHS (SEA), is legislated and required for studies at master plan level.

Major legislations relating to environmental and social considerations in Indonesia are as follows.

- Government Regulation No. 51, 1993
- Law for Environmental Management, No.23, 1997
- Government Regulation No.27, 1999 on Analysis of Environmental Impacts
- Government Regulation No. 41, 1999 on Air Pollution Control
- Ministry of Environment Decree No.2, 2000 on Guidance on the Evaluation of the EIA (AMDAL) Document
- Decree of Head of BAPEDAL No.8, 2000 on Public Involvement and Information Disclosure in EIA Process
- Decree of Head of BAPEDAL No.9, 2000 on Guideline for Preparation of EIA Study
- Ministry of Environment Decree No.86, 2002 on Regulation on UKL and UPL
- Decree of the Ministry of Environment No.11, 2006 on Type of Business Plan and/or Activity Requiring EIA
- Decree of the Ministry of Environment No.5, 2008 on Works of EIA Appraisal Commission
- Decree of the Ministry of Environment No.6, 2008 on License of EIA Appraisal Commission
- Decree of the Ministry of Environment No.8, 2008 on Guidelines for EIA
- Law No.32, 2009 concerning Environmental Protection and Management
- Decree of the Ministry of Environment No.27, 2009 on Guidelines for Implementation of Strategic Environmental Assessment
- Government Regulation No.10, 2010 on Procedures for Change to the Use and Function of Forest Areas
- Government Regulation No.15, 2010 on Spatial Arrangement
- Decree of the Ministry of Environment No.9, 2011 on General Guidelines for Strategic Environmental Assessment (revised version of No.27, 2009)
- Government Regulation No.27, 2012 on Environmental Permit

7.2 Strategic Environmental Assessment (SEA): KLHS

In the above mentioned laws, the followings are relevant to KLHS (SEA) as of August 2012.

- Law No.32, 2009 on Environmental Protection and Management
- Decree of the Ministry of Environment No.27, 2009 on Guidelines for Implementation of Strategic Environmental Assessment
- Government Regulation No.10, 2010 on Procedures for Change to the Use and Function of Forest Areas
- Government Regulation No.15, 2010 on Spatial Arrangement
- Decree of the Ministry of Environment No.9, 2011 on General Guidelines for Strategic Environmental Assessment

“Decree of the Ministry of Environment No.27, 2009 on Guidelines for Implementation of Strategic

Environmental Assessment” defines that KLHS (SEA) is for the environmental assessment at levels of policy, plan and program while AMDAL (EIA) is required at project level as shown in Figure 3. However, the guideline of KLHS (SEA) in the decree describes only basic matters and it will be revised and legislated again. Therefore, the decree explains that appropriate approaches and methods of KLHS (SEA) can be decided according to purposes and policies of plans.

JICA GUIDELINES FOR ENVIRONMENTAL AND SOCIAL CONSIDERATIONS April 2010 (hereinafter referred to as “JICA Guideline”) also defines that a “strategic environmental assessment” is an assessment that is implemented at the policy, planning, and program levels, but not a project-level EIA.

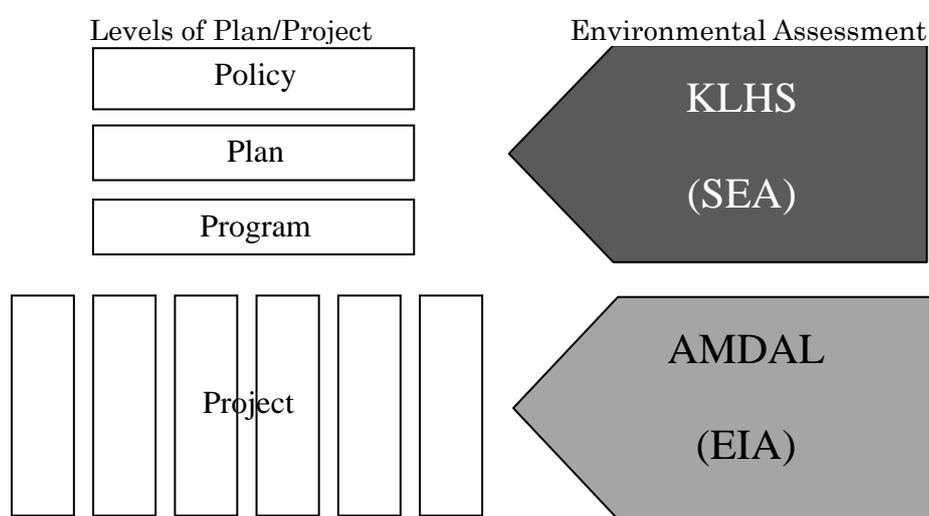


Figure 3 Type of Environmental Assessment by Level of Plan/Project

Later, KLHA (SEA) is legislated in “Law No.32, 2009 concerning Environmental Protection and Management”. However, in the Law No.32, KLHS (SEA) is required for a) spatial plans (RTRW) and long/medium term development plans of nation, province, district and city, and b) policy/plan/program which potentially cause adverse impacts or risks on environment.

“Decree of the Ministry of Environment No.27, 2009 on Guidelines for Implementation of Strategic Environmental Assessment” was revised as “Decree of the Ministry of Environment No.9, 2011 on General Guidelines for Strategic Environmental Assessment”. Six principles are stated for KLHS (SEA) as 1) Self-Assessment, 2) Improvement of Policies, Plans, and / or Program, 3) Capacity Building and Social Learning, 4) Influences on Decision Making, 5) Accountability and 6) Participatory. Besides, implementation methods are discussed among parties and integrated approach and transparency are confirmed.

8. Provisional Scoping

8.1 Screening

As the Project is not at project level but a master plan level assessing and integrating climate change

impacts into the water resources management plans for Brantas and Musi River Basins, AMDAL (EIA) is not required for the Project. KLHS (SEA) is appropriate according to the Law No.32, 2009 and the MOE also suggested reasonability to implement KLHS (SEA) for the Project especially in authorization although no legal procedures like AMDAL (EIA) were established yet at August 2012. JICA Guideline also describes that “JICA applies a Strategic Environmental Assessment (SEA) when conducting Master Plan Studies etc., and encourages project proponents etc. to ensure environmental and social considerations from an early stage to a monitoring stage” as the measures for environmental and social considerations must be implemented from an early stage to a monitoring stage. Therefore, KLHS (SEA) is the appropriate study for environmental and social considerations in the Project.

8.2 Provisional Scoping

In two project sites, Brantas River Basin has 11,800km² area and is the second largest river in Jawa Island, in the meantime, Musi River has 640 km long and the area is about 60 thousands km², which is five times as much as area of Brantas River Basin. As these huge project sites are located in the islands of Jawa and Sumatra, the detailed planning survey of environmental and social considerations was limited in time schedule. Therefore, the results of interviews of MOE, BLH, agricultural and forest sections of local governments, BAPPEDA and spatial planning sections were also used for the provisional scoping. They mostly expected positive impacts from the Project.

As one of outputs, the recommendations which include the adaptation and mitigation strategies and measures for reflecting climate change impacts on water resources management plans (POLA and RENCANA) will be the subjects for environmental and social considerations. However, in the huge scale of the target river basins, the adaptation and mitigation strategies and measures are assumed in many different ways as creating alert system, evacuation system, water use system, land use management or structure constructions, consequently it is still unclearly understood in locations and scales and on the impacts from them. Therefore, the structural measures were assumed for the major sources of impacts and the likely impacts were mostly evaluated at “B” or “C” as the results of provisional scoping.

Table 2 Results of provisional Scoping for Brantas River Basin

	No.	Likely Impacts	Evaluation	Description of Impacts
Social Environment:	1	Involuntary Resettlement	C-	In case that improvement of the existing dams or new developments of dams will be proposed to increase reservoir capacity, involuntary resettlement could occur in some locations but it is still unclear.
	2	Local economy such as employment and livelihood, etc.	B+/-	In case that improvement of the existing dams or new developments of dams will be proposed to increase reservoir capacity, livelihood could be affected in some locations but it is still unclear. However, the construction works can offer local people job opportunities and stable water supply by well-managed water resources can contribute development of overall local economy.
	3	Land use and utilization of local resources	B+	If land use plan and adaptation strategies and measures for climate change impacts are proposed in water resource management plans, local resources can be effectively used.

No.	Likely Impacts	Evaluation	Description of Impacts	
4	Social institutions such as social infrastructure and local decision making institutions	C+	Local farmer's groups manage irrigation water in the basin. If the adaptation strategies and measures for climate change impacts are proposed at this local level, they can effectively use irrigation water but it is still unclear.	
5	Existing social infrastructures and services	B+	In case that flood prevention measures are proposed for the adaptation strategies and measures for climate change impacts, the existing social infrastructures and services can be protected from damages from flood.	
6	The poor, indigenous and ethnic people	C+/-	Indigenous people, named Tengger, live in Bromo Tengger Semeru National Park (nearby Semeru Mountain at the southeast of Brantas River Basin). If the adaptation strategies and measures for climate change impacts are proposed in this area, they can enjoy protections from climate change impacts or be affected in their livelihood by structure construction.	
7	Misdistribution of benefit and damage	D	No adverse impact is expected on misdistribution of benefit and damage because local stakeholders will be involved in the study process and the Project will contribute the water resource management for public benefits.	
8	Cultural heritage	C+/-	Ruins of Buddhism/Hindu temples, named Candi Berahu, Candi Jabung, Candi Waringin Lawang, Candi Penataran, Candi Singosari, are located in the river basin. If the adaptation strategies and measures for climate change impacts are proposed in these areas, they can enjoy protections from climate change impacts or be affected by facility constructions.	
9	Local conflict of interests	D	No adverse impact is expected on local conflict of interests because local stakeholders will be involved in the study process and the Project will contribute the water resource management for public benefits.	
10	Water Usage or Water Rights and Rights of Common	C+	Local farmer's groups manage irrigation water in the basin. If the adaptation strategies and measures for climate change impacts are proposed at this local level, they can effectively use irrigation water but it is still unclear.	
11	Sanitation	D	No adverse impact is expected on sanitation because the Project may not propose adaptation strategies and measures for climate change impacts on sanitation.	
12	Hazards (Risk)	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, infectious diseases such as HIV/AIDS can spread with influx of workers.	
Natural Environment	13	Topography and Geographical features	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, surrounding topography can be changed.
	14	Soil Erosion	B+/-	Comprehensive water resource management can improve soil erosion in the upper reach of Brantas River. On the other hand, if structure constructions are proposed, it can confound the existing soil erosion depending on their locations.
	15	Groundwater	C-	If groundwater use is proposed to secure more water resource, its quantity and quality can be affected. However, it is unclear whether proposed or not because another ministry manages groundwater.
	16	Hydrological Situation	C+/-	The water resource of Brantas River is the most important target for management. However, many dams are already constructed to manage the river water. The adaptation strategies and measures for climate change impacts will improve this water resource management and no adverse impact is expected on the existing hydrological situation but further study is necessary in the Project.
	17	Coastal Zone	C+/-	No adverse impact is expected on coastal zone because the Project may not propose adaptation and mitigation strategies and measures for climate change impacts on coastal zone.

No.	Likely Impacts	Evaluation	Description of Impacts
18	Flora, Fauna and Biodiversity	B+/-	Protected forests including Bromo Tengger Semeru National Park are located in the river basin. If the adaptation strategies and measures for climate change impacts are proposed in these areas, their ecosystems can be conserved from climate change impacts or be affected by facility constructions depending on the locations.
19	Meteorology	D	No adverse impact is expected on meteorology because the Project will propose adaptation and mitigation strategies and measures to climate change impacts.
20	Landscape	B+	In case that use of paddy as water reservoir and forest conservation are proposed, landscape of paddy field and forest can be maintained and improved.
21	Global Warming	D	No adverse impact is expected on global warming because the Project will propose adaptation and mitigation strategies and measures for climate change impacts.
Pollution	22	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, exhaust gasses generated by construction vehicles and machinery can deteriorate air quality in the vicinity at least temporarily in construction phase.
	23	B+/-	Declining quality of river water especially in the upper reach of Brantas River due to municipal and industrial effluents, overuse of pesticide and fertilizer for farm lands was heard from local government officers. Integrated water resource management can improve river water quality. Meanwhile, in case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, discharging water from construction sites and field offices can contaminate river water in the vicinity at least temporarily in construction phase.
	24	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, oil leaked from construction vehicles and machinery can contaminate soil in the vicinity at least temporarily in construction phase.
	25	B-	In case that dredging of deposited sand is proposed to increase reservoir capacity, dredged sludge can cause disposal problems.
	26	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, noise and vibration generated by construction vehicles and machinery can affect residents living in the vicinity at least temporarily in construction phase.
	27	C-	If groundwater use is proposed to secure more water resource, the over usage can cause ground subsidence. However, it is unclear whether proposed or not because another ministry manages groundwater.
	28	B-	In case that dredging of deposited sand is proposed to increase reservoir capacity, dredged sludge can be source to generate offensive odor.
	29	B-	In case that dredging or forced drainage of deposited sand are proposed to increase reservoir capacity, these activities can affect bottom sediment.
	30	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, accidents of construction workers and residents living in the vicinity can be involved in accidents at least temporarily in construction phase.

Rating:

A+/-: Significant positive/negative impact is expected.

B+/-: Positive/negative impact is expected to some extent.

C+/-: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progresses.)

D: No impact is expected.

Table 3 Results of provisional Scoping for Musi River Basin

No.	Likely Impacts	Evaluation	Description of Impacts	
Social Environment:	1	Involuntary Resettlement	C-	In case that improvement of the existing dams or new developments of dams will be proposed to increase reservoir capacity, involuntary resettlement could occur in some locations but it is still unclear.
	2	Local economy such as employment and livelihood, etc.	B+/-	In case that improvement of the existing dams or new developments of dams will be proposed to increase reservoir capacity, livelihood could be affected in some locations but it is still unclear. However, the construction works can offer local people job opportunities and stable water supply by well-managed water resources can contribute development of overall local economy.
	3	Land use and utilization of local resources	B+	If land use plan and adaptation strategies and measures for climate change impacts are proposed in water resource management plans, local resources can be effectively used.
	4	Social institutions such as social infrastructure and local decision making institutions	C+	Local farmer's groups manage irrigation water in the basin. If the adaptation strategies and measures for climate change impacts are proposed at this local level, they can effectively use irrigation water but it is still unclear.
	5	Existing social infrastructures and services	B+	In case that flood prevention measures are proposed for the adaptation strategies and measures for climate change impacts, the existing social infrastructures and services can be protected from damages from flood.
	6	The poor, indigenous and ethnic people	B+/-	If irrigation water is stably supplied especially for local farmers who live on irrigated agriculture in the lower reach of Musi River, they can be more profitable. Indigenous people were not identified in this detailed planning survey but further study is necessary in the Project. If the adaptation strategies and measures for climate change impacts are proposed in where they live, they can enjoy protections from climate change impacts or be affected in their livelihood by structure construction.
	7	Misdistribution of benefit and damage	D	No adverse impact is expected on misdistribution of benefit and damage because local stakeholders will be involved in the study process and the Project will contribute the water resource management for public benefits.
	8	Cultural heritage	C+/-	Specific cultural heritages were not heard from local government officers but further study is necessary in the Project. If the adaptation strategies and measures for climate change impacts are proposed in where the heritages are located, they can enjoy protections from climate change impacts or be affected by facility constructions.
	9	Local conflict of interests	D	No adverse impact is expected on local conflict of interests because local stakeholders will be involved in the study process and the Project will contribute the water resource management for public benefits.
	10	Water Usage or Water Rights and Rights of Common	C+	Local farmer's groups manage irrigation water in the basin. If the adaptation strategies and measures for climate change impacts are proposed at this local level, they can effectively use irrigation water but it is still unclear.
	11	Sanitation	D	No adverse impact is expected on sanitation because the Project may not propose adaptation strategies and measures for climate change impacts on sanitation.
	12	Hazards (Risk)	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, infectious diseases such as HIV/AIDS can spread with influx of workers.
Envir	13	Topography and Geographical features	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, surrounding topography can be changed.

No.	Likely Impacts	Evaluation	Description of Impacts	
14	Soil Erosion	B+/-	Comprehensive water resource management can improve river bank erosion in the upper reach of Musi River. On the other hand, if structure constructions are proposed, it can confound the existing river bank erosion depending on their locations.	
15	Groundwater	C-	If groundwater use is proposed to secure more water resource, its quantity and quality can be affected. However, it is unclear whether proposed or not because another ministry manages groundwater.	
16	Hydrological Situation	C+/-	The water resource of Musi River is the most important target for management. The adaptation strategies and measures for climate change impacts will improve this water resource management and no adverse impact is expected on the existing hydrological situation but further study is necessary in the Project.	
17	Coastal Zone	C+/-	No adverse impact is expected on coastal zone because the Project may not propose adaptation and mitigation strategies and measures for climate change impacts on coastal zone.	
18	Flora, Fauna and Biodiversity	B+/-	Six of eight national parks in South Sumatra Province are located in Musi River Basin. If the adaptation strategies and measures for climate change impacts are proposed in these areas, their ecosystems can be conserved from climate change impacts or be affected by facility constructions depending on the locations.	
19	Meteorology	C+	The Project would propose mitigation measures to reduce CO2 emission from the peat land in the lower reach of Musi River and it will contribute promote measures against global warming. However, it is unclear to impacts on the meteorology in the region.	
20	Landscape	B+	In case that use of paddy as water reservoir and forest conservation are proposed, landscape of paddy field and forest can be maintained and improved.	
21	Global Warming	B+	The Project would propose mitigation measures to reduce CO2 emission from the peat land in the lower reach of Musi River and it will contribute promote measures against global warming.	
Pollution	22	Air Pollution	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, exhaust gasses generated by construction vehicles and machinery can deteriorate air quality in the vicinity at least temporarily in construction phase.
	23	Water Pollution	B+/-	Declining quality of river water especially due to municipal and industrial effluents was heard from local government officers. Integrated water resource management can improve river water quality. Meanwhile, in case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, discharging water from construction sites and field offices can contaminate river water in the vicinity at least temporarily in construction phase.
	24	Soil Contamination	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, oil leaked from construction vehicles and machinery can contaminate soil in the vicinity at least temporarily in construction phase.
	25	Waste	D	The Project may not propose adaptation and mitigation strategies and measures for climate change impacts to generate enormous quantities of waste.
	26	Noise and Vibration	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, noise and vibration generated by construction vehicles and machinery can affect residents living in the vicinity at least temporarily in construction phase.
	27	Ground Subsidence	C-	If groundwater use is proposed to secure more water resource, the over usage can cause ground subsidence. However, it is unclear whether proposed or not because another ministry manages groundwater.

No.	Likely Impacts	Evaluation	Description of Impacts
28	Offensive Odor	D	The Project may not propose adaptation and mitigation strategies and measures for climate change impacts to generate offensive odor.
29	Bottom sediment	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, construction activities can affect bottom sediment at least temporarily in construction phase.
30	Accidents	B-	In case that structure constructions like dams are proposed to prevent flood and increase reservoir capacity, accidents of construction workers and residents living in the vicinity can be involved in accidents at least temporarily in construction phase.

Rating:

A+/-: Significant positive/negative impact is expected.

B+/-: Positive/negative impact is expected to some extent.

C+/-: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progresses.)

D: No impact is expected.

9. Alternatives to the project activities including 'without project' option

In Indonesia, there are growing concerns about the effects of climate change on the water cycle, such as rainfall variability and intensified flood and drought. They may affect socio-economic aspects such as freshwater resources, food security, safety of coastal or low-lying areas, eco-system, human health and sanitation, and so on. Thus, appropriate water resources management, including access to water supply and alleviation of water-related disasters, is vitally important for sustainable development of Indonesia.

Although the adaptation and mitigation strategies and measures are still unclear, in perspective of the Project background mentioned above, the Project will be highly beneficial for sustainable development in the target river basins rather than the "without project".

10. Result of the consultation with recipient government on environmental and social consideration including roles and responsibilities

The MOE suggests that KLHS (SEA) will be implemented by responsible agencies to plan the strategies and measures. TKPSDA and BBWS of South Sumatra Province and East Java Province are consequently responsible for KLHS (SEA). JICA Study Team will support them. The MOE also suggests that the environment sections of local governments, BLH of both provinces, will manage KLHS (SEA) although they need technical assistance. Spatial planning sections under BAPPEDA of both provinces have provisionally studied KLHS (SEA) for the provincial spatial plans. They will be beneficial to be involved in the implementation structure of KLHS (SEA). Therefore, the implementation structure of KLHS (SEA) is proposed as follows.

- Implementing agencies: TKPSDA/BBW of South Sumatra Province and East Java Province (supported by JICA Study Team)
- Responsible environmental administration: BLH of South Sumatra Province and East Java Province (environment sections of local governments both provinces)
- Supporting agencies: MOE, Spatial planning sections under BAPPEDA of both province
- Other collaborators: universities, experts

11. Terms of reference for environmental and social considerations

KLHS (SEA) will be implemented in the Project at master plan level according to both Indonesian environmental legislations and JICA Guideline. The KLHS (SEA) will be studied at IEE level, however, its procedures and methods are discussed and decided through coordination with C/P and environmental administrations in the Project.

1) Set-up of policies or strategies for SEA

The subjects of KLHS (SEA), adaptation and mitigation strategies and measures to formulate recommendations for reflecting climate change impacts on water resources management plans (POLA and RENCANA), are studied and set-up. Alternatives are proposed as strategic scenarios of adaptation and mitigation measures, or more concrete plans including locations, scales, combination of systems and facilities.

2) Study of methods for SEA implementation

Methods how to implement KLHS (SEA) are studied and coordinated with MOE, BLH, DGWR based on the work item 1) through reviewing the latest guidelines and practical examples of KLHS (SEA) in Indonesia.

3) Scoping for SEA

For decision-making of the adaptation and mitigation strategies and measures, items of likely impacts are studied by scoping and its evaluation methods of impacts are clarified.

4) Collection of baseline data and set-up of indicators and criteria for evaluation

Environmental and social conditions will be studied in both Brantas and Musi River Basins. Information and data of socio-economy, land use, culture and nature are collected especially to set-up the indicators and criteria according to the evaluation methods for the likely impacts studied in the work item 3).

5) Evaluations and study of alternatives

The impacts of alternatives including a zero-option are weighed and evaluated to decide the appropriate adaptation and mitigation strategies and measures based on the work items 3) scoping and 4) set-up indicators.

6) Study of mitigation measures

For the adverse impacts caused by appropriate strategies and measures decided in the work item 5), mitigation measures are studied.

7) Support of stakeholder meetings

Stakeholder's meetings will be conducted and hosted by C/P because both Indonesian environmental legislations and JICA Guideline place importance on involvement of stakeholders, consultations and information disclosure in decision-making process. JICA Study Team will support them. The meetings are required especially at the phases of 3) scoping and 5) evaluations and study of alternatives. However, schedules and number of times are decided by discussion with C/P and environmental administration agencies. The stakeholders mainly consist of the members of TKPSDA and the MOE

suggested environment sections of local governments, local offices of MOE, universities, local NGOs, community associations, Assistant Deputy of Water Surface Ecosystem (MOE) and Assistant Deputy of Climate Change (MOE). (Some members are overlapped with the members of TKPSDA.)

(3) Scoping and mitigation measures for priority projects

Scoping will be done for proposed priority projects of adaptation and mitigation strategies and measures (both structural and non-structural), which should be preferentially implemented in the immediate term. Mitigation measures and a monitoring plan are also studies to be prepared for project implementation.

12. Other relevant information

None.