Environmental Assessment and Review Framework

November 2013

INO: Coral Reef Rehabilitation and Management Program - Coral Triangle Initiative Project

Prepared by the Indonesia Ministry of Marine Affairs and Fisheries for the Asian Development Bank.

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 12 November 2013)

Currency Unit	–	rupiah (Rp)
Rp1.00	=	$.000088
$1.00	=	Rp11,396

ABBREVIATIONS

ADB	–	Asian Development Bank
AMDAL	–	Analisis Mengenai Dampak Lingkungan Hidup, or Indonesian Environmental Impact Assessment system
ANDAL	–	Analisis Dampak Lingkungan, or Environmental Impact Assessment
BAPEDAL	–	Environmental Impact Control Agency *(Badan Pengendalian Dampak Lingkungan)*
BAPEDALDA	–	Local Environmental Impact Control Agency (*Badan Pengendalian Dampak Lingkungan Daerah*)
BAPPENAS	–	National Development Planning Agency (*Badan Perencanaan Pembangunan Nasional)*
BKKPN	–	National Marine Conservation Center (BKKPN) of Kupang
COREMAP	–	Coral Reef Rehabilitation and Management Program
CT	–	Coral Triangle
CTI	–	Coral Triangle Initiative
DG	–	Directorate General
EARF	–	environmental assessment and review framework
EIA	–	environmental impact assessment
ESMU	–	environmental management unit
ha	–	hectare
IEE	–	initial environmental examination
km	–	kilometer
LIPI	–	National Science Agency
LKKPN	–	National Marine Conservation Areas (Loka *Kawasan Konservasi Perairan Nasional or LKKPN)* of Pekanbaru
LPSTK	–	*Coral Reef Resource Management Agency (Lembaga Pengelola Sumberdaya Terumbu Karang)*
MCSI	–	Directorate General of Marine, Coast and Small Islands (Kelautan, Pesisir Dan Pulau-Pulau Kecil or KP3K)
MMAF	–	Ministry of Marine Affairs and Fisheries (*Kementarian Kelautan dan Perikanan or KKP)*
MoU	–	Memorandum of Understanding
MPA	–	Marine Protected Area (*Kawasan Konservasi Laut Daerah or KKLD)*
NGO	–	nongovernment organization
PIU	–	oroject implementation unit
PMO	–	project management office
POKMAS	–	community groups
Rp	–	rupiah
SPPL	–	Surat Pernyataan Kesanggupan Pengelolaan dan Pemantauan Lingkungan Hidup, or statement of management and environmental monitoring ability

SPS	–	Safeguard Policy Statement
UKL	–	environment management efforts/plan
UPL	–	environmental monitoring efforts/plan
UPT	–	technical implementing unit

I. Introduction

1. The Coral Reef Rehabilitation and Management Program—Coral Triangle Initiative Project (COREMAP—CTI, the Project) aims to manage coral reef resources, associated ecosystems and biodiversity in a sustainable manner for the welfare of coastal communities. The design of COREMAP—CTI reflects a phased and incremental approach. The first or initiation phase known as COREMAP Phase I (1998–2004) represented the pilot phase leading to the design of COREMAP Phase II (COREMAP II). The second or acceleration phase, COREMAP II (2004–2011) represented the initial implementation phase. The proposed Project is the third and final phase which aims to (i) complete remaining gaps in Phase II; (ii) "institutionalize" Phase II interventions; and (iii) build a "model" of coral reef rehabilitation and management program in Indonesia for replication and up-scaling in new areas. "Institutionalization" will mean integrating community-based activities within local Government functions and policies, and facilitate learning networks and institutional partnerships across regional and national institutions for project sustainability. The Project will align with Indonesia's National Plan of Action (NPOA) for the Coral Triangle Initiative for (CTI). The Project will follow a project financing modality for a sector loan.

2. The Project is financed by the Asian Development Bank (ADB), while the World Bank is financing a counterpart project in the eastern part of Indonesia. The ADB-financed project would cover three national and seven sub-national marine protected areas (MPAs) in primarily eastern and western parts of Sumatra Island, western part of Indonesia.[1] The World Bank project covers an additional seven MPAs in the eastern part of Indonesia.[2]

3. The Project is categorized as Category B for Environment under ADB's Safeguard Policy Statement (SPS) 2009, which requires the development of initial environmental examinations (IEEs). This is equivalent to Government of Indonesia's (GOI) requirement for Environment Management Effort(s)- Environmental Monitoring Efforts(UKL-UPL). This categorization rating criteria will be followed by using selection criteria of subprojects to ensure that no subproject interventions under any component will exceed this categorization rating. In other words, no activity or intervention that falls into category B or C for environment according to the ADB SPS 2009 will be selected.

4. Sample IEEs have been prepared for two representative (core) subproject areas, one for a national-level MPA (Anambas) and one for a subnational MPA (Bintan).[3] Upon results of the screening process of other MPAs using the Rapid Environmental Assessment (REA) checklists, IEEs may be required and in that case will be developed by the executing agency and submitted to ADB for review and approval.

5. The purpose of this Environmental Assessment and Review Framework (EARF) is to provide the procedure for environmental assessment and review of subproject activities that are to be proposed in target MPAs to screen infrastructure interventions, set up institutional arrangements in relation to environmental management and monitoring, and define environmental assessment requirements in accordance with the applicable laws and regulations of the Government of Indonesia and with ADB's SPS 2009.

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[1] ADB sites include Anambas, Bintan, Mentawai, Gilli Matra, Pulah Pieh, Batam, Nias, Natuna, Lingga, and Tapanuli Tengah.

[2] World Bank sites include Padaido (Biak), Kapoposang, Sawu Sea, Banda, Raja Ampat, Waigeo-Raja Ampat, and Aru (southern part).

[3] See Annexes 3 and 4 for the IEEs of Anambas and Bintan subprojects.

6. This EARF is prepared based on (i) review of the selected infrastructure completed under COREMAP Phase II, (ii) discussion with the executing agency, provincial and district/city government officials from respective planning, public works and environmental agencies, and village organizations (pokmas) and community members; and (iii) review of relevant documents.

II. Overview of Project Activities to be Assessed

7. The project will have four outputs: (i) coral reef management and institutions strengthened; (ii) ecosystem-based resource management developed; (iii) sustainable marine-based livelihoods improved; and (iv) project management.

8. The subprojects to be assessed are limited to: (i) MPA management effectiveness; (ii) ecotourism; and (iii) livelihoods.

9. The typical interventions/infrastructure in this assessment include MPA office and facilities, mooring buoys, jetty, turtle hatchery, fish cage culture, fish processing improvement, trading center and handicraft shop, gazebo, surveillance post, and information center. Livelihood activities related to mariculture such as grouper and seaweeds, and pond culture such as catfish and fish processing activities, are also included.

10. Due to the wide range of activities, assessment of environmental impacts and the proposed mitigation measures are discussed in detail for each of the interventions in the IEEs (Annexes 3 and 4). Tables 1 and 2 show the list of some infrastructure and livelihood activities to be implemented under the project, as well as anticipated environmental impacts from these activities and mitigation measures. The list is not exhaustive and other interventions may be identified during project implementation, for which impact assessment and mitigation measures will be developed following the procedure set forth in this EARF. Paras. 11 to 14 also provide a summary of the anticipated impacts and the principles for mitigation measures.

Table 1. Proposed types of infrastructure and livelihood activities and corresponding potential impacts

Infrastructure	Potential Impacts
MPA Office Complex consisting of offices, signage, information center, public washroom, communication tower, solar cells power supply, water supply, and waste water treatment unit	The MPA Office Complex may induce ▪ waste generation; ▪ water resource problem; ▪ social conflicts between construction workers from other areas and local workers; ▪ noise and dust from construction activities; ▪ temporary silt runoff due to construction; ▪ water depletion and/or degradation; ▪ contamination of surface and ground waters due to improper waste disposal;
Pier/jetty	▪ short-term increase in turbidity and sunlight penetration as well as changes in sediment pattern and flows; ▪ removal and disturbance of aquatic flora and fauna at dredging site especially as the structure is within the marine protected areas with rich marine life; ▪ deterioration of water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction; noise and vibration due to blasting and other civil works;

Infrastructure	Potential Impacts
	▪ social concerns relating to local inconveniences associated with port operation (e.g. increased volume of port traffic, greater risk of accidents, communicable disease transmission); ▪ deterioration of water quality due to ship (e.g. ballast water, oil waste, lubricant and fuel spills, sewage) and waterfront industry discharge.
Turtle Hatchery	▪ social problems arising from conflicts with other site uses; ▪ social problems especially when workers from other areas are hired; ▪ pollution of nearby aquatic environments by pond drainage water and inadequate farm management
Gazebo	▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services. ▪ social conflicts between construction workers from other areas and local workers.
Security and Remote Surveillance Post	▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services. ▪ social conflicts between construction workers from other areas and local workers.
Mooring buoys	▪ encroachment on precious ecology resulting in loss or damage to fisheries and fragile coastal habitats such as coral reefs, mangroves, and seagrass beds ▪ poor sanitation and solid waste disposal in construction camps and work sites; ▪ social concerns relating to local inconveniences associated with port operation (e.g. increased volume of port traffic, greater risk of accidents, communicable disease transmission); ▪ deterioration of water quality due to ship (e.g. ballast water, oil waste, lubricant and fuel spills, sewage) and waterfront industry discharges; ▪ removal and disturbance of aquatic flora and fauna at the installation site, especially in areas with coral reef.
Solar (PV) Cells Power Supply	▪ Industrial liquid (dielectric fluids, cleaning agents, and solvents) and solid wastes (lubricating oils, compressor oils, and hydraulic fluids) generated during construction and operations likely to pollute land and water resources; ▪ Soil/water contamination due to use of hazardous materials or disposal of broken or damaged solar cells; ▪ Visual impacts due to reflection from solar collector arrays resulting in glint or glare; ▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during construction, installation, operation, and decommission.
Upgrading community fish processing facility	▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services; ▪ water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality, and pollution of receiving waters); ▪ social conflicts between construction workers from other areas and local workers; ▪ noise and dust from construction activities; ▪ hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation; ▪ contamination of surface and ground waters due to improper waste disposal;

Table 2: Summary of Environmental Impacts and Mitigation Measures and Institutional Arrangement

Stage/Intervention/ Environmental Impacts	Mitigation Measures	Institutional Arrangements
Project Location/Design Stage		
MPA Office Complex Pier/jetty Gazebo Security and Remote Surveillance Post Turtle Hatchery Mooring Buoys Upgrading community fish processing facility		
Impacts to coral reefs, mangroves and seagrasses.	Site selection in compliance with the approved MPA zoning and management plan, or the draft management guidelines if the approved management plan is not available, and use of best practices (e.g. in selection of mooring buoy system). No activities that would affect physical and cultural resources will be selected.	ESMU-PMO and PIU to coordinate and supervise.
Construction/Establishment Stage		
MPA Office Complex Pier/jetty Gazebo Security and Remote Surveillance Post Turtle Hatchery Mooring Buoy Upgrading community fish processing facility		
Potential impacts to coral reefs, mangroves and seagrasses.	Construction activities will be supervised so that impacts to surrounding are minimized, including reduction of noise and dust by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and transfer of waste and debris into surrounding areas. Construction should not be conducted during rainy days as there is potential for silt runoff. Safe and healthy working conditions will be provided to prevent	ESMU-PMO and PIU to coordinate and supervise.

Stage/Intervention/ Environmental Impacts	Mitigation Measures	Institutional Arrangements
	accidents, injuries, and disease to workers, following ADB's SPS 2009 and related guidelines on Environment, Health, and Safety . The Sector Guideline on Fish Processing by the IFC is to be followed for upgrading community fish processing facilities activity.	
Potential impacts to physical and cultural resources	If any item of cultural heritage or archaeological artifacts are uncovered during excavation or other construction activities, works must stop and the project implementation unit (PIU) has to be notified. Construction activities at that location cannot commence until the chance-find has been investigated by the PIU and change of location is recommended.	Environmental and social monitoring unit (ESMU) of the project management office (PMO) and PIU to coordinate and supervise.
Operation/Maintenance Stage		
MPA Office Complex		
Waste Generation (solid and sanitary)	• Solid wastes will be treated in accordance with approved Waste Management Plan (WMP), where solid wastes will be collected, segregated and disposed appropriately; 3R (Reuse, reduce and recycle) principles will be practiced. • Compliance monitoring	The WMP will be prepared and implemented by the MPA Office, which will submit report on compliance to ESMU-PMO; LKKPN will evaluate and approve the WMP, and supervise the implementation the WMP.
	Sanitary wastes will be treated in a wastewater treatment unit, which is part of the complex structures.	The MPA office will ensure that the wastewater treatment facility is operating well; and shall report any sanitation problem to ESMU-PMO.
Water supply problem	identify and assess the water supply requirement of the complex	The MPA office to identify and assess the water supply of the complex, and report to ESMU-PMO
	• water conservation measures • Compliance monitoring	The MPA office to propose and implement water conservation measures, and submit report on compliance to ESMU-PMO
Pier/jetty		
social concerns relating to local inconveniences like increased port traffic volume, increased risk of accidents and communicable disease	• Promulgation of rules on the use and maintenance of the pier/jetty, after consultation with affected parties; • Compliance Monitoring	Rules on the use and maintenance of the pier/jetty will be promulgated and approved by LKKPN, which will also ensure public

Stage/Intervention/ Environmental Impacts	Mitigation Measures	Institutional Arrangements
transmission water quality will deteriorate due to ship and waterfront discharges		consultation. These rules will be strictly implemented by the MPA office, which will submit report on compliance to ESMU-PMO.
Turtle Hatchery, Gazebo, Security and Remote Surveillance Post		
No significant impact	Nothing to mitigate but additional environmental safeguards are recommended	ESMU-PMO to coordinate and supervise the implementation of additional environmental safeguards
Mooring buoys		
Social concerns such as boat congestion, increase traffic and risks due to accidents and diseases	• Promulgation of rules on the use and maintenance of the mooring buoys, after consultation with affected parties; • Compliance monitoring	Rules on to the use and maintenance of mooring buoys will be promulgated and approved by LKKPN, and enforced by the MPA Office, which will submit report on compliance to ESMU-PMO
Upgrading community fish processing facility		
Waste Generation (solid and sanitary)	• Solid wastes will be treated in accordance with approved Waste Management Plan (WMP), where solid wastes will be collected, segregated and disposed appropriately; • Compliance monitoring	The WMP will be prepared and implemented by Pokmas Bandeng, which will submit report on compliance to ESMU-PMO; PIU/LKKPN will evaluate and approve the WMP, and supervise the implementation the WMP.
	• Sanitary wastes will be treated in a septic tank unit, which is part of the complex structures.	MPA Bintan will ensure that the septic tank is operating well; and shall report any sanitation problem to PIU and ESMU-PMO.

11. **Design phase.** During the project design stage, environmental safeguards measures are recommended to avoid adverse environmental impacts include proper siting and best practices. Where possible, locating of project sites in areas where there are no live corals, mangroves and seagrasses, and outside the restricted zones of the MPA, in compliance with the approved zoning and management plan of the MPA, or the draft management guidelines if the approved management plan is not available will be recommended. Another measure involves application of best practices based on the local conditions, for example, selection of a mooring buoy system that is most suitable for the sea bottom condition (flat, solid bedrock, sand, mud, coral rubble, or a combination of all), to avoid damage to corals and other marine life.

12. **Physical and cultural resources.** As part of the requirements during the design phase, no activities that would affect physical and cultural resources will be selected. If any item of

cultural heritage or archaeological artifacts are uncovered during excavation or other construction activities, works must stop and the PIU has to be notified. Construction activities at that location cannot commence until the chance-find has been investigated by the PIU and change of location is recommended to avoid impacts on physical and cultural resources. Contractors will be obliged to familiarize themselves with the chance-find procedure and will be contractually required to implement them strictly.

13. **Construction phase.** The impacts during construction phase are temporary and minimal, including increased level of noise and dust, disposal of waste, and work conditions for workers. Safeguards to avert any adverse environmental effect during construction include: (i) proper use and maintenance of construction equipment, in accordance with the owner's manual and compliant with government's standards to minimize noise and dust from construction activities; (ii) scheduling the drilling when the waves are calm to reduce temporary silt runoff; (iii) limiting noisy works to 9am to 5pm during work days only; (iv) provision of safe and healthy working conditions to prevent accidents, injuries, and disease to workers following ADB's SPS 2009 and related guidelines on Environment, Health, and Safety ; (v) provision of temporary lavatories for workers; (vi) prioritization of hiring local labour; and (vii) development and implementation a waste management plan for chemical and hazardous wastes according to government regulations.

14. **Operation and maintenance phase.** The potential environmental impacts during operation/maintenance stage are (i) reduced access to resources, which can be mitigated by consultation with the affected people or groups, conduct of technical extension and information, education and communication, and provision of appropriate property right or use arrangements; (ii) obstruction to navigation by fish cages, which can be mitigated by proper lay-out of cages so as not to obstruct navigation and consultation with other users; (iii) depletion of local fish populations by stocking of wild fry/fingerlings in cages, which can be mitigated by procurement of fingerlings from established hatcheries; (iv) Spread of parasites and diseases from cultured species, which can be prevented by the provision of veterinary services; (v) social conflict between workers from other areas and local workers, which can be prevented by giving priority to local workers; (vi) influx of squatters near the trading center or jetties, which can be mitigated by the institution of appropriate land use rules, known and accepted by all parties concerned; (vii) aggravation of sanitation and solid waste management problems, which can be mitigated by incorporating latrines/toilets and solid waste disposal system in the design and operation of the infrastructures; and (viii) water resource problems and pollution of receiving waters, which can be prevented by proper waste disposal and efficient water use.

15. **Occupational health and safety.** The PMO and PIUs shall require the contractors to follow ADB's SPS 2009 and related guidelines on Environment, Health, and Safety to protect the health and safety of workers. The PMO and PIUs shall only hire contractors that have the technical capability to manage the occupational health and safety issues of their employees, extending the application of the hazard management activities through formal procurement agreements.

III. Country's Environmental Assessment and Review Procedures

16. Indonesia's environmental assessment and review procedures are described in - Analisis Mengenai Dampak Lingkungan Hidup (AMDAL) or the Indonesian Environmental Impact Assessment (EIA) system. The relevant environmental assessment laws and regulations include:

- Law of Republic Indonesia No. 32 of 2009 on Environmental Protection and Management Law (amended Environmental Management Law or Law No. 23/1997) is now the primary law on environmental assessment.
- Law of Republic Indonesia No. 22 of 2009 regarding Regional Governance
- Law of Republic Indonesia No. 26 of 2007 regarding Spatial Planning
- Government of Republic Indonesia No. 27 of 2012 on Environmental Permit (revoked Government Regulation No.27/1999 which requires actions to implement EIA)
- Minister of Environment Regulation No.05 of 2012 on the Type of Business Plan and/or Activities that require EIA (revoked Minister of Environment Decree No.11/2006 on the list of projects requiring EIA).
- Minister of Environmental Regulation No.17 of 2012 regarding Guideline of Public Participation in AMDAL Process and Environmental Permission.
- Minister of Environmental Regulation No.17 of 2010 regarding Environmental Audit
- Minister of Environmental Regulation No.15 of 2010 regarding Requirement and License Procedure of AMDAL Commission
- Ministry Regulation of Environmental No.13 of 2010 regarding Environmental Management Plan and Environmental Monitoring Plan and Notification Obligation of Environmental Management and Monitoring
- Minister of Environmental Regulation No.07 of 2010 regarding Competence Certification of AMDAL Arranger and Requirement of Competence Training Institution for AMDAL Arranger
- Minister of Environmental Regulation No.24 of 2009 regarding Guidance for Evaluation of AMDAL Document
- Minister of Environmental Regulation No.22 of 2009 regarding Procedure of Environment Competence Registration
- Minister of Environmental Regulation No.06 of 2008 regarding Procedure of License for AMDAL Commission at the Regency/Municipality Level
- Decree of Head of BAPEDAL No. 056 of 1994 regarding Guidelines of Determination of Significance

17. The Ministry of Environment (MOE) is responsible for EIA at the national level while the Local Environmental Impact Control Agencies (BAPEDALDA) hold this responsibility at the provincial and district levels. Under the AMDAL system, each individual business plan and/or activity must be screened for coverage and compliance. An investment project is categorized into one of three types: (i) project requiring an EIA report (Analisis Dampak Lingkungan, or ANDAL report); (ii) project requiring Environmental Management Efforts (Upaya Pengelolaan Lingkungan or UKL) and Environmental Monitoring Efforts (Upaya Pemantauan Lingkungan or UPL); and (iii) projects that do not require ANDAL or UKL-UPL but are obliged to submit a statement of management and environmental monitoring ability (Surat Pernyataan Kesanggupan Pengelolaan dan Pemantauan Lingkungan Hidup or SPPL). The MOE Regulation No.05 of 2012 lists the types of investment activities (with sector specific thresholds) that require the preparation of EIA or ANDAL. Investment activities will be assessed by responsible environment agency at the central, provincial or district level, depending on their level of authority as allowed by law.

18. The simplified steps of the AMDAL screening process under the new regulation (5/2012) are described in Annex 1 – The AMDAL environmental screening process simplified flow chart. As all project interventions in the sample subprojects are (i) not among those listed under Annex

I of MOE Regulation No 5/2012 that require EIA or ANDAL report; (ii) those, while within or adjacent to protected areas as listed in Annex III, are excluded under Article 3 paragraph (4) of the same regulation; and (iii) not among those activities that are assessed to generate significant negative impacts to the environment, the environmental assessment required is UKL-UPL, or SPPL.

19. The AMDAL system, which was recently revised and strengthened under the new law (Law 32/2009), substantially conforms to the ADB SPS 2009, and requires all projects to complete the AMDAL process prior to implementation. Table 1 shows the comparison between projects categorized under ADB classification system and those screened according to AMDAL procedures. Category A projects under ADB are similar to projects that require ANDAL, while Category B projects under ADB match those that require UKL-UPL. The counterparts for Category C projects are those projects that require a 'statement of management and environmental monitoring ability' (SPPL). One key difference lies in the classification criteria used. ADB uses the significance of potential environmental impacts as criteria for classification, while the AMDAL primarily uses a positive list of projects and sector-specific thresholds that require EIA. The AMDAL system also provided specific eligibility criteria for a project to be environmentally feasible4 such as spatial plans' conformity with laws and regulations, non-interference of the project with the social value of the society or with the existing business/activity, non-disruption of the project with ecological integrity, etc., which makes the new AMDAL evaluation procedure more stringent in terms of data or documentary requirements. Table 3 shows the comparison between ADB and AMDAL project categories.

Table 3. Comparison between ADB and Indonesian environmental safeguard systems

ADB Project Categories	Indonesian Project Categories (AMDAL system)
Category A: Projects with potential for significant adverse environmental impacts, requiring an environmental impact assessment (EIA)	**ANDAL**: Projects with potential for substantial impacts on the environment requiring Environmental Impact Analysis or ANDAL report
Category B: Projects judged to have some adverse environmental impacts, but of lesser degree and/or significance than those for category A projects, and requiring an initial environmental examination (IEE)	**UKL-UPL**: Projects not required to have ANDAL are obliged to have Environmental Management Efforts/Plan (UKL) and Environmental Monitoring Efforts/Plan (UPL)
Category C: Projects unlikely to have adverse environmental impacts.	**SPPL**: Projects that do not require ANDAL or UKL-UPL are obliged to submit a 'statement of management and environmental monitoring ability' or SPPL

IV. Specific Procedures to be used for the Subprojects under the Sector Loan

20. ADB procedure on the categorization of the project using the Rapid Environmental Assessment (REA) will be maintained for screening purpose. This is based on the most sensitive component, meaning that if one part of the project poses a potential for significant

[4] MOE Regulation No. 16 of 2012 Annex II.

adverse environmental impact, that part would be excluded from the Project to ensure category B for environment of the Project by ADB's SPS 2009 will not be exceeded.

A. Responsibilities and Authorities

21. The Directorate General of Marine, Coast, and Small Islands (DGMCSI) of the Ministry of Marine Affairs and Fisheries (MMAF), as the Executing Agency (EA) of the COREMAP—CTI Project, has overall responsibility for project management and administration and will host the Project Management Office (PMO). The EA is responsible for the compliance with both ADB's SPS 2009 and GOI's environmental safeguards rules and regulations.

22. An Environmental and Social Monitoring Unit (ESMU), which will be established under the PMO, will play a lead role in implementing the EARF provisions of the Project, and will be responsible for ensuring that the environmental requirements and procedures of the government are complied with, such as the preparation of summary information on business plan/project activities, UKL-UPL, SPPL; the REA, the environmental categorization form, and environment management and monitoring plans, are incorporated in every stage of the subproject/MPA activities.

23. The ESMU will be headed by a senior government officer with expertise in environmental management, and assisted by a junior government officer with expertise in marine and coastal management. Both will be assigned by the EA from DGCSI, to ensure that an environmental management system, including mitigating measures, environmental monitoring, and the acquisition of government permits and clearances, is effectively implemented. One national environmental safeguard specialist (consultant) with extensive experience in marine, fisheries and coastal management and infrastructure projects, engaged by the Project at the ESMU-PMO, will assist in capability building, as well as to periodically audit the implementation of the mitigation measures and monitoring plan in every MPA, and to advise the project on issues related to environmental management. The TOR of the national environmental safeguard specialist is in Annex 2.

24. Capacity-building activities and budget for environmental management, in particular for training needs related to compliance monitoring, and water quality monitoring, are listed in Table 2.

25. Three national Project Implementing Units (PIUs), one for each of the three IAs DGMCSI-Directorate of Area and Fish Species Conservation (DGMCSI-DAFSC), Directorate General of Capture Fisheries-Directorate of Fisheries Resources (DGCF-FR), and Indonesian Institute of Sciences [Lembaga Ilmu Pengetahuan Indonesia (LIPI)]) and seven District PIUs will be established which will be responsible for implementing the approved project activities. Among other functions, the PIUs are also tasked with the preparation of the AMDAL studies and documents pertaining to the UPL-UKL or SPPL, whichever is required by relevant local environmental authority as well as the implementation of UKL and UPL. An environmental safeguard officer will be assigned in each of the national and district PIUs to assist the PIU in developing and monitoring the implementation of environmental safeguard measures, with support from the national environmental safeguard specialist. The PIUs will also be assisted by the Project's district advisors. The TOR for the district advisor can be found in the Project Administration Manual.

26. UKL-UPL or SPPL documents will be submitted by PIU/PMO to the relevant environment authority at district or provincial level for approval and for issuance of

environmental clearance/permit as part of the AMDAL process. Some initial samples of AMDAL documents may be furnished to ADB for review (see para. 33).

27. The Project partners (Provincial and District Fisheries Office, LPSTK, Pokmas) will also assist in the implementation of environmental safeguards and in environmental monitoring within their area of operation.

B. Environmental Criteria of Subproject Selection

28. In selecting subprojects, it is recommended that the environmental criteria to be used for the initial screening include: (a) the subproject must be in compliance with the approved zoning and management plan of the MPA; (b) the potential adverse environmental impacts of the subproject are not significant so that it will not surpass environmental category B under ADB SPS 2009, or would require an ANDAL (EIA) under the government's requirements. In the event that MPA management plans have not been approved, the sub-project must be consistent with draft management planning guidelines and consultation and approval must be received in advance from the relevant MPA authorities.

29. A negative list has been developed to exclude activities that may be harmful to the environment and the people or incompatible with the purpose of the project. The ineligible sub-projects include the following:

- Purchase or compensation for land;
- Road construction into protected areas;
- Repair of government offices;
- Meeting halls and places of worship;
- Environmentally hazardous materials such as chainsaws, explosives, pesticides, herbicides, insecticides, asbestos and other potentially dangerous materials;
- Fishing boats (beyond the weight limit set by the government);
- Activities that have alternative prior sources of committed funding;
- Activities for fiesta and other religious and cultural activities;
- International travel;
- Salaried activities that employ under-aged children;
- Consumption items; and
- Maintenance and operation of infrastructure built from project funds.

30. For general guidance, the following are the additional list of prohibited investments based on ADB policies:

- Production or activities involving harmful or exploitative forms of forced labor or child labor;
- Production of or trade in any product or activity deemed illegal under the government's laws or regulations or international conventions and agreements or subject of international phaseouts or bans, such as (a) pharmaceuticals, pesticides, and herbicides; (b) ozone-depleting substances, (c) polychlorinated biphenyls and other hazardous chemicals, (d) wildlife or wildlife products regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora and (e) transboundary trade in waste or waste products;
- Production of or trade in weapons and munitions, including paramilitary materials;
- Production of or trade in alcoholic beverages, excluding beer and wine;
- Production of or trade in tobacco;

- Gambling, casinos and equivalent enterprises;
- Production of or trade in radioactive materials, including nuclear reactors and components thereof;
- Production of, trade in, or use of unbounded asbestos fibers;
- Commercial logging operations or the purchase of logging equipment for use in primary tropical moist forests or old-growth forests; and
- Marine and coastal fishing practices, such as large-scale pelagic drift net fishing, harmful to vulnerable and protected species in large numbers and damaging to marine biodiversity and habitats.

31. The project will also not fund the following activities that would give rise to significant environmental impacts, including:

- Any activity that will impact on population migration (voluntarily or not);
- Activities that would affect physical and cultural resources;
- Any activity that requires land acquisition. If a piece of land is required for the implementation of a micro-project, the land will become part of community donations and a selected village forum shall provide a written statement stating that the individual landowner does not suffer from any disadvantage;
- A large-scale agricultural activity;
- Design of land conversion to convert a forest into agricultural grounds;
- Agricultural programs that impact on population migration;
- Large-scale water drainage and irrigation projects;
- Construction of water channels in marsh habitat or native forest;
- Productive forest projects;
- Conversion of mountain forest areas for transfer of uses;
- Commercial logging;
- Housing development;
- Industrial plants and industrial estates, including expansion, rehabilitation or modification;
- Reclamation and new land development;
- Manufacturing, transportation and uses of pesticides or other toxic materials; and
- Construction of seaport and airport.

C. Procedures for Environmental Assessment of Subprojects

1. Environmental Classification, Performance Monitoring and Audit at the MPA subproject level

32. The PIU will undertake the Rapid Environmental Assessment (REA) for each subproject at the MPA level with its interventions to determine its environmental category under ADB's SPS 2009. These will be submitted to PMO for endorsement.

33. Upon endorsement of the REA and environmental categorization form of each subproject, the applicable document (i.e. IEE for category B for environment) will be prepared as appropriate by the PIU with assistance from the national environmental safeguard specialist. The endorsed REA and environmental categorization form and where applicable, the IEE, of each subproject will then be submitted to ADB for review and approval.

2. Preparation and Approval of Environmental Documents at the activity/intervention level under each MPA subproject

34. Based on the approved environmental assessment of the MPA subproject, each intervention/activity (i.e. mooring buoys, jetty, trading center, handicraft, grouper mariculture, etc.) of the subproject shall follow and comply with the government's screening process and procedures for environmental assessment, which are discussed in the AMDAL system and its relevant regulations. This will begin with the preparation of summary information to be submitted by PIU/PMO to the district or provincial environmental offices concerned, which will determine the environmental assessment needed for the activity (UKL-UPL or SPPL - see Annex 1 for the process). Any activity that will require an ANDAL (EIA), will not be selected.

35. Under the new regulation (Annex IV, MOE Regulation No. 16 of 2012), a UKL-UPL form will be filled by the proponent (PIU) and documents like maps, proof of compliance with spatial planning, proof of business activity principle that will be carried out, statement of proponent, and other information about the planned activity, will be attached.

36. The preparation of SPPL by the PIU will follow the format under Annex V of MOE Regulation No. 16 of 2012.

37. The assessment documents prepared by the PIU (UKLs-UPLs or SPPLs) of the subproject interventions/activities as required by the EARF and the respective IEE will be reviewed and approved, following the process outlined below:

(i) Filled-up form of UKL-UPL or SPPL of the subproject intervention/activity will be submitted by the PIU to the head of the district, the governor or through its local environmental department (BAPEDALDA), or to the Ministry of Environment for processing and approval.

(ii) Upon approval by the governor or regent of the UKL-UPL or SPPL, the PIU will submit the UKL-UPL or SPPL to the PMO for consolidation and a selected numbers will be submitted to ADB for review (see point iii below) but the information has to be retained in PMO for ADB review and audit purposes.

(iii) The first UKL-UPL of each type of intervention/activity will be submitted to ADB for review and concurrence. If this is deemed by ADB as of satisfactory quality, subsequent UKLs-UPLs will be certified by the Project Director and submitted to ADB upon request. ADB may conduct assessment of the compliance with its environmental safeguards policy of the Project on a random basis.

3. Public Consultation and Information Disclosures

38. Public consultation and information disclosures in accordance with ADB and government requirements will be complied for all subprojects during the UKL-UPL, and SPPL phase. This is to inform the stakeholders of the proposed subproject components and to encourage input to identify overlooked environmental issues. The information disclosed and feedback provided at the consultation sessions will be summarized, attendance recorded, and the document attached as an annex to the environmental assessment report.

39. Invited attendees at environmental assessment consultations are expected to include national and local government agencies, community organizations/representatives, NGOs, academic and religious institutions.

40. Environmental documents such as the business plan/project activities, UKLs-UPLs and SPPLs, IEEs and REAs are subject to public disclosure; therefore, these documents should be made available in Bahasa Indonesia and English languages, and made available to the public on ADB website.

4. Implementation

41. The implementation of mitigation measures and additional environmental safeguards, as described in the Environmental Management Plan or UKL, will be primarily the responsibility of the PIUs based on contracts with the contractor/developer, and under the supervision of the PMO through the ESMU. The PIUs, which may be assisted on a contractual basis by local environmental consultants, shall coordinate with all parties involved to implement the UKL. The district advisors also will support the PIUs in implementation.

5. Monitoring and reporting

42. The environmental monitoring plan under the respective IEE of the subproject, and the UPL of the Project activity/intervention will also be implemented by the PIU. The PIU can call on the District Fisheries Office, LPSTK and ESMU in the conduct of field inspection and monitoring of the subproject interventions. Water quality monitoring based on site specific needs (typically biochemical oxygen demand, pH, total suspended solids, ammonia, etc) will be carried out. Field inspection of mitigating measures and safeguards will also be done to coincide with the field monitoring survey. A simple monitoring form will be prepared for this purpose by the ESMU. All environmental monitoring reports will emanate from PIUs and will be submitted to the ESMU/PMO for review and consolidation. The PMO will integrate the consolidated environmental reports of all subproject specific activities into its quarterly progress reports to the EA (MMAF) and the ADB for review.

V. Confirmation that Environmental Assessment and Review Procedures conforms to ADB's Environmental and Social Safeguard Policies

43. The procedures developed under the Project ensures to screen and assess potential impacts associated with infrastructure and livelihood interventions, set up institutional arrangements in relation to environmental management and monitoring, and define environmental assessment requirements. The developed procedures with the proposed consultants' inputs are adequate to comply with the applicable laws and regulations of the Government and with ADB's SPS 2009.

VI. Grievance Redress Mechanism

44. The grievance redress mechanism (GRM) is meant for people seeking satisfactory resolution of their complaints on the environmental performance of the project. The mechanism will ensure that (i) the basic rights and interests of every affected person by poor environmental performance of the project are protected; and (ii) their concerns arising from the poor environmental performance of the project during the phases of design, construction and operation activities are effectively and timely addressed.

45. The PMO, PIUs, the province and the regency concerned will make the public aware of the GRM through public awareness campaigns, training and capacity building. Each office will nominate and train one of their staff to be a Grievance Point Person (GPP) for environment-related issues as part of the advanced action activities at the inception stage of the Project implementation. Any person who has complaints regarding the environmental performance of the subproject during pre-construction, construction and operation phases shall have access to the GMR described in the subsequent section.

46. The GPP will ensure that:

(i) the grievance redress mechanism and the contact details of the GPPs are publicly disclosed, and posted in the offices of the affected communes and in strategic places of the subproject's area of influence;
(ii) the grievance redress mechanism is accessible to all affected communities;
(iii) the public, especially the residents and passers-by in the vicinities of influence of the subproject, are aware of their rights to access, and shall have access to, the mechanism free of administrative and legal charges; and
(iv) a registry of grievances received is maintained for reporting to ADB and higher Government authorities on associated follow-up, resolution or non-resolution of issues.

47. Households or groups of households wishing to complain about the effects of construction works on their property, production system, economic well-being, spiritual life, quality of surface and ground water, quality of air, health, safety, welfare, or any other assets of their lives shall make their complaint using the standard complaint form provided by the GPPs.

48. The Grievance Investigation and Resolution process is outlined below:

Step 1: Complaint form will be sent by affected persons (APs), affected households (AHs) or groups of households to the GPP of the relevant PIU.

Step 2: If the complaint is judged as valid, within 15 days from the date the complaint is received, the GPP of the relevant PIU will organize meetings with the relevant agencies/contractors/subcontractors to discuss how to resolve the matter. All meetings will be recorded and copies of the minutes of meetings will be provided to APs/AHs.

Step 3: The relevant PIU shall take such mitigation measures as agreed in meetings from step 2 within 15 days, or some other period acceptable to the parties referred to in step 2.

Step 4: When the complaint is resolved, the Complaint Form needs to be signed by Complainant/ head of AH, the relevant parties, and annotated at each stage of process by the PIU with copies to be sent to the relevant regency.

Step 5: If no understanding or amicable solution is reached, or if no response is received from the relevant PIU within 15 days after the registration of complaint, the APs/ AHs can appeal to the relevant regency of the district, who will decide and take mitigation measures within one month of receiving the appeal.

Step 6: If no understanding or amicable solution is reached, or if no decision or mitigation measure is received from the relevant agency regency within 15 days after the registration of complaint, the APs/ AHs can appeal to the relevant district head or governor of the province through their GPP, who will decide and take mitigation measures within one month of receiving the appeal.

Step 7: When the complaint is resolved, the Complaint Form needs to be signed by Complainant/ head of AH, the relevant parties, the relevant governor of the province, and annotated at each stage of process by the GPP of the governor of the province.

Step 8: If no understanding or amicable solution is reached, or if no response is received from the relevant governor of the province within 15 days after the registration of complaint, the APs/ AHs can appeal to the PMO through their GPP. The PMO will

provide a decision and take mitigation measures within one month of receiving the appeal.

Step 9: When the complaint is resolved, the Complaint Form needs to be signed by Complainant/ head of AH, the relevant parties, the relevant PIU, and the PMO with copies to be sent to ADB.

Step 10: If the AP/AH is still not satisfied with the decision of the PMO in the absence of any response within the stipulated time, the AP/AH as a last resort may submit his/her case to the court to redress their grievance.

VII. Staffing Requirements and Budget

49. The ESMU, which is to be established in the PMO, is headed by an assigned government officer with expertise in environmental management, and assisted by a junior government officer with expertise in marine and coastal management, both of whom are appointed by the EA (DGMCSI-MMAF). A national environmental safeguard specialist (consultant) will be engaged by the project to assist the ESMU and provide advice in environmental management. The TOR of the national consultant is in Annex 2.

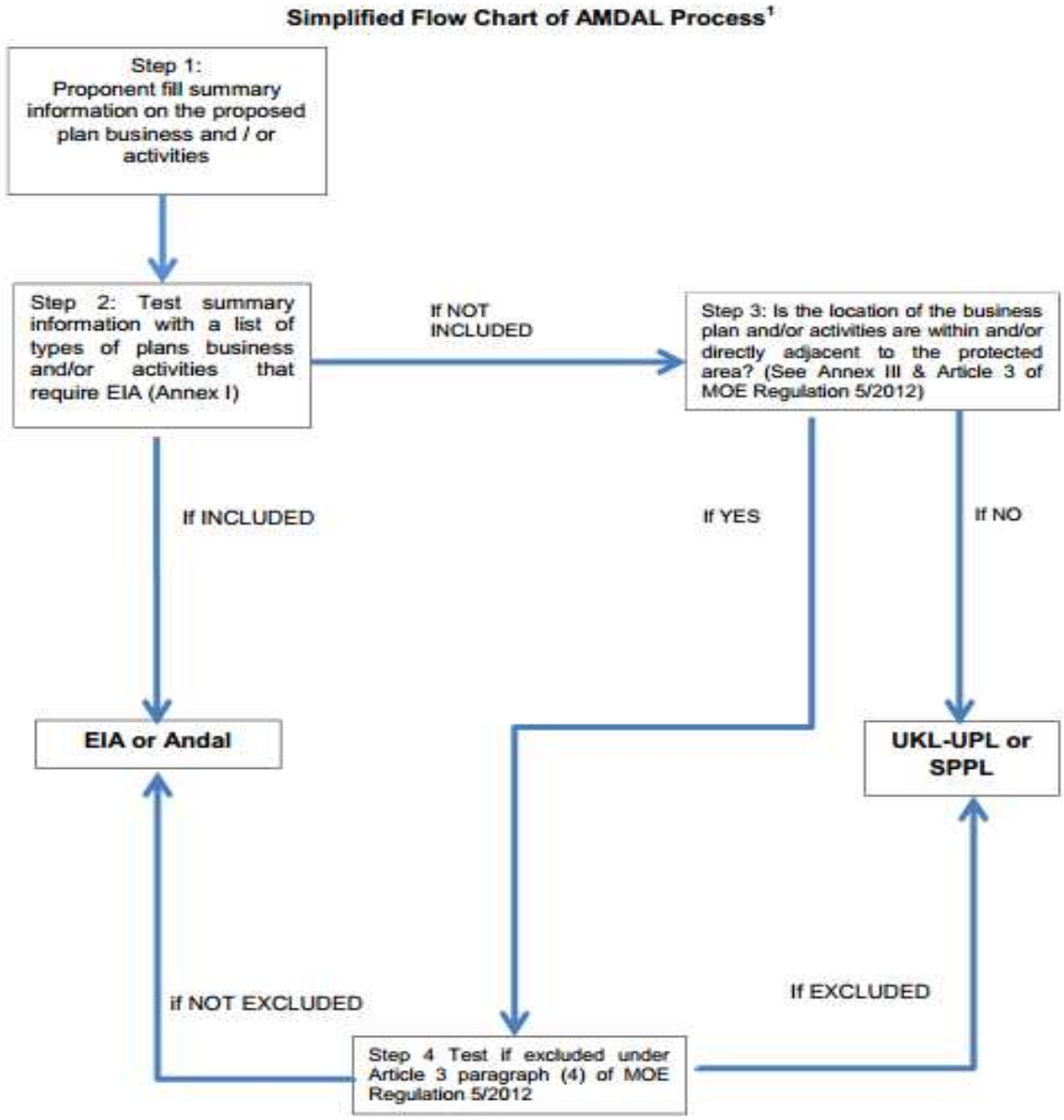
50. Each of the PIUs will assign one environmental safeguard officer to prepare the environmental documents and monitor the implementation of the environmental safeguard measures as required by the government and ADB. The district advisors will also provide assistance to the PIUs in this regard.

51. **Budget Estimates of Environmental Management.** The cost of ESMU staffing in the PMO and the environment officer in the PIUs is included in the budget of the executing agency and implementing agencies under the loan. The environmental report preparation, implementation of mitigation measures and environmental monitoring, including travel, survey, auditing and capacity building expenses and the cost of engaging a national environmental safeguard specialist will come from PMO budget. The Project proposes to allocate a total amount Rp24,000 million, which is described in detail in Table 4 below.

Table 4. Proposed budget for Environmental Management of the Project

Cost Item	Particulars	Total Amount (Rp million)
UKL-UPL and SPPL preparation and permitting	80 Villages	800
Water Monitoring survey	Year 2 to Year 5 (Rp.0.2M/sample x 2 /yr x 4years x100 parameters x 10 subprojects)	1,600
Total		**2,400**

Annex 1. Simplified Flow Chart of AMDAL Process



Annex 2. Proposed Terms of Reference of the National Environmental Safeguard Specialist (30 person-months, to be assigned at ESMU/PMO)

1. The National Environmental Safeguard Specialist will have at least a Master's Degree in environmental management/science, or equivalent, and will have more than 10 years of experience in the fields of marine, fisheries and coastal management. S/he should have proper accreditation from the government as an environmental assessment consultant and should be fluent in English and Bahasa Indonesia. Familiarity with ADB environmental safeguard system and knowledge in the types of infrastructure under the Project will be an advantage.

2. **Overall responsibilities:** The Specialist will provide technical guidance, capacity building, support and advice to PMO, PIUs, and local government concerned in all aspects of environmental management and environmental safeguards in accordance with the ADB SPS 2009 and the environmental rules and regulations of the Government of Indonesia.

Specific tasks:

(i) Review various reports/assessments and other relevant background information available regarding the project or collect additional information to update him/herself with the current status of environment related aspects of the Project and familiarize him/herself with potential environmental issues relevant to the proposed interventions in each subproject area;
(ii) Refine EARF as needed at project start after consultation with PMO, IAs and PIUs;
(iii) Assist the PIUs in the preparation of the applicable Rapid Environmental Assessment (REA) and the environmental categorization forms of the subprojects for submission to PMO (The templates of these documents are available on ADB website);
(iv) Assist the PIUs and PMO in the preparation of all Initial Environmental Examinations (IEEs) for subprojects that are determined as category B for environment according to ADB's SPS 2009, and in the submission of the REAs, the environmental categorization forms and the applicable IEEs of the subprojects to ADB for review and approval;
(v) Lead in the conduct of capacity building/training of environment personnel in the Project;
(vi) Develop sample UKL-UPLs and SPPLs for subproject interventions/activities based on the EARF and guiding IEEs;
(vii) Provide technical assistance and capacity building to the PMO and PIUs, in particular the ESMU environment officers, the PIU environment officers and the district advisors in the preparation of UKL-UPL and SPPL of each subproject intervention/activity;
(viii) Review the preparation of environmental documents per Project activities, which will be submitted to the concerned government offices and to ADB for approval.
(ix) Develop strategy to effectively carry out the submission of environmental assessment documents to the concerned government offices and ADB;
(x) Provide technical assistance and capacity building to the PMO and PIUs in monitoring the implementation of the IEEs, and UKL-UPLs;
(xi) Assist the PMO and PIUs in the preparation and consolidation of the environmental monitoring reports, to be integrated into the quarterly project progress reports;

(xii) Discuss with the regency, particularly the district department of environment, and identify any additional environmental regulatory requirements, and specific environmental issues related to the subproject;

(xiii) Provide technical inputs to the PIU and Pokmas in the environmental assessment and technical proposal formulation processes to ensure adequate environmental considerations and site specific mitigation measures in the design of interventions and operation and maintenance; and

(xiv) Collaborate with district departments of environment to include environmental safeguards and awareness aspects in the capacity building and awareness building activities.

ADB

Initial Environmental Examination:

Subproject: Enhancing Management Effectiveness, Anambas National Marine Protected Area, Anambas Islands, Indonesia

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Document Stage: Final

Project Number: 46421

November 2013

INO: Coral Reef Rehabilitation and Management Program—Coral Triangle Initiative Project

CURRENCY EQUIVALENTS
(as of 12 November 2013)

Currency Unit – rupiah (Rp)
Rp 1.00 = $0.000088
$1.00 = Rp11,396

ABBREVIATIONS

ADB	-	Asian Development Bank
AMDAL	-	Analisis Mengenai Dampak Lingkungan Hidup, or Indonesian Environmental Impact Assessment system
ANDAL	-	Analisis Dampak Lingkungan, or Environmental Impact Assessment
BAPEDAL	-	Environmental Impact Control Agency *(Badan Pengendalian Dampak Lingkungan)*
BAPEDALDA	-	Local Environmental Impact Control Agency (*Badan Pengendalian Dampak Lingkungan Daerah*)
BAPPENAS	-	National Development Planning Agency (*Badan Perencanaan Pembangunan Nasional)*
BKKPN	-	National Marine Conservation Center (BKKPN) of Kupang
BPLHD	-	Local Environmental Management Agency (*Badan Pengelolaan Lingkungan Hidup Daerah*)
Bupati	-	District Mayor
COREMAP	-	Coral Reef Rehabilitation and Management Program
CT	-	Coral Triangle
CTI	-	Coral Triangle Initiative
DG	-	Directorate General
DPL	-	Marine Protected Areas *(Daerah Perlindungan Laut)*
EARF	-	Environmental Assessment and Review Framework
EIA	-	Environmental Impact Assessment
ESMU	-	Environmental Management Unit
GEF	-	Global Environment Facility
GoI	-	Government of Indonesia
Ha	-	hectare
KKJI	-	Directorate for Conservation of Area and Fish Species *(Direktorat Konservasi Kawasan dan Jenis Ikan or KKJI)*
Km	-	kilometer
LIPI	-	National Science Agency
LKKPN	-	National Marine Conservation Areas (Loka *Kawasan Konservasi Perairan Nasional or LKKPN)* of Pekanbaru
LPSTK	-	*Coral Reef Resource Management Agency (Lembaga Pengelola Sumberdaya Terumbu Karang)*
MCSI	-	Directorate General of Marine, Coast and Small Islands (Kelautan, Pesisir Dan Pulau-Pulau Kecil or KP3K)
MMAF	-	Ministry of Marine Affairs and Fisheries (*Kementarian Kelautan dan Perikanan or KKP)*
MoU	-	Memorandum of Understanding
MPA	-	Marine Protected Area (*Kawasan Konservasi Laut Daerah or KKLD)*
NGO	-	nongovernment organization
PES	-	Payment for ecosystem services

PKBL	-	Partnership and Environment Development Program
PIU	-	Project Implementation Unit
PMO	-	Project Management Office
POKMAS	-	community groups
Rp	-	rupiah
SPPL	-	Statement of readiness to manage and monitor the environment
UKL	-	Environmental Management Efforts/Plan (UKL)
UPL	-	Environmental Monitoring Efforts/Plan (UPL)
UPT	-	Technical Implementing Unit

I. Introduction

1. The Coral Reef Rehabilitation and Management Program: Coral Triangle Initiative Project (COREMAP—CTI, the Project) aims to manage coral reef resources, associated ecosystems and biodiversity in a sustainable manner for the welfare of coastal communities. The design of COREMAP—CTI reflects a phased and incremental approach. The first or initiation phase known as COREMAP Phase I (1998–2004) represented the pilot phase leading to the design of COREMAP Phase II (COREMAP II). The second or acceleration phase, COREMAP II (2004–2011) represented the initial implementation phase. The proposed Project is the third and final phase which intends to (i) complete remaining gaps in Phase II; (ii) "institutionalize" Phase II interventions; and (iii) build a "model" of coral reef rehabilitation and management program in Indonesia for replication and up-scaling in new areas. "Institutionalization" will mean integrating community-based activities within local Government functions and policies, and facilitate learning networks and institutional partnerships across regional and national institutions for project sustainability. The Project will follow a project financing modality for a sector loan.

2. COREMAP—CTI will be aligned with Indonesia's National Plan of Action (NPOA) for the Coral Triangle Initiative (CTI), and aims to manage coral reef resources, associated ecosystems and biodiversity in a sustainable manner for increasing the incomes of coastal communities in Indonesia. Building upon Phase II interventions, the Project will deliver 10 effective Marine Protected Area (MPA) models that can be replicated across the country for sustainable coral reef management. MPAs in Phase II were in MPA initiation stage ("red" category) or the MPA established stage ("yellow" category). The Project will help to move the MPAs to the next higher stage(s): "yellow", MPA managed minimally stage ("green" category), or MPA managed optimally stage ("blue" category) by increasing and evaluating their management effectiveness.

3. The selection of subprojects within this sector modality will be based on the following key criteria: the subproject (i) contributes directly to environmentally sound non-consumptive resource utilization across the MPAs (e.g., environmentally-responsible tourism); (ii) supports development of sustainable fisheries (e.g., enhancing fish market facilities, fish landing sites, fish catch monitoring and catch regulation); (iii) contributes to fostering alternative livelihoods that reduce fishing pressure or provides non-traditional gainful employment within the sector; and (iv) enhances effectiveness, governance, and financial sustainability of co-managed MPAs. Subprojects will be formulated and implemented using a community-driven development (CDD) approach.

4. Based on these criteria, the feasibility study for the project preparation has appraised two representative (core) subprojects, one for a national level MPA and one for a subnational MPA. The core subprojects may include: (i) enabling infrastructure for private sector participation in ecotourism development (e.g., mooring buoys, jetties, village roads, solid waste management, water supply, sanitation, electricity supply, telecommunications etc.); (ii) fisheries productivity-related infrastructure (e.g., hatcheries, fish markets, fish landing sites, fishing ports, etc.); (iii) alternative livelihood-related infrastructure (fish ponds, fish cages, fish processing etc.) and (iv) MPA governance (e.g., management board, spatial plans, management plans, financing plans, threatened species management plans, coral monitoring and database systems, monitoring and surveillance operations).

5. This Initial Environmental Examination (IEE) Report focuses on the environmental assessment of the management and livelihood interventions for Anambas MPA as a sample

subproject, and is limited to infrastructures and livelihood, as these project interventions have potential for environmental impacts.

6. The environmental assessment was undertaken by the consultant team for the Government of Indonesia through field visits between May 26, 2013 and June 7, 2013 in the project sites, interviews/consultation and focus-group discussions with officials or representatives from project stakeholders such as the regencies, cities and municipal governments, villages, and district/field offices of national government agencies, including the Ministry of Marine Affairs and Fisheries (MMAF), National Development Planning Agency (*Badan Perencanaan Pembangunan Nasional* or BAPPENAS), Regional Development Planning Agency (*Badan Perencanaan Pembangunan Daerah* or BAPPEDA), National Science Agency (*Lembaga Ilmu Pengetahuan Indonesia or LIPI),* National Marine Conservation Areas (LKKPN), National Marine Protected Area (*Kawasan Konservasi Perairan Nasional),* Marine Protected Area (*Kawasan Konservasi Laut Daerah or KKLD),* Directorate for Conservation of Area and Fish Species *(Direktorat Konservasi Kawasan Dan Jenis Ikan or KKJI*) and others. Collection of secondary data such as the regency profile/statistics, maps, and management/development plans were also carried out.

II. Description of the Project

A. Overview of the Sector Loan

7. **Type.** This sector loan project is associated with environment and natural resources. It is multi-component, and related to investment in capacity building, coastal and fishery management, and livelihood development.

8. **Category.** The Project is categorized as Category B for environment under the ADB Safeguard Policy Statement (SPS) 2009 due to the project's emphasis on conservation of marine and coastal resources and the localized impacts for which mitigation measures can be readily designed and implemented.

9. **Need for project.** Low coastal community awareness and inadequate institutional capacity to manage land and marine-based pollution, insufficient institutional framework to effectively manage marine protected areas (MPAs), and persistent poverty in coastal areas have resulted in 70% of Indonesian coral reefs becoming degraded. The Government of Indonesia plans to address these root causes of resource and environmental degradation by undertaking this project.

10. **Location.** The Project will be implemented in existing COREMAP Phase II areas of seven districts that include at least 57 existing project villages in three provinces in Sumatra (North Sumatra, West Sumatra and Riau). Additional project activities will focus on MPA management effectiveness at three national MPAs: Anambas in Anambas District in Riau Islands province, Pulau Pieh in Pariaman District in West Sumatra province, and Gili Matra in North Lombok District of West Nusa Tenggara province.

11. **Magnitude of Operation.** The ADB-financed portion of the project would cover three national and seven subnational marine protected areas (MPAs) in primarily eastern and western part of Sumatra Island. Two subprojects of the Anambas national MPA and the subnational Bintan MPA have been prepared.

12. **Proposed Schedule of Implementation and Project Proponents.** The Project is proposed to be implemented within 5 years from 2014 to 2018, with the Directorate General of Marine, Coast, and Small Islands (DG of MCSI) of the Ministry of Marine Affairs and Fisheries (MMAF) as the Executing Agency (EA).

13. **Description of Project Components.** The Project has four major components or outputs:

(i) **Output 1: Coral reef management and institutions strengthened**. This component will focus on strengthening and institutionalizing capacities developed under COREMAP II.
(ii) **Output 2: Ecosystem based resources management developed**. This component will strengthen MPA management effectiveness and biodiversity conservation.
(iii) **Output 3: Sustainable marine-based livelihoods improved**. This component will promote sustainable livelihoods and income-generating infrastructure.
(iv) **Output 4: Project management**.

B. Description of the Subproject

14. The Anambas Islands Marine Recreational Park is of high strategic importance and high conservation value nationally with tourism potential as it is close to countries and territories with growing outbound international tourists (Malaysia, Thailand, and the PRC). The government has prepared a master plan to attract investors and international tour operators and organized an investor forum on attracting investments to small islands.

15. The biodiversity and fishery resource is under threat and some coral reefs have been damaged from destructive fishing practices. Overfishing of some species has placed them in an endangered category and the government has taken steps to carry out surveys and draft a management plan. This national MPA requires establishment of biodiversity inventory and monitoring, stock assessments and monitoring, management support, capacity building, awareness raising and empowerment of local people to co-manage the resource and establish environmentally responsible tourism.

16. The outcome of the subproject is to enhance management effectiveness of Anambas Islands Marine Recreational Park, achieving the blue level status by year 5 after project start as compared to start of project with the conservation area / Marine Recreational Park being designated but with minimal management organization on the ground. The impact or long term objective of the subproject is to achieve Gold standard on the Management Effectiveness scale by 2025, which can be evidenced by sustainable financing, improved community welfare and ecosystem health of the MPA. The main outputs are: (i) management plan implemented; (ii) biodiversity conservation and ecosystem based fisheries management enhanced; (iii) basic infrastructure for management operations provided; and (iv) financial sustainability and livelihoods enhanced.

17. This environmental assessment will be limited to output 3 of the project that is required to make the Anambas MPA operational. Such facilities will allow effective communication and services, provision of educational information to visitors, and basic amenities such as water supply and waste water treatment plant/system. It follows the ADB rapid environmental assessment (REA) checklists for port, fishery and urban development projects under the ADB SPS 2009 (See ADB REA Checklists).

18. The basic infrastructure of the subproject is listed in Table 1 below:

Table 1. Subproject Interventions

Infrastructure	No, of units	Location
MPA Office Complex consisting of:		Tarempa, near harbor, next to MMAF surveillance office
MPA offices	1	
MPA signage	1	
Information Center	1	
Public washroom	2	
Water supply	1	
Wastewater treatment unit	1	
Communication tower	1	
Pier / jetty	1	
Turtle hatchery	1	Durai island
Coastal boundary markers and signage	4	
Security and Remote Surveillance Post	1	Other islands
Mooring buoy	To be decided	Other islands
Gazebo	1	Outer islands
Information Center	2	Other islands

Source: MMAF.2013. Anambas MPA Draft Management Plan.,

19. **Implementation Schedule.** The schedule of implementation for Output 3: Basic infrastructures are shown in Table 2 below.

Table 2: Schedule of Implementation of Subproject Interventions

Type of Interventions	Unit	Physical Target	Implementation Schedule				
					Year 3	Year 4	Year 5
Output 3: Sustainable marine-based livelihoods improved							
Detailed Engineering Design							
MPA Office complex	1	Unit					
Turtle hatchery	1	Unit					
Coastal boundary markers and signage	4	sets					
Security and Remote Surveillance Post	1	unit					
Mooring buoys	unknown	unit					
Gazebo	1	unit					
Information Center	2	unit					

III. Description of the Environment[1]

20. The Anambas group of islands includes three large islands (Jemaja, Siantan and Matak), two medium-sized islands (Badjau and Mubur) and numerous small islands. The major villages are Tarempa on Siantan Island and Letong, Padang and Kuala Maras on Jemaja Island. The region is located adjacent to the western edge of the Coral Triangle (CT), renowned for its globally outstanding marine biodiversity.

21. Kepaluaun Anambas Regency consists of 7 subdistricts, and 54 villages. These subdistricts, with their corresponding area and capital, are listed in the Table 3 below.

[1] Sourced mostly from Kepelauan Anambas in Figures 2011 Katalog BPS 1102001 2105

Table 3. Subdistricts of Anambas Regency and their corresponding area and capital town

Subdistrict (Kecamatan)	Area (Sq. Km)	Percentage of Total	Capital
Jemaja	78,26	12%	Letung
Jemaja Timur	154,24	24%	Ulu Maras
Siantan Selatan	115,48	18%	Air Bini
Siantan	45,39	7%	Tarempa
Siantan Timur	88,92	14%	Nyamuk
Siantan Tengah	22,14	3%	Air Asuk
Palmatak	129,94	20%	Tebang Ladan
Total	634,37	100%	

Source: Kepaluan Anambas in Figures 2011

22. Some of the environmental issues and concerns in the Subproject that were elicited during the field visits, and from the results of meetings with stakeholders and the results of studies that have been conducted in 2011 and in 2012 (Working Group Meetings and Socio-Economic Assessment) include illegal and destructive fishing, overfishing, coral bleaching, coral destruction, illegal sea turtle egg and meat collection, overexploitation of Napoleon fish (*Cheilinnus undulatus*)[2], intensified sands and rocks mining, unregulated cutting of mangroves and waste pollution.

A. Physical Resources

23. **Topography and Soil.** The Anambas Islands are generally hilly over 500 meters above sea level and with little flat lands. A narrow coastal plain exists in a few areas, but in most places the coastline is steep and rocky but tree-covered. The principal crop is coconut but various fruits and spices are also grown on the steep hillsides. Anambas include many islands separated by narrow, usually deep channels. Numerous bays and coves occur affording some protection from winds and oceanic waves. Many of these are 20–30 m deep, but most have coral heads and fringing reefs extending to within two meters of the surface at low tide. Shallow areas, some sandy or muddy, occur toward the head of most coastal bays. The soil is generally a thin covering over solid rock. The islands apparently are not of sedimentary origin and lack the minerals of the Riau group.

24. **Rivers/Lakes.** Freshwater is relatively scarce but a few small streams occur. There are no freshwater lakes or swamps.

25. **Climate.** The climate is typical with south monsoon winds from May through October, and north monsoon winds from November through April. The islands received an average of 228.6 mm of rainfall annually, with an average of 13 rainy days per month. The temperature ranges from 21.32 to 34.03°C and the average atmospheric pressure is 1009.2 mb. Average

[2] Endangered according to the IUCN Red List

humidity ranges from 66% to 88%. Seawater temperatures recorded July 15–19 at various locations were 28–30.5 °C

26. **Oceanographic conditions**. Water quality of the sea in some areas of Anambas is shown in the table below.

Table 4. Water Quality Parameters in TWP Anambas Islands

No.	Parameter	Value
1	Temperature (oC)	28,9 – 31,5
2	Salinity (psu)	23 – 34
3	Water flow (cm/det)	15-40
4	Wave (cm)	80-150
5	Chlorophyll (mg/m3)	<0,3
6	Turbidity (NTU) (mg/l)	0,46 - 1.07
7	pH	7,96 – 9,61
8	Dissoved Oxygen (DO)	4,34 – 6,15
9	Ammonia (NH3 -N) (mg/l)	0,042 - 0,31
10	Nitrite (NO2 -N) (mg/l)	0,002
11	Nitrate (NO3 -N) (mg/l)	0,001 - 0,027
12	Total Phosphate (PO4-P) (mg/l)	0,27 – 5,51
13	Mercury (Hg) (mg/l)	<0,001
14	Lead (Pb) (mg/l)	0,028 – 0,169
15	Cadmium (Cd) (mg/l)	< 0,001 – 0,015
16	Aluminum (Al) (mg/l)	-

Source of data: Directorate TRLP3K, 2012

B. Ecological Resources

27. **Forest/Vegetation.** Anambas islands belong to the biogeographical region of Kalimantan: lowland evergreen forests; montane forests; extensive mangroves; peat and fresh water swamp forests; and large heath forests. Among the mangrove species belong to the genera of Avicennia, Rhizophora, and Sonneratia. Extensive seagrass beds (Enhalus acoroides, Halophila ovalis, Thalassia hemprichii) are found in Anambas with about 62.77 acres.

28. **Wildlife/Biodiversity.** In terms of reef fish biodiversity, a total of 578 species of reef fish from 256 genera and 71 families have been recorded. About 801 species are predicted on the Anambas reefs. These are mostly: Gobies (Gobiidae), wrasses (Labridae), damselfishes (Pomacentridae), groupers (Serranidae), cardinalfishes (Apogonidae), blennies (Blenniidae), butterflyfishes (Chaetodontidae) and parrotfishes (Scaridae). Sites with the most fish diversity included SE Pulau Bawah (240 species), Pulau Selai (215 species), Pulau Piantai (199 species), Pulau Pahat (198 species), SE Pulau Jemaja (196 species) and Pulau Mandariau Laut (194 species). However, large, commercially important reef fishes (jacks, grouper, snapper, sharks, Napoleon wrasse) appear to have been severely overfished.

Table 5. Distribution of Coral Fish Species in sites assessed in Anambas MPA

Species	% Sites	Species	% Sites
Chrysiptera rollandi	100.0	*Chlorurus sordidus*	95.0
Pomacentrus alexanderae	100.0	*Siganus corallines*	95.0
Pomacentrus moluccensis	100.0	*Parupeneus barberinus*	90.0
Pomacentrus philippinus	100.0	*Chaetodon baronessa*	90.0
Epibulus brevis	100.0	*Chaetodon octofasciatus*	90.0
Labroides dimidiatus	100.0	*Amblyglyphidodon curacao*	90.0
Thalassoma lunare	100.0	*Dascyllus trimaculatus*	90.0
Scarus quoyi	100.0	*Neoglyphidodon nigroris*	90.0
Siganus virgatus	100.0	*Pomacentrus bankanensis*	90.0
Siganus vulpinus	100.0	*Pomacentrus lepidogenys*	90.0
Cephalopholis cyanostigma	95.0	*Bodianus mesothorax*	90.0
Cephalopholis microprion	95.0	*Cheilinus fasciatus*	90.0
Lutjanus decussatus	94.4	*Cirrhilabrus cyanopleura*	90.0
Caesio cuning	95.0	*Halichoeres hortulanus*	90.0
Lethrinus erythropterus	95.0	*Hemigymnus fasciatus*	90.0
Pentapodus aureofasciatus	95.0	*Hemigymnus melapterus*	90.0
Scolopsis bilineatus	95.0	*Paracheilinus filamentosus*	90.0
Heniochus varius	95.0	*Thalassoma hardwicke*	90.0
Centropyge vroliki	94.4	*Chlorurus microrhinos*	90.0
Pygoplites diacanthus	95.0	Scarus forsteni	90.0
Amblyglyphidodon leucogaster	95.0	Scarus niger	90.0
Dascyllus reticulatus	95.0	Eviota guttata	90.0
Plectroglyphidodon lacrymatus	95.0	Siganus puellus	90.0
Oxycheilinus digramma	95.0		

Source. Marine Resurce Assessment Report, 2012

C. Economic Development

29. **Land Use**. The existing land use of the Subproject area as of 2009 is summarized in the table below.

Table 6: Land Use of Anambas Islands (2009)

Subdistrict	Land Use Types in hectares						Total
	Plantation	Land/ yard	Field	Grassland	Forest	Swamp	
Jemaja							
Jemaja Timur							
Siantan Selatan							
Siantan							
Siantan Timur							
Siantan Tengah							
Palmatak							
Total							

Source: Kepulauan Anambas Regency Agriculture and Forestry

30. **Agricultural crops.** In the year 2011, Anambas regency has 9,928 hectares of farm that produced 2,041 tons of coconut, 54 hectares of rice paddy that produced 324 tons of rice, 2,492 hectares that produced 1,151 tons of rubber, and 2,839 hectares that produced 259 tons of cloves. It has also produced 225 tons of corn, 735 tons of cassava, 420 tons of sweet potatoes, 16 tons of long beans, 250 tons of mustard, 440 tons of spinach, 616 tons of kangkung, 60 tons

of pineapple, 738 tons of durian, and 6,910 tons of bananas on the same year. There are also 94 farmers group organized for different crop production.

31. **Livestock.** The regency recorded 3,606 cows, 356 goats, 13,496 broiler chicken and 796 ducks in year 2011. They produced 23,380 kg of cow meat, 7,371 kg of chicken meat and 544 kg of goat meat, 6478 kg of chicken eggs and 477 kg of duck eggs.

32. **Fishery**. The regency harvested 1,454 tons of marine fish, with a value of Rp 16.2 billion in 2011. Aquaculture production declined to 70 tons, as compared to last year (82 tons). There are 595 non-motorized boats, 2,596 ferry boats, and no motorized boats used in fishery production in 2011.

33. **Commerce, Trade and Industry**. Anambas has 172 small industries that employ 1,544 people, and 4 medium industry that employ 22 people. Mining of granite is being extensively undertaken in 4 subdistricts covering an aggregate area of 14,230 hectares in Jemaja, Siantan Selatan, Siantan and Palmatak and with stock of 35,898 million m3. In 2011, most export of Anambas (99,98%) are mineral fuel amounting to 5,789 million kg and valued at $3,751 million, while it imports different products valued at $14.8 million. There are 4 commercial banks 58 units of cooperatives operating in the islands.

34. **Tourism**. There are 22 hotels (6 in Jemaja, 8 in Siantan, 2 in Siantan Timur and 6 in Pamatak), 3 restaurants and 19 cafes in Anambas Islands.

35. **Water Resources**. Water is provided to 3,070 customers by non-state owned water companies in all subdistricts and to 990 customers in Siantan by state-owned water company (PDAM).

36. **Communication.** Mail/postal service is provided to all subdistricts, except in Jemaja, Jemaja Timur, which delivered 10,627 letters in year 2011. Television and radio stations are also available in Anambas.

37. **Electricity.** Electricity service is provided by four power stations of PT PLN (Persero) Cab. Tanjungpinang (State Electricity Company of Tanjungpinang) with 9 units of generators, which have a combined installed capacity of 3,395 kw. There are 1,491 customers served in year 2011 consuming 2,230,940 kwh.

38. **Transportation.** Being a group of islands, sea transportation plays an essential role in the life of the people of Anambas. There are 93 seaports (15 large seaports, 29 medium seaports and 50 small seaports) in 7 subdistricts of Anambas, where domestic ships made 833 calls and international ships made 103 calls in 2011. The regency also recorded 61 cars, 4,074 motorcycles and 2,221 ships. A total of 183,174 meters of roads were also built as of 2011.

D. Social and Cultural Resources

39. **Population.** The registered population of Anambas in 2011 was 45,003 with 28,452 males and 21,551 females, and the average population density was 70.94 persons/km^2. This represented an increase of 7% from the population in the year 2010, which was 41,878. The total number of households was 12,282, while average number per household was 3.66. The biggest population was in Siantan (12,784) and the smallest population can be found in Jemaja Timur (2,312).

40. **Health Facilities**. In 2011, there was only one hospital in Kepulauan Anambas, which is located in Palmatak Subdistrict. The regency also had 7 public health centers, 21 supporting public health centers, and 2 public clinics. These facilities employed 1 specialist, 35 doctors, 9 dentists, 84 tocologists and 162 nurses.

41. **Educational facilities.** In 2011, there are an aggregate of 119 units of kindergarten schools, elementary schools, junior high schools, and high schools (in all subdistricts of Anambas.

42. **Economy.** The Gross Regional Domestic Product (GRDP) of Anambas in 2011 was Rp 2 773 714 million in constant 2000 price, with oil and gas contributing Rp2,053 831 million or 74% of the total GRDP. Without oil and gas, the GRDP was only Rp719,883 million in constant 2000 price. Per capita GRDP was Rp7,402 million and the regional income per capita was Rp6,141 million, in constant 2000 price. The growth rate was estimated at 2.41% with oil and gas and 7.39% without oil and gas.

43. **Religion.** There are three religions: Protestant Christian, with 37,510 adherents (49.24%); Catholic Christians, with 23,684 adherents (31.09 %); and Islamic Religion, with 14,979 adherents (19.66 %).

IV. Screening of Potential Environmental Impacts and Mitigation Measures

A. Screening and Categorization of Subproject Components

44. This report has been prepared in accordance with the ADB's SPS 2009[3]. The SPS 2009 governs the environmental and social safeguards of ADB's operations. Environmental Safeguard Requirements 1 (SR1) of the SPS outlines the requirements that borrowers/clients are required to meet when delivering environmental safeguards for projects supported by the ADB. These requirements include assessing impacts, planning and managing impact mitigations, preparing environmental assessment reports, disclosing information and undertaking consultation, establishing a grievance mechanism, and monitoring and reporting. SR1 also includes specific environmental safeguard requirements pertaining to biodiversity conservation and sustainable management of natural resources, pollution prevention and abatement, occupational and community health and safety, and conservation of physical and cultural resources.

45. The ADB Rapid Environmental Assessment (REA) checklists (See ADB REA Checklists) screening process, as applied to the Anambas MPA Effectiveness Subproject interventions, results in the identification of the following potential impacts (Table 7):

[3] SPS is available at http://www.adb.org/documents/safeguard-policy-statement?ref=site/safeguards/publications

Table 7. Infrastructure and ADB checklist used and corresponding potential impacts

Infrastructure	ADB Checklist Used	Potential Impacts
MPA Office Complex consisting of offices, signage, information center, public washroom, communication tower, solar cells power supply, water supply, and waste water treatment unit	Urban development	The MPA Office Complex may induce ▪ wastes generation; ▪ water resource problem; ▪ social conflicts between construction workers from other areas and local workers; ▪ noise and dust from construction activities; ▪ temporary silt runoff due to construction; ▪ water depletion and/or degradation; ▪ contamination of surface and ground waters due to improper waste disposal;
Pier/jetty	Ports	▪ short-term increase in turbidity and sunlight penetration as well as changes in sediment pattern and flows; ▪ removal and disturbance of aquatic flora and fauna at dredging site especially as the structure is within the marine protected areas with rich marine life; ▪ deterioration of water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction; ▪ noise and vibration due to blasting and other civil works; ▪ social concerns relating to local inconveniences associated with port operation (e.g. increased volume of port traffic, greater risk of accidents, communicable disease transmission; ▪ deterioration of water quality due to ship (e.g. ballast water, oil waste, lubricant and fuel spills, sewage) and waterfront industry discharge.
Turtle Hatchery	Fishery	▪ social problems arising from conflicts with other site uses; ▪ social problems especially when workers from other areas are hired; ▪ pollution of nearby aquatic environments by pond drainage water and inadequate farm management
Gazebo	Urban development	▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services. ▪ social conflicts between construction workers from other areas and local workers?
Security and Remote Surveillance Post	Urban development	▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services. ▪ social conflicts between construction workers from other areas and local workers?

Infrastructure	ADB Checklist Used	Potential Impacts
Mooring buoys	Ports	▪ encroachment on precious ecology resulting in loss or damage to fisheries and fragile coastal habitats such as coral reefs, mangroves, and seagrass beds ▪ poor sanitation and solid waste disposal in construction camps and work sites; ▪ social concerns relating to local inconveniences associated with port operation (e.g. increased volume of port traffic, greater risk of accidents, communicable disease transmission; ▪ deterioration of water quality due to ship (e.g. ballast water, oil waste, lubricant and fuel spills, sewage) and waterfront industry discharges; ▪ removal and disturbance of aquatic flora and fauna at the installation site, especially in areas with coral reef.
Solar (PV) Cells Power Supply	customized	▪ Industrial liquid (dielectric fluids, cleaning agents, and solvents) and solid wastes (lubricating oils, compressor oils, and hydraulic fluids) generated during construction and operations likely to pollute land and water resources; ▪ Soil/water contamination due to use of hazardous materials or disposal of broken or damaged solar cells; ▪ Visual impacts due to reflection from solar collector arrays resulting in glint or glare; ▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during construction, installation, operation, and decommission.

46. The Indonesian environmental assessment regulations are embodied in the AMDAL - *Analisis Mengenai Dampak Lingkungan Hidup* or the Indonesian EIA system. Based on the AMDAL project screening criteria shown above, a project categorized by the responsible agency into one of three types: (i) business and/or activity having substantial impacts requiring Environmental Impact Analysis (ANDAL)[4];(ii) business and/or activity requiring Environmental Management Efforts/Plan (UKL) or Environmental Monitoring Efforts/Plan (UPL)[5]; and (iii) business and/or activity with no substantial impact and that does not require ANDAL nor UKL-UPL, but require a statement of readiness to manage and monitor the environment (SPPL)[6].

47. The initial category/type of the subproject components, under ADB SPS 2009 and the Indonesian AMDAL regulations, are presented in Table 8 below.

[4] Based on the 'positive list' of project/activities that requires EIA/ANDAL under Minister of Environment Regulation No. 11/2006 and Article 23 of the Environmental Protection and Management Law (Law 32/2009).
[5] Based on Article 43 of Law 32/2009.
[6] Based on Article 35 of Law 32/2009.

Table 8. ADB and AMDAL Category of Subproject Intervention

Subproject Intervention	ADB Category	AMDAL Type[7]
MPA Office Complex consisting of offices, signage, information center, public washroom, communication tower, solar cells power supply, water supply, and waste water treatment unit	B[8] – IEE needed (integrated in this IEE)	UKL-UPL is required
Pier/jetty	B - IEE needed (integrated in this IEE)	UKL-UPL is required
Turtle hatchery	C[9] – No IEE is required	SPPL is required
Gazebo	C – No EE is required	SPPL is required
Security and Remote Surveillance Post	C – No EE is required	SPPL is required
Mooring buoys	B-IEE needed (integrated in this IEE)	UKL-UPL is required

48. As a subproject with multiple components and interventions, an IEE (being of the highest documentary requirement) compliant with ADB SPS 2009 is followed in this assessment. This IEE also substantially conforms with AMDAL guidelines for the Anambas National Marine Protected Area. The individual interventions UKL-UPL listed in Table 8, including (i) the MPA Office Complex; (ii) the pier/jetty; and (iii) the mooring buoys shall require the development of individual UKL-UPL based on their specific site and context. Other interventions including (i) turtle hatchery, (ii) gazebo; and (iii) surveillance post, will require an SPPL under the new AMDAL regulation. These UKL-UPLs and SPPLs will be developed in both the Bahasa Indonesia and the English languages, and made available to the public on ADB website.

49. According to the Environmental Assessment and Review Framework (EARF) of the Project, with assistance from the national environmental safeguard specialist, the Anambas Project Implementation Unit (PIU) will prepare the UKL-UPL or SPPL of the respective subproject intervention/activity and submit it to the Ministry of Environment (MOE) for approval.

50. Upon approval by MOE of the UKL-UPL or SPPL, the PIU will submit the UKL-UPL or SPPL to the PMO for consolidation and a selected numbers will be submitted to ADB for review (see para. 53) but the information has to be retained in PMO for ADB review and audit purposes.

51. The first UKL-UPL of each type of intervention/activity will be submitted to ADB for review and concurrence. If this is deemed by ADB as of satisfactory quality, subsequent UKLs-UPLs will be certified by the Project Director and submitted to ADB upon request. ADB may

[7] Subject to the final determination by relevant environmental authority.
[8] Category B- proposed project's potential environmental impacts are less adverse and fewer in number than those of category A projects; impacts are site-specific, few if any of them are irreversible, and impacts can be readily addressed through mitigation measures. An initial environmental examination (IEE), including an EMP, is required.
[9] Category C- Projects unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are still reviewed (ADB Environmental Assessment Guidelines (2003).

conduct assessment of the compliance with its environmental safeguards policy of the Project on a random basis.

B. Potential Environmental Impacts and Mitigation Measures

52. The potential environmental impacts of the Subproject interventions and the corresponding mitigating measures are to be classified according to the different stages of the Subproject components (design, construction, and operation stages).

1. Project Location/Design Stage

53. By design, the subproject is located within the Marine Protected Area as it intends to rehabilitate, protect and sustainably manage this protected area. The Project interventions are designed to enhance the resources of the protected areas, and reverse environmental degradation.

54. MPA Office Complex consisting of offices, signage, information center, public washroom, communication tower, solar cells power supply, water supply, and waste water treatment unit. The MPA Office Complex is proposed to be located near Terempa town, in the Antang Fishing Harbor and next to the MMAF Surveillance Office, in a property owned by the provincial government. This office complex is expected to improve the management effectiveness of the MPA. The facilities are unlikely to produce significant adverse environmental impacts requiring mitigation at this stage but the following safeguards are recommended to be put in place during the design stage to avoid or prevent any negative environmental effect of the subproject:

(i) To discourage the influx of workers from other areas and social conflicts, local residents, indigenous peoples and women are given priority in hiring;
(ii) The siting of the facility should be in compliance with the approved MPA zoning and management plan, or the draft management guidelines if the approved management plan is not available;
(iii) The facility is to be located in an area where no live corals, seagrasses and mangroves or natural habitats would be affected;
(iv) The waste water treatment should be located at least 100 feet away from the water source to prevent contamination; and
(v) Visual impacts due to reflection from solar panels resulting in glare can be reduced by appropriate design and orientation of the building and solar panels.

55. **Pier or jetty.** This will be located adjacent to the MPA Office Complex in Terempa. No significant impacts requiring mitigation is also anticipated for this component at the design stage. Nevertheless, the subproject will incorporate the following additional environmental safeguards in the project design of this component to avoid or preclude any negative environmental effects:

(i) The siting of the pier or jetty should be in compliance with the approved MPA zoning and management plan, or the draft management guidelines if the approved management plan is not available;
(ii) To avoid social conflicts, local laborers will be hired during the construction; and
(iii) The design of the pier should comply with the standard set by the International Marine Organization.

56. **Turtle Hatchery.** The hatchery is proposed to be located in Durai Island, and intends to increase the survival rate of sea turtles in the wild. No adverse environmental impact is anticipated unless a social problem arises from conflicts with other site users, which can be

mitigated by consultation or compensation, and compliance with the approved zoning and management plan of the MPA, or the draft management guidelines if the approved management plan is not available. Additional safeguards that would be adopted to preclude any other impacts include:

(i) Hiring of local workers, to avoid social conflict; and
(ii) Adoption of good hatchery management practices to prevent pollution and improve sanitation.

57. **Gazebo.** This will be located in outer islands under conservation and tourism zones. As the size is small, no adverse environmental impacts are expected. However, additional safeguards are still recommended as follows:

(i) Inclusion of waste management plan, to prevent pollution in the pristine area;
(ii) Hiring of local laborers to avoid social conflict that may arise; and
(iii) The siting of gazebo should comply with the approved MPA zoning and management plan, or the draft management guidelines if the approved management plan is not available.

58. **Surveillance Post.** This is proposed to be located in outer islands, which will be used for monitoring, control and surveillance purposes, and therefore produces general positive impacts to the marine conservation and the environment. There is no significant impact at this stage but additional safeguards are recommended such as:

(i) Hiring of local workers to avoid social conflicts; and
(ii) The siting of the surveillance post should comply with the approved MPA zoning and management plan, or the draft management guidelines if the approved management plan is not available.

59. **Mooring Buoys.** An unknown number of mooring buoys will be mostly placed near the shores of outer islands and some diving sites, to reduce damages to corals due to the dropping of anchors. Following this principle, it is critical that the mooring system used does not cause more damage to the resource than a boat anchor and chain. There are three most common buoy systems: the Halas, the Manta-Ray, and the traditional system (also called a “mushroom” system). All mooring buoys consist of three elements: a permanent fixture on the sea bottom, a floating buoy on the water surface, and something in between to attach the two. Sea bottom characteristics dictate what type of system is most suitable. The Halas system is most successful in areas with flat, solid bedrock. The Manta-Ray is recommended for areas of sand, coral rubble, or a combination of bottom types. Traditional systems, limited in effectiveness, should only be used in sand or mud, if at all. The following safeguards measures are recommended:

(i) The choice of the mooring buoy system used is based on site survey and the sea bottom condition to avoid damage to corals and other marine life;
(ii) The placement of mooring buoys should be in compliance with the approved MPA zoning and management plan, or the draft management guidelines if the approved management plan is not available;
(iii) The design of the mooring buoys should comply with the standard set by the International Maritime Organization;
(iv) No mooring buoy shall accommodate loading of 10,000 DWT or more; and
(v) To avoid mooring buoys from being stolen, the design of the buoys should be color-coded to distinguish these from ordinary buoys, and should embed a notice stating that it is the property of the government and illegal possession thereof is punishable by law (based on the consultation with stakeholders).

2. Construction/Establishment Stage

60. MPA Office Complex consisting of offices, signage, information center, public washroom, communication tower, solar cells power supply, water supply, and waste water treatment unit. The construction of the complex will entail raising of stilts or pillars along the shore as foundation, before the base is built and the complex facilities are finished. Due the relatively small dimension of this complex, the impacts are temporary and minimal and no significant environmental impacts at construction stage are anticipated which would require mitigating measures. All the same, additional safeguards to avert any adverse environmental effect during construction are to be adopted by the subproject, such as but not limited to:

(i) Noise and dust from construction activities can be minimized by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and follow government's standards;
(ii) Temporary silt runoff maybe reduced by scheduling the drilling when the waves are calm;
(iii) The contractor shall provide workers with safe and healthy working conditions to prevent accidents, injuries, and diseases, following the ADB's SPS 2009 and related guidelines on Environment, Health, and Safety;
(iv) Any chemicals, hazardous and other wastes from solar panel installation will be disposed according to the waste management plan and government regulations
(v) Only qualified technical service crew will construct and install the solar panels system.

61. **Pier or jetty.** The construction of pier or jetty is expected to generate short-term and minimal environmental impacts in terms of silt, turbidity, wastes, noise and vibration. Safeguards measures are recommended to confine the impacts within the threshold level, such as:

(i) Noise and dust from construction activities can be minimized by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather when within 50 meters of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and follow government's standards;
(ii) The contractor shall provide workers with safe and healthy working conditions to prevent accidents, injuries, and diseases, following ADB's SPS 2009 and related guidelines on Environment, Health, and Safety ;
(iii) Waste collection, segregation and disposal shall be undertaken in accordance with an approved Waste Management Plan;
(iv) Proper scheduling of work;
(v) Use only equipment that compliant with the government emission standard and manufacturer's maintenance prescriptions;
(vi) The length of the pier shall be less than 300 meters.

62. **Turtle Hatchery, Gazebo, Security and Remote Surveillance Post, and Mooring buoys.** Owing to the small size of these structures, no adverse environmental impacts are expected during the construction. However, as additional safeguards, it is recommended that:

(i) A waste management plan shall be implemented during the construction stage to prevent pollution of the surrounding environment;
(ii) Construction activities shall be confined only on the project site, and due diligence shall be exercised so as not to spill activities to adjacent areas or surroundings; and

(iii) The contractor shall provide workers with safe and healthy working conditions to prevent accidents, injuries, and diseases, following ADB's SPS 2009 and related guidelines on Environmental, Health, and Safety .

3. Operation/Maintenance Stage

63. MPA Office Complex consisting of offices, signage, information center, public washroom, communication tower, solar cells power supply, water supply, and waste water treatment unit. The complex, including the information center, is expected to attract unspecified number of visitors. Its operation will generate wastes, mainly solid wastes, and sewerage/sanitary wastes. The latter will be treated by the wastewater treatment unit, which is part of the complex' structures. The former will be treated under a waste management plan, where solid wastes are collected, segregated and disposed accordingly. There is also a need to identify and assess the water supply requirement of the complex to portend any problems that may arise in the future like water depletion, contamination and degradation. A water conservation measure shall also be implemented. The solar power system will be maintained and operated by designated staff who will be trained on proper operation and maintenance of the system. Decommissioning of solar cells will be done in accordance with the government and manufacturer's specifications

64. **Pier or jetty.** The establishment and operation of the pier or jetty may bring social concerns relating to local inconveniences like increased port traffic volume, increased risk of accidents and communicable disease transmission. It is also likely that the water quality will deteriorate due to ship and waterfront discharges. To mitigate this, rules will be promulgated and approved by relevant government agencies on the use and maintenance of the pier/jetty, and these will be strictly enforced. These rules and regulations will form part of the UKL-UPL to be developed.

65. **Turtle Hatchery, Gazebo, Security and Remote Surveillance Post.** The operation of these structures is expected to generate significant positive impacts to the environment. No adverse impacts are anticipated but additional safeguards are recommended like implementing a wastes management plan throughout the operation stage.

66. **Mooring buoys.** Mooring buoys placed in different islands would likely attract boats and visitors at various times of the year. Just like a pier, it is also likely that buoys may bring social concerns such as boat congestion, increase traffic and risks due to accidents and diseases. To mitigate these, rules as to the use and maintenance of mooring buoys will also be promulgated and approved, disseminated and explained, and enforced by relevant government authorities. These rules and regulations will form part of the UKL-UPL to be developed.

V. Institutional Requirements and Environmental Monitoring Plan

67. The Directorate General of Marine, Coast, and Small Islands (DGMCSI) of the Ministry of Marine Affairs and Fisheries (MMAF), as the Executing Agency (EA) of the COREMAP—CTI Project, has responsibility for project management and administration and will host the Project Management Office (PMO).

68. An Environmental and Social Monitoring Unit (ESMU), which will be established in the PMO, will play a lead role in implementing the EARF provisions of Project, and will be responsible for ensuring that the environmental requirements and procedures of the government and ADB are complied with, including the preparation of business plan/project activities, Initial Environmental Examination (IEE), Environmental Management Program (Upaya Pengelolaan

Lingkungan, UKL) and Environmental Monitoring Program (Upaya Pemantauan Lingkungan, UPL); other AMDAL requirements; and the corresponding mitigation measures, environment management plan are incorporated in every stage of the subproject/MPA activities. Any activity which will require an ANDAL (EIA) by any environmental authority at a later stage will not be selected.

69. The ESMU is headed by an assigned government officer with expertise in environmental management, and assisted by a junior government officer with expertise in marine and coastal management, both of whom are appointed by the EA (DGCSI-MMAF). The ESMU will ensure that an environmental management system, including mitigating measures, environmental monitoring, and the acquisition of government permits and clearances, is effectively implemented. Capacity-building activities and budget for environmental management, in particular for training and equipment needs related to compliance monitoring, and water quality monitoring, are listed in Appendix 2. A national environmental safeguard specialist (consultant) will be engaged by the project to assist the ESMU and provide advice in environmental management. The TOR of this specialist can be found in the EARF.

70. The Anambas PIU will be established and assume responsibility for implementing the approved subproject activities. Among other functions, the PIU is also tasked with (i) the preparation of the AMDAL studies and documents pertaining to the UPL-UKL or SPPL, as described in Table 8; and (i) the implementation of UKL and UPL. An environmental safeguard officer will be assigned in the Anambas PIU to assist the PIU in developing and monitoring the implementation of environmental safeguard measures, with support from the national environmental safeguard specialist.

71. The Project partners (LIPI, CI, District Fisheries Office, Pokmas) will also assist in the implementation of environmental safeguards and environmental monitoring in their area of responsibility.

72. The responsibilities of parties in environmental management are summarized in Table 9 below.

Table 9. Main Environmental Responsibilities

Level	Institution	Responsibilities
National/ Central	Executing Agency: Marine Coast, and Small Islands, MMAF	Overall Project management and administration
	Implementing Agency: National Marine Conservations Areas (LKKPN)	Technical planning and supervision of national MPAs, including MPA Anambas.
	Project Management Office (PMO)	▪ coordinate overall planning and scheduling (particularly infrastructure related and consultants); ▪ overall supervision and monitoring; and preparation of consolidated monitoring reports; ▪ administer contracts; and submit reports
	Environmental and Social Monitoring Unit (ESMU)	• Oversee implementation of the environmental management and monitoring plan, and ensure that institutional arrangements and responsibilities are followed;

Level	Institution	Responsibilities
		• Consolidate environmental performance and impact monitoring reports on behalf of the Project, for submission to the central, provincial and district environment units, relevant government ministries, and public information channels; • Advise the PMO on environmental aspects and impacts of projects, including those requiring corrective action during project implementation; • Assist the PMO in coordinating with the MOE, UPT-LKKPN-Pekanbaru and/or provincial/district environment agencies for the AMDAL compliance of projects; • Assist the PMO in drawing up terms of reference for the AMDAL teams/consultants, based on assessment scope agreed with the responsible AMDAL agency; • Update the information system on the MPA's baseline environment conditions,
	National Science Agency (LIPI)	Undertake and document baseline surveys and monitoring data on biodiversity, ecosystem, and socio-economic aspects relating to project impacts.
Provincial	Provincial Coordinating Unit	Coordination and guidance, monitoring and reporting, and handling of issues between districts/municipalities.
District [Kabupaten]	Project Implementation Unit (PIU): Technical Implementing Unit (UPT) of the National Marine Conservations Areas (LKKPN) of Pekanbaru	• Oversee and implement the subproject activities in Anambas. • Prepare AMDAL compliance of subprojects
	The MPA Field Area Management Office (Satker)	Responsible for day-to-day operation of MPA Anambas.
	District Advisory Committee	• Guide environmental issues and compliance.
	Marine and Fisheries Resources Supervision (PSDKP), MMAF	Mainly responsible for monitoring and supervising fisheries surveillance
	District Fisheries Office in Anambas	On behalf of the district, responsible for: • improving and strengthening management and utilization marine and fisheries resources to be optimal, effective, efficient and sustainable; • empowering economic coastal and small islands communities; • improving and strengthen surveillance and law enforcement for marine and fisheries sector; • preparing database and resource potential data of marine and fisheries in Anambas; and • improving quality and quantity marine and fisheries

Level	Institution	Responsibilities
		personnel.
	Nongovernment Organizations (NGOs): Conservation International (CI)	Collaboration in: • Raising public awareness and dissemination ("socialize") activities and • Monitoring biodiversity and ecosystem
Village [Desa]	Community groups (Pokmas)	• Collaboration in fisheries surveillance of MPA • Participate in the preparation of AMDAL compliance of subprojects (UKL-UPL) • Monitor the implantation of the UKL-UPL of subprojects

73. The potential environmental impacts, mitigation measures, institutional arrangement to implement the mitigation measures are summarized below.

Table 10: Summary of Environmental Impacts, Mitigation Measures and Institutional Arrangement

Stage/Intervention/ Environmental Impacts	Mitigation Measures	Institutional Arrangements
Project Location/Design Stage		
MPA Office Complex *Pier/jetty* *Gazebo* *Security and Remote Surveillance Post* *Turtle Hatchery* *Mooring Buoys*		
Impacts to coral reefs, mangroves and seagrasses.	Site selection in compliance with the approved MPA zoning and management plan, or the draft management guidelines if the approved management plan is not available, and use of best practices (e.g. in selection of mooring buoy system)	ESMU-PMO and PIU to coordinate and supervise.
Construction/Establishment Stage		
MPA Office Complex *Pier/jetty* *Gazebo* *Security and Remote Surveillance Post* *Turtle Hatchery* *Mooring Buoy*		
Potential impacts to coral reefs, mangroves and seagrasses.	Construction activities will be supervised so that impacts to surrounding are minimized, including reduction of noise and dust by proper use and	ESMU-PMO and PIU to coordinate and supervise.

Stage/Intervention/ Environmental Impacts	Mitigation Measures	Institutional Arrangements
	maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, transfer of waste and debris into surrounding areas. Construction should not be conducted during rainy days as there is potential for silt runoff. The contractor shall provide workers with safe and healthy working conditions to prevent accidents, injuries, and diseases, following ADB's SPS 2009 and related guidelines on Environment, Health, and Safety.	
Operation/Maintenance Stage		
MPA Office Complex		
Waste Generation (solid and sanitary)	• Solid wastes will be treated in accordance with approved Waste Management Plan (WMP), where solid wastes will be collected, segregated and disposed appropriately; 3R (Reuse, reduce and recycle) principles will be practiced. • Compliance monitoring	The WMP will be prepared and implemented by MPA Anambas Office (Satker), which will submit report on compliance to ESMU-PMO; LKKPN will evaluate and approve the WMP, and supervise the implementation the WMP.
	Sanitary wastes will be treated in a wastewater treatment unit, which is part of the complex structures.	MPA Anambas will ensure that the wastewater treatment facility is operating well; and shall report any sanitation problem to ESMU-PMO.
Water supply problem	identify and assess the water supply requirement of the complex	MPA Anambas to identify and assess the water supply of the complex, and report to ESMU-PMO
	• water conservation measures • Compliance monitoring	MPA Anambas to propose and implement water conservation measures, and submit report on compliance to ESMU-PMO
Pier/jetty		
social concerns relating to local inconveniences like increased port traffic volume, increased risk of accidents and communicable disease transmission	• Promulgation of rules on the use and maintenance of the pier/jetty, after consultation with affected parties; • Compliance Monitoring	Rules on the use and maintenance of the pier/jetty will be promulgated and approved by LKKPN, which will also ensure public consultation. These rules will be strictly implemented by

Stage/Intervention/ Environmental Impacts	Mitigation Measures	Institutional Arrangements
water quality will deteriorate due to ship and waterfront discharges		MPA Anambas, which will submit report on compliance to ESMU-PMO.
Turtle Hatchery, Gazebo, Security and Remote Surveillance Post		
No significant impact	Nothing to mitigate but additional environmental safeguards are recommended	ESMU-PMO to coordinate and supervise the implementation of additional environmental safeguards
Mooring buoys.		
Social concerns such as boat congestion, increase traffic and risks due to accidents and diseases	• Promulgation of rules on the use and maintenance of the mooring buoys, after consultation with affected parties; • Compliance monitoring	Rules on to the use and maintenance of mooring buoys will be promulgated and approved by LKKPN, and enforced by MPA Anambas Office, which will submit report on compliance to ESMU-PMO

74. Environmental monitoring will be integrated in the GIS-based monitoring and evaluation (M&E) decision support system (DSS) of the Project. At the subproject level, the items to be monitored include environmental impacts, mitigation and environmental safeguards implemented, and environmental parameters/indicators on the conditions of the environment such as Temperature, Salinity, Water flow, Chlorophyll, Turbidity, pH, Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), Ammonia (NH3 -N), Nitrite (NO2 -N), Nitrate (NO3 -N), Total Phosphate (PO4-P), Mercury (Hg) Lead (Pb) Cadmium (Cd) , Fecal coliform, Oil and grease in water. Water sampling shall be undertaken every quarter and the results will be compiled by ESMU-PMO for evaluation.

75. The Environmental Monitoring Plan describes the impacts that will be monitored, monitoring activities and frequency, monitoring party and the resources needed to carry out monitoring. These are presented below.

Table11: Environmental Monitoring Plan and Budget

Impacts to be Monitored and parameters	Monitoring Activity and Frequency	Monitoring Party	Resources and Budget (million rupiah)
Monitoring Water Quality (DO, BOD, pH, Coliform, Nitrogen, Sulfate, streamflow, Heavy metals, etc.);	Site inspection 2 times per year	PIU, ESMU-PMO and project proponents and consultants	160
Preparation, surveys, consultations and permitting	Preparation of environmental documents, surveys and	MPA Anambas; PIU; ESMU-	80

Impacts to be Monitored and parameters	Monitoring Activity and Frequency	Monitoring Party	Resources and Budget (million rupiah)
	permitting	PMO	
Total			**240**

VI. Public Consultation and Information Disclosure

76. The consultant team conducted a series of public consultation to refine the project concept and design, selection criteria used, and sub-project component coverage.

77. Between May 27 and June 7, 2013, a consultant team conducted meetings, interviews, consultations and focus-group discussions with officials or representatives of Directorate General of Marine Coast, and Small Islands (MCSI)-Ministry of Marine Affairs and Fisheries (MMAF), Directorate for Conservation of Area and Fish Species *(Direktorat Konservasi Kawasan Dan Jenis Ikan-KKJI)*, Badan Perencanaan Pembangunan Nasional (BAPPENAS) or National Development Planning Agency, National Science Agency (*Lembaga Ilmu Pengetahuan Indonesia-LIPI),* Badan Perencanaan Pembangunan Daerah (Regional Development Planning Agency), National Marine Conservation Areas (LKKPN or *Kawasan Konservasi Perairan Nasional),* Marine Protected Area *Kawasan Konservasi Laut Daerah (KKLD),* and from project stakeholders like the Kepulauan Anambas Regency, and some of its villages. They were briefed on the proposed project, and clarifications, questions and comments were raised.

78. The draft IEE has been provided to the MCSI-MMAF, KKJI and LKKPN as well as to the Regency of Kepulauan Anambas for comments and suggestions, as part of public consultation of the proposed Subproject. This final IEE will be made available to the public on ADB website. Subsequent UKL-UPLs will also be developed in both the Bahasa Indonesia and the English languages and made available to the public on ADB website.

VII. Findings and Recommendation

79. Based on the evaluation of the different interventions under Anambas Subproject, and its possible impacts on the environment, this IEE finds that their impacts on the environment are generally positive, and that the potential adverse impacts can be easily mitigated by adoption of specific measures as outlined in this report. This IEE is adequate and there is no need further detailed study or EIA. UKLs-UPLs will be developed for specific interventions/activities under the subproject at the design stage of the activities as recommended in Table 8.

VIII. Conclusions

80. This IEE finds that the proposed Anambas MPA Subproject will create no significant adverse environmental impacts and substantial and positive environmental benefits are expected for improved MPA effectiveness. This IEE, with the recommended institutional and monitoring program, is sufficient for the sub-project. UKLs/UPLs will be developed for specific interventions/activities under the subproject at the design stage of the activities in line with the recommendations in Table 8.

APPENDICES

Appendix 1: ADB REA Checklists

Rapid Environmental Assessment (REA) Checklist

Urban Development: MPA Office Complex

Instructions:

- This checklist is to be prepared to support the environmental classification of a project. It is to be attached to the environmental categorization form that is to be prepared and submitted to the Chief Compliance Officer of the Regional and Sustainable Development Department.
- This checklist is to be completed with the assistance of an Environment Specialist in a Regional Department.
- This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on (i) involuntary resettlement, (ii) indigenous peoples planning, (iii) poverty reduction, (iv) participation, and (v) gender and development.
- Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title: Coral Reef Rehabilitation and Management Program—Coral Triangle Initiative (COREMAP—CTI)

Sector Division: Environment, Natural Resources and Agriculture Division

Subproject: Anambas MPA Effectiveness Subproject

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting Is the project area…			
▪ Densely populated?		☑	
▪ Heavy with development activities?		☑	
▪ Adjacent to or within any environmentally sensitive areas?			
- Cultural heritage site		☑	
- Protected Area	☑		This is a project to support Anambas marine protected area. Its establishment and operation shall be guided by the Zoning and Management Plan of the MPA
- Wetland		☑	

MPA Office Complex - page 2

SCREENING QUESTIONS	Yes	No	REMARKS
- Mangrove	☑		The location of MPA station may be adjacent to mangrove areas but care will be done to avoid mangroves.
- Estuarine		☑	
- Buffer zone of protected area	☑		The project supports marine protected area
- Special area for protecting biodiversity	☑		The project supports biodiversity conservation in the Coral Triangle
- Bay		☑	
B. Potential Environmental Impacts Will the Project cause…			
▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services.		☑	
▪ deterioration of surrounding environmental conditions due to rapid urban population growth, commercial and industrial activity, and increased waste generation to the point that both manmade and natural systems are overloaded and the capacities to manage these systems are overwhelmed?	☑		The station may induce waste generation. Wastes will be collected, segregated and disposed in accordance with Waste Management Plan.
▪ degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		☑	
▪ dislocation or involuntary resettlement of people		☑	
▪ degradation of cultural property, and loss of cultural heritage and tourism revenues?		☑	
▪ occupation of low-lying lands, floodplains and steep hillsides by squatters and low-income groups, and their exposure to increased health hazards and risks due to pollutive industries?		☑	
▪ water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality , and pollution of receiving waters?	☑		Water sources will be assessed and water conservation measures will be practiced
▪ air pollution due to urban emissions?		☑	
▪ social conflicts between construction workers from other areas and local workers?	☑		Local workers will be given priority in hiring
▪ road blocking and temporary flooding due to land excavation during rainy season?		☑	

MPA Office Complex, page 3

SCREENING QUESTIONS	Yes	No	REMARKS
▪ noise and dust from construction activities?	☑		Temporary and minimal disturbance during working hours; maybe reduced by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working
▪ traffic disturbances due to construction material transport and wastes?		☑	
▪ temporary silt runoff due to construction?	☑		Minimal and temporary impacts and no need for mitigating measure.
• hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?		☑	
• water depletion and/or degradation?	☑		Water conservation measures will be practiced
• overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		☑	
• contamination of surface and ground waters due to improper waste disposal?	☑		Waste management plan will be implemented
• pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?		☑	

Rapid Environmental Assessment (REA) Checklist

Jetties and Pier

Country/Project Title: Coral Reef Rehabilitation and Management Program—Coral Triangle Initiative (COREMAP—CTI)

Sector Division: Environment, Natural Resources and Agriculture Division

Subproject: Anambas MPA Effectiveness Subproject

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting			
▪ Cultural heritage site		☑	
▪ Protected Area	☑		This is a project to support Anambas marine protected area. Its operation
▪ Wetland		☑	
▪ Mangrove	☑		The location of pier/jetty may be adjacent to mangrove areas but care will be done to avoid mangroves.
▪ Estuarine		☑	
▪ Buffer zone of protected area	☑		The project supports marine protected area
▪ Special area for protecting biodiversity	☑		The project supports biodiversity conservation in the Coral Triangle.
B. Potential Environmental Impacts			
• encroachment on precious ecology resulting in loss or damage to fisheries and fragile coastal habitats such as coral reefs, mangroves, and seagrass beds?		☑	
• short-term increase in turbidity and sunlight penetration as well as changes in sediment pattern and flows at dredging site?	☑		Temporary and small impact only.
• removal and disturbance of aquatic flora and fauna at dredging site?	☑		Very short t disturbance;
• deterioration of water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?	☑		Temporary impacts. Sanitary wastes and used chemicals will be disposed properly in accordance with Waste Management Plan

Pier - page 2

SCREENING QUESTIONS	Yes	No	REMARKS
• alteration of bottom surface and modifications to bathymetry, causing changes in tidal bore, river circulation, species diversity, and salinity?		☑	
• changes in sediment pattern and littoral drift that may cause beach erosion of neighboring areas?		☑	
• modification of terrestrial habitat by upland disposal of dredged material or covering of potential archaeological sites with dredge spoil?		☑	
• short-term air quality degradation due to dredging-related operations?		☑	
• noise and vibration due to blasting and other civil works?	☑		Temporary and minimal disturbance during working hours; maybe reduced by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and follow government's standards
• dislocation or involuntary resettlement of people?		☑	
• other social concerns relating to inconveniences in living conditions in the project areas?	☑		Workers will be provided adequate billeting facilities if needed.
• social conflicts if construction depletes local fishery resources on which communities depend for subsistence?		☑	
• poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?	☑		Wastes will be segregated and disposed according to the Waste Management Plan
• social concerns relating to local inconveniences associated with port operation (e.g. increased volume of port traffic, greater risk of accidents, communicable disease transmission)?	☑		Rules will be promulgated in the use of the pier/jetty, and these will be strictly enforced to facilitate traffic, avoid accidents and communicable disease transmission.
• deterioration of water quality due to ship (e.g. ballast water, oil waste, lubricant and fuel spills, sewage) and waterfront industry discharges?	☑		Rules will be promulgated and enforced to prevent water quality deterioration
• increased noise and air pollution resulting from airborne emissions (e.g. gas, smoke, fumes) from maneuvering and berthing ships and the waterfront industry?		☑	

Rapid Environmental Assessment (REA) Checklist

FISHERIES:
Turtle Hatchery

Coral Reef Rehabilitation and Management Program: Coral Triangle Initiative (COREMAP-CTI)

Country/Project Title:

Sector Division: Environment, Natural Resources and Agriculture Division

Subproject: Anambas MPA Effectiveness Subproject

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site		☑	
▪ Protected Area	☑		This is a project to support Anambas marine protected area. Its establishment and operation shall be guided by the Zoning and Management Plan of the MPA
▪ Wetland		☑	
▪ Mangrove		☑	
▪ Estuarine		☑	
▪ Buffer zone of protected area	☑		The project supports biodiversity conservation in the Coral Triangle.
▪ Special area for protecting biodiversity	☑		The project supports biodiversity conservation in the Coral Triangle.
B. Potential Environmental Impacts			
▪ overexploitation of fish stocks and long-term degradation of resource base?		☑	
▪ capture of non-target species and habitat damage through use of destructive fishing methods and gears?		☑	
▪ accidental damage to coral reefs by divers and fishing vessel anchors?		☑	
▪ pollution from oil and fuel spills and bilge flushing?		☑	
▪ ecological protection resulting from clearing for conversion of coastal wetlands to fishponds?		☑	
▪ social problems arising from conflicts with other site uses?	☑		The site might be withdrawn from other uses. This should comply with the zoning and management plan of the MPA. Prior consultation is needed.

Turtle hatchery - page 2

SCREENING QUESTIONS	Yes	No	REMARKS
▪ downstream water pollution from discharge of pond effluents with drain water?		☑	
▪ reduction of water supplies for competing uses (e.g., irrigation or domestic)?		☑	
▪ restriction of water circulation, obstruction to navigation by fish pens/cages, and reduction of stream capacity from siltation?		☑	
▪ dislocation or involuntary resettlement of people		☑	
▪ social problems due to land tenure and use conflicts?		☑	
▪ soil erosion and siltation during construction?		☑	
▪ noise and dust from construction?	☑		Temporary and minimal disturbance during working hours; maybe reduced by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and follow government's standards
▪ social problems especially when workers from other areas are hired?	☑		Minimal impact. Local workers will be hired.
▪ reduction of water available to downstream users during peak seasons?		☑	
▪ pollution of nearby aquatic environments by pond drainage water and inadequate farm management?	☑		Minimal impact
▪ depletion of local fish populations by stocking of wild fry/fingerlings in ponds?		☑	
▪ spread of diseases and parasites from exotic cultured species or escape of pond fish to the wild?		☑	
▪ increased public health risks due to the increased incidence or introduction of waterborne or water-related diseases?		☑	

Rapid Environmental Assessment (REA) Checklist

Social Infrastucture: Gazebo

Country/Project Title: Coral Reef Rehabilitation and Management: Coral Triangle Initiative (COREMAP-CTI)

Sector Division: Environment, Natural Resources and Agriculture Division

Subproject: Anambas MPA Effectiveness Subproject

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting			
▪ Densely populated?		☑	
▪ Heavy with development activities?		☑	
▪ Adjacent to or within any environmentally sensitive areas?			
- Cultural heritage site		☑	
- Protected Area	☑		This is a project to support Anambas marine protected area. Its establishment and operation shall be guided by the Zoning and Management Plan of the MPA
- Wetland		☑	
- Mangrove	☑		The location of MPA station may be adjacent to mangrove areas but care will be done to avoid mangroves.
- Estuarine		☑	
- Buffer zone of protected area	☑		The project supports marine protected area
- Special area for protecting biodiversity	☑		The project supports biodiversity conservation in the Coral Triangle
- Bay		☑	
B. Potential Environmental Impacts Will the Project cause…			Gazebo - page 2
▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services.	☑		Minimal impact. Solid wastes will be collected, segregated and disposed according to an approved Waste Management Plan

SCREENING QUESTIONS	Yes	No	REMARKS
▪ deterioration of surrounding environmental conditions due to rapid urban population growth, commercial and industrial activity, and increased waste generation to the point that both manmade and natural systems are overloaded and the capacities to manage these systems are overwhelmed?		☑	
▪ degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		☑	
▪ dislocation or involuntary resettlement of people		☑	
▪ degradation of cultural property, and loss of cultural heritage and tourism revenues?		☑	
▪ occupation of low-lying lands, floodplains and steep hillsides by squatters and low-income groups, and their exposure to increased health hazards and risks due to pollutive industries?		☑	
▪ water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality, and pollution of receiving waters?		☑	
▪ air pollution due to urban emissions?		☑	
▪ social conflicts between construction workers from other areas and local workers?	☑		Minimal impact. Local workers will be given priority in hiring
▪ road blocking and temporary flooding due to land excavation during rainy season?		☑	
▪ noise and dust from construction activities?	☑		Temporary and minimal disturbance during working hours; maybe reduced by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and follow government's standards
▪ traffic disturbances due to construction material transport and wastes?		☑	
▪ temporary silt runoff due to construction?		☑	
• hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?		☑	
• water depletion and/or degradation?		☑	

SCREENING QUESTIONS	Yes	No	REMARKS
• overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		☑	
• contamination of surface and ground waters due to improper waste disposal?		☑	
• pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?		☑	

Rapid Environmental Assessment (REA) Checklist

Marine Infrastructure: Security and Remote Surveillance Post

Country/Project Title: Coral Reef Rehabilitation and Management Program—Coral Triangle Initiative (COREMAP—CTI)

Sector Division: Environment, Natural Resources and Agriculture Division

Subproject: Anambas MPA Effectiveness Subproject

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting			
▪ Densely populated?		☑	
▪ Heavy with development activities?		☑	
▪ Adjacent to or within any environmentally sensitive areas?			
- Cultural heritage site		☑	
- Protected Area	☑		This is a project to support Anambas marine protected area. Its establishment and operation shall be guided by the Zoning and Management Plan of the MPA
- Wetland		☑	
- Mangrove	☑		The location of MPA station may be adjacent to mangrove areas but care will be done to avoid mangroves.
- Estuarine		☑	
- Buffer zone of protected area	☑		The project supports marine protected area
- Special area for protecting biodiversity	☑		The project supports biodiversity conservation in the Coral Triangle
- Bay		☑	
B. Potential Environmental Impacts			
Will the Project cause…			
▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services.	☑		Minimal impact. Solid wastes will be collected, segregated and disposed according to an approved Waste Management Plan

SCREENING QUESTIONS	Yes	No	REMARKS
▪ deterioration of surrounding environmental conditions due to rapid urban population growth, commercial and industrial activity, and increased waste generation to the point that both manmade and natural systems are overloaded and the capacities to manage these systems are overwhelmed?		☑	
▪ degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		☑	
▪ dislocation or involuntary resettlement of people		☑	
▪ degradation of cultural property, and loss of cultural heritage and tourism revenues?		☑	
▪ occupation of low-lying lands, floodplains and steep hillsides by squatters and low-income groups, and their exposure to increased health hazards and risks due to pollutive industries?		☑	
▪ water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality , and pollution of receiving waters?		☑	
▪ air pollution due to urban emissions?		☑	
▪ social conflicts between construction workers from other areas and local workers?	☑		Minimal impact. Local workers will be given priority in hiring
▪ road blocking and temporary flooding due to land excavation during rainy season?		☑	
▪ noise and dust from construction activities?	☑		Minimal and temporary noise from civil works. Operations will be avoided at night.
▪ traffic disturbances due to construction material transport and wastes?		☑	
▪ temporary silt runoff due to construction?		☑	
• hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?		☑	
• water depletion and/or degradation?		☑	
• overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		☑	
• contamination of surface and ground waters due to improper waste disposal?		☑	
• pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?		☑	

Rapid Environmental Assessment (REA) Checklist

MARINE INFRASTRUCTURE: Mooring Buoy

Coral Reef Rehabilitation and Management Program—Coral Triangle Initiative (COREMAP—CTI)

Country/Project Title:

Sector Division: Environment, Natural Resources and Agriculture Division

Subproject: Anambas MPA Effectiveness Subproject

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site		☑	
▪ Protected Area	☑		This is a project to support Anambas marine protected area. Its establishment and operation shall be guided by the Zoning and Management Plan of the MPA
▪ Wetland		☑	
▪ Mangrove		☑	
▪ Estuarine		☑	
▪ Buffer zone of protected area	☑		The project supports marine protected area
▪ Special area for protecting biodiversity	☑		The project supports biodiversity conservation in the Coral Triangle.
B. Potential Environmental Impacts Will the Project cause…			
• encroachment on precious ecology resulting in loss or damage to fisheries and fragile coastal habitats such as coral reefs, mangroves, and seagrass beds?	☑		Temporary and localized impacts only.
• short-term increase in turbidity and sunlight penetration as well as changes in sediment pattern and flows at dredging site?		☑	

Mooring Buoy - page 2

SCREENING QUESTIONS	Yes	No	REMARKS
• removal and disturbance of aquatic flora and fauna at dredging site?	☑		Selection of the mooring buoy system based on the sea bottom conditions. Adoption of the Halas system in areas with flat, solid bedrock. Adoption of the Manta-Ray system for areas of sand, coral rubble or a combination of bottom types. Avoidance of the traditional system except in sand or mud sea bottom areas.
• deterioration of water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?		☑	
• alteration of bottom surface and modifications to bathymetry, causing changes in tidal bore, river circulation, species diversity, and salinity?	☑		See mitigation measures to 'removal and disturbance of aquatic flora and fauna' above.
• changes in sediment pattern and littoral drift that may cause beach erosion of neighboring areas?		☑	
• modification of terrestrial habitat by upland disposal of dredged material or covering of potential archaeological sites with dredge spoil?		☑	
• short-term air quality degradation due to dredging-related operations?		☑	
• noise and vibration due to blasting and other civil works?	☑		Minimal and temporary noise during installation. Thorough survey and planning to reduce installation time.
• dislocation or involuntary resettlement of people?		☑	
• other social concerns relating to inconveniences in living conditions in the project areas?		☑	
• social conflicts if construction depletes local fishery resources on which communities depend for subsistence?		☑	
• poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?	☑		Wastes segregation and disposal will be done in accordance with an approved Waste Management Plan
• social concerns relating to local inconveniences associated with port operation (e.g. increased volume of port traffic, greater risk of accidents, communicable disease transmission)?	☑		Rules will be promulgated in the use of the pier/jetty, and these will be strictly enforced to facilitate traffic, avoid accidents and communicable disease transmission.
• deterioration of water quality due to ship (e.g. ballast water, oil waste, lubricant and fuel spills, sewage) and waterfront industry discharges?	☑		Rules will be promulgated and enforced to prevent water quality deterioration
• increased noise and air pollution resulting from airborne emissions (e.g. gas, smoke, fumes) from maneuvering and berthing ships and the waterfront industry?		☑	

Rapid Environmental Assessment (REA) Checklist

SOLAR CELLS (PHOTOVOLTAIC)

Country/Project Title: Coral Reef Rehabilitation and Management Program—Coral Triangle Initiative (COREMAP—CTI)

Sector Division: Environment, Natural Resources and Agriculture Division

Subproject: Anambas MPA Effectiveness Subproject

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site		☑	
▪ Protected area	☑		This is a project to support Anambas marine protected area. Its establishment and operation shall be guided by the Zoning and Management Plan of the MPA
▪ Wetland		☑	
▪ Mangrove		☑	
▪ Estuarine		☑	
▪ Buffer zone of protected area	☑		The project supports marine protected area
▪ Special area for protecting biodiversity	☑		The project supports biodiversity conservation in the Coral Triangle
B. Potential Environmental Impacts Will the Project cause…			
▪ Large scale land disturbance and land use impacts especially due to diversion of productive lands?		☑	
▪ Involuntary resettlement of people? (physical displacement and/or economic displacement)		☑	
▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		☑	
▪ Noise, vibration and dust from construction activities?		☑	
▪ An increase in local traffic during construction?		☑	

SCREENING QUESTIONS	Yes	No	REMARKS
▪ Environmental disturbances such as soil erosion, land contamination, water quality deterioration, air pollution, noise and vibrations during construction phase?		☑	
• Aesthetic degradation and property value loss due to establishment of plant and ancillary facilities?		☑	
▪ Changes in flow regimes of the water intake from surface water or underground wells due to abstraction for cooling purposes?		☑	
▪ Pollution of water bodies and aquatic ecosystem from wastewater treatment plant, from cooling towers, and wash-water during operation?		☑	
▪ A threat to bird or bat life from colliding with the project facilities and/or being burned by concentrated solar rays?		☑	.
▪ Industrial liquid (dielectric fluids, cleaning agents, and solvents) and solid wastes (lubricating oils, compressor oils, and hydraulic fluids) generated during construction and operations likely to pollute land and water resources?	☑		Any chemical wastes will be disposed in accordance with waste management plan
▪ Soil/water contamination due to use of hazardous materials or disposal of broken or damaged solar cells (photovoltaic technologies contain small amounts of cadmium, selenium and arsenic) during installation, operation and decommissioning?	☑		Hazardous wastes will be disposed according to waste management plan and government regulations
▪ Noise disturbance during operation due to the proximity of settlements or other features?			
▪ Visual impacts due to reflection from solar collector arrays resulting in glint or glare?	☑		Any glare could be corrected by the proper design and alignment of solar panels.
▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		☑	
▪ Social conflicts between local laborers and those from outside the area?	☑		Local laborers will be hired preferably.
▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during construction, installation, operation, and decommission?	☑		Only qualified technical service crew will construct and install the solar panels system. The office staff will be oriented as to the proper operation and maintenance of the system. Decommissioning will be done in accordance with the government and manufacturer's specifications.
▪ Risks to community health and safety due to the transport, storage, and use and/or disposal of materials and wastes such as explosives, fuel and other chemicals during construction, and operation?	☑		Chemicals and other wastes will be disposed according to the waste management plan
▪ Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		☑	

Climate Change and Disaster Risk Questions The following questions are not for environmental categorization purposes. However, the questions are included in this checklist to help the project team identify the potential climate and disaster risks of the project.	**Yes**	**No**	**Remarks**
▪ Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes (see Appendix I)?	☑		Sumatra is one of the highest risk areas in world for a major earthquake (>8.o) and subsequent tsunami in next 30-50 years. Due to its inland mountains, there are landslides as well. Storm surge and sea level rise are other hazards that need to be considered in implementing activities. (Coastal buffer zone, building codes, evacuation routes, accessible sustainable materials for building, etc.)
▪ Could changes in precipitation, temperature, salinity, or extreme events over the Project lifespan affect its sustainability or cost?		☑	Unlikely extreme weather conditions would affect its sustainability or cost. EQ is the primary risk.
▪ Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (e.g. high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?	☑		Women and children still have low levels of safety and security, as well as little power, particular in Non-COREMAP villages. IP are dominant in only one place: Mentawai, and they are the majority ethnic group there.
▪ Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., increasing traffic or housing in areas that will be more prone to flooding, by encouraging settlement in earthquake zones)?		☑	The project will discourage expensive buildings or activities in earthquake zones, and encourage coastal setback and other practices to minimize impacts of coastal hazards. Sumatra has received a lot of EQ preparedness, and this awareness should be sustained.

Environments, Hazards and Climate Change

Environment	Natural Hazards and Climate Change
Arid/Semi-arid and desert environments	Low erratic rainfall of up to 500 mm rainfall per annum with periodic droughts and high rainfall variability. Low vegetative cover. Resilient ecosystems & complex pastoral and systems, but medium certainty that 10–20% of drylands degraded; 10-30% projected decrease in water availability in next 40 years; projected increase in drought duration and severity under climate change. Increased mobilization of sand dunes and other soils as vegetation cover declines; likely overall decrease in agricultural productivity, with rain-fed agriculture yield reduced by 30% or more by 2020. Earthquakes and other geophysical hazards may also occur in these environments.
Humid and sub-humid plains, foothills and hill country	More than 500 mm precipitation/yr. Resilient ecosystems & complex human pastoral and cropping systems. 10-30% projected decrease in water availability in next 40 years; projected increase in droughts, heatwaves and floods; increased erosion of loess-mantled landscapes by wind and water; increased gully erosion; landslides likely on steeper slopes. Likely overall decrease in agricultural productivity & compromised food production from variability, with rain-fed agriculture yield reduced by 30% or more by 2020. Increased incidence of forest and agriculture-based insect infestations. Earthquakes and other geophysical hazards may also occur in these environments.
River valleys/ deltas and estuaries and other low-lying coastal areas	River basins, deltas and estuaries in low-lying areas are vulnerable to riverine floods, storm surges associated with tropical cyclones/typhoons and sea level rise; natural (and human-induced) subsidence resulting from sediment compaction and ground water extraction; liquefaction of soft sediments as result of earthquake ground shaking. Tsunami possible/likely on some coasts. Lowland agri-business and subsistence farming in these regions at significant risk.
Small islands	Small islands generally have land areas of less than 10,000km^2 in area, though Papua New Guinea and Timor with much larger land areas are commonly included in lists of small island developing states. Low-lying islands are especially vulnerable to storm surge, tsunami and sea-level rise and, frequently, coastal erosion, with coral reefs threatened by ocean warming in some areas. Sea level rise is likely to threaten the limited ground water resources. High islands often experience high rainfall intensities, frequent landslides and tectonic environments in which landslides and earthquakes are not uncommon with (occasional) volcanic eruptions. Small islands may have low adaptive capacity and high adaptation costs relative to GDP.
Mountain ecosystems	Accelerated glacial melting, rockfalls/landslides and glacial lake outburst floods, leading to increased debris flows, river bank erosion and floods and more extensive outwash plains and, possibly, more frequent wind erosion in intermontane valleys. Enhanced snow melt and fluctuating stream flows may produce seasonal floods and droughts. Melting of permafrost in some environments. Faunal and floral species migration. Earthquakes, landslides and other geophysical hazards may also occur in these environments.
Volcanic environments	Recently active volcanoes (erupted in last 10,000 years – see www.volcano.si.edu). Often fertile soils with intensive agriculture and landslides on steep slopes. Subject to earthquakes and volcanic eruptions including pyroclastic flows and mudflows/lahars and/or gas emissions and occasionally widespread ashfall.

ANNEX 4: INITIAL ENVIRONMENTAL EXAMINATION FOR BINTAN

ADB

Initial Environmental Examination:

Subproject: Enhancing Management Effectiveness, Bintan Marine Protected Area, Indonesia

Document Stage: Final

Project Number: 46421

November 2013

INO: Coral Reef Rehabilitation and Management Program—Coral Triangle Initiative Project

.

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 12 November 2013)

Currency Unit – rupiah (Rp)
Rp 1.00 = $ 0.000088
$1.00 = Rp11,396

ABBREVIATIONS

ADB	-	Asian Development Bank
AMDAL		Analisis Mengenai Dampak Lingkungan Hidup, or Indonesian Environmental Impact Assessment system
ANDAL		Analisis Dampak Lingkungan, or Environmental Impact Assessment
BAPEDAL	-	Environmental Impact Control Agency *(Badan Pengendalian Dampak Lingkungan)*
BAPEDALDA	-	Local Environmental Impact Control Agency (*Badan Pengendalian Dampak Lingkungan Daerah*)
BAPPENAS	-	National Development Planning Agency (*Badan Perencanaan Pembangunan Nasional)*
BKKPN	-	National Marine Conservation Center (BKKPN) of Kupang
BPLHD	-	Local Environmental Management Agency (*Badan Pengelolaan Lingkungan Hidup Daerah*)
Bupati	-	District Mayor
COREMAP	-	Coral Reef Rehabilitation and Management Program
CT	-	Coral Triangle
CTI	-	Coral Triangle Initiative
DG	-	Directorate General
DPL	-	Marine Protected Areas *(Daerah Perlindungan Laut)*
EARF	-	environmental assessment and review framework
EIA		environmental impact assessment
ESMU		environmental management unit
GEF	-	Global Environment Facility
GoI	-	Government of Indonesia
ha	-	hectare
KKJI	-	Directorate for Conservation of Area and Fish Species *(Direktorat Konservasi Kawasan dan Jenis Ikan or KKJI)*
km	-	kilometer
LIPI	-	National Science Agency
LKKPN	-	National Marine Conservation Areas (Loka *Kawasan Konservasi Perairan Nasional or LKKPN)* of Pekanbaru
LPSTK	-	*Coral Reef Resource Management Agency (Lembaga Pengelola Sumberdaya Terumbu Karang)*
MCSI	-	Directorate General of Marine, Coast and Small Islands (Kelautan, Pesisir Dan Pulau-Pulau Kecil or KP3K)
MMAF	-	Ministry of Marine Affairs and Fisheries (*Kementarian Kelautan dan Perikanan or KKP)*
MoU	-	Memorandum of Understanding
MPA	-	Marine Protected Area (*Kawasan Konservasi Laut Daerah or KKLD)*
NGO	-	nongovernment organization

PES	-	payment for ecosystem services
PKBL	-	Partnership and Environment Development Program
PIU	-	Project Implementation Unit
PMO	-	Project Management Office
POKMAS	-	community groups
Rp	-	rupiah
SPPL	-	statement of readiness to manage and monitor the environment
UKL	-	Environmental Management Efforts/Plan (UKL)
UPL	-	Environmental Monitoring Efforts/Plan (UPL)
UPT	-	Technical Implementing Unit

I. Introduction

1. The Coral Reef Rehabilitation and Management Program: Coral Triangle Initiative Project (COREMAP–CTI, the Project) aims to manage coral reef resources, associated ecosystems and biodiversity in a sustainable manner for the welfare of coastal communities. The design of COREMAP—CTI reflects a phased and incremental approach. The first or initiation phase known as COREMAP Phase I (1998–2004) represented the pilot phase leading to the design of COREMAP Phase II (COREMAP II). The second or acceleration phase, COREMAP II (2004–2011) represented the initial implementation phase. The proposed Project is the third and final phase which intends to (i) complete remaining gaps in Phase II; (ii) "institutionalize" Phase II interventions; and (iii) build a "model" of coral reef rehabilitation and management program in Indonesia for replication and up-scaling in new areas. "Institutionalization" will mean integrating community-based activities within local Government functions and policies, and facilitate learning networks and institutional partnerships across regional and national institutions for project sustainability. The Project will follow a project financing modality for sector loan.

2. COREMAP—CTI will be aligned with Indonesia's National Plan of Action (NPOA) for the Coral Triangle Initiative (CTI), and aims to manage coral reef resources, associated ecosystems and biodiversity in a sustainable manner for increasing the incomes of coastal communities in Indonesia. Building upon Phase II interventions, the Project will deliver 10 effective Marine Protected Area (MPA) models that can be replicated across the country for sustainable coral reef management. MPAs in Phase II were in MPA initiation stage ("red" category) or the MPA established stage ("yellow" category). The Project will help to move the MPAs to the next higher stage(s): MPA managed minimally stage ("green" category), or MPA managed optimally stage ("blue" category) by increasing and evaluating their management effectiveness.

3. The selection of subprojects within this sector modality will be based on the following key criteria: the subproject (i) contributes directly to environmentally sound non-consumptive resource utilization across the MPAs (e.g., environmentally-responsible tourism); (ii) supports development of sustainable fisheries (e.g., enhancing fish market facilities, fish landing sites, fish catch monitoring and catch regulation); (iii) contributes to fostering alternative livelihoods that reduce fishing pressure or provides non-traditional gainful employment within the sector; and (iv) enhances effectiveness, governance, and financial sustainability of co-managed MPAs. Subprojects will be formulated and implemented using a community-driven development (CDD) approach, which give the communities a role in the selection of subprojects and participate in the development of coral reef management plans and policies, as well as in the involvement in the design, implementation and monitoring of infrastructure and livelihood activities.

4. Based on these criteria, the feasibility study for the project preparation will appraise two representative (core) subprojects, one for a national level MPA and one for a subnational MPA. The core subprojects may include: (i) enabling infrastructure for private sector participation in ecotourism development (e.g., mooring buoys, jetties, village roads, solid waste management, water supply, sanitation, electricity supply, telecommunications etc.); (ii) fisheries productivity-related infrastructure (e.g., hatcheries, fish markets, fish landing sites, fishing ports, etc.); (iii) alternative livelihood-related infrastructure (fish ponds, fish cages, fish processing etc.) and (iv) MPA governance (e.g., management board, spatial plans, management plans, financing plans, threatened species management plans, coral monitoring and database systems, monitoring and surveillance operations).

5. This Initial Environmental Examination (IEE) Report focuses on the environmental assessment of the management and livelihood interventions for Bintan MPA as a sample subproject, and is limited to infrastructures and livelihood, as these project interventions have potential for environmental impacts.

6. The environmental assessment was undertaken by the consultant team for the Government of Indonesia through field visits between May 26, 2013 and June 7, 2013 in the project sites, interviews/consultation and focus-group discussions with officials or representatives from project stakeholders such as the regencies/municipalities/cities, villages, and district/field offices of national government agencies including the Ministry of Marine Affairs and Fisheries (MMAF), National Development Planning Agency (Badan Perencanaan Pembangunan Nasional or BAPPENAS), Regional Development Planning Agency (Badan Perencanaan Pembangunan Daerah or BAPPEDA), National Science Agency (Lembaga Ilmu Pengetahuan Indonesia or LIPI), National Marine Conservation Areas (LKKPN), National Marine Protected Area (Kawasan Konservasi Perairan Nasional), Marine Protected Area (Kawasan Konservasi Laut Daerah or KKLD), Directorate for Conservation of Area and Fish Species (Direktorat Konservasi Kawasan Dan Jenis Ikan or KKJI) and others. Collection of secondary data such as the regency profile/statistics, maps, and management/development plans were also carried out.

II. Description of the Project

A. Overview of the Sector Loan

7. **Type**. This sector loan project is associated with environment and natural resources. It is multi-component, and related to investment in capacity building, coastal and fishery management, and livelihood development.

8. **Category**. The Project is categorized as Category B under ADB Safeguard Policy Statement 2009 due to the project's emphasis on conservation of marine and coastal resources and the localized impacts for which mitigation measures can be readily designed and implemented.

9. **Need for project.** Low coastal community awareness and inadequate institutional capacity to manage land and marine-based pollution, insufficient institutional framework to effectively manage marine protected areas (MPAs), and persistent poverty in coastal areas have resulted in 70% of Indonesian coral reefs becoming degraded. The Government of Indonesia plans to address these root causes of resource and environmental degradation by undertaking this project.

10. **Location.** The Project will be implemented in existing COREMAP Phase II areas of seven districts that include at least 57 existing project villages in three provinces in Sumatra (North Sumatra, West Sumatra and Riau). Additional project activities will focus on MPA management effectiveness at three national MPAs: Anambas in Anambas District in Riau Islands province, Pulau Pieh in Pariaman District in West Sumatra province, and Gili Matra in North Lombok District of West Nusa Tenggara province.

11. **Magnitude of Operation.** The ADB-financed portion of the project would cover three national and seven sub-national marine protected areas in primarily eastern and western part of Sumatra Island. Two subprojects of the Anambas national MPA and the subnational Bintan MPA have been prepared.

12. **Proposed Schedule of Implementation and Project Proponents.** The Project is proposed to be implemented within five years from 2013 to 2018, with the Directorate General of Marine, Coast, and Small Islands (DG of MCSI) of the Ministry of Marine Affairs and Fisheries (MMAF) as the Executing Agency (EA).

13. **Description of Project Components.** The Project has four major components or outputs:

(i) **Output 1: Coral reef management and institutions strengthened**. This component will focus on strengthening and institutionalizing capacities developed under COREMAP II.
(ii) **Output 2: Ecosystem based resources management developed**. This component will strengthen MPA management effectiveness and biodiversity conservation.
(iii) **Output 3: Sustainable marine-based livelihoods improved**. This component will promote sustainable livelihoods and income-generating infrastructure.
(iv) **Output 4: Project coordination and management**.

B. Description of the Subproject

14. The Bintan Regency is internationally considered to be an attractive tourist destination for South East Asians entering Indonesia through Singapore and through Hong Kong. In some areas it has high conservation value based on its levels of endemic fauna and also being the natural habitat of the dugong, which is under serious threat. The Bintan Regency (District) Kepulauan Bintan covers 88,038.54 km^2, of which the total land area is only 2.21% or 1,946.13 km2. One of the areas with the highest coral diversity is the group of Tambelan islands with an area of about 90.96 km^2. It is the farthest subdistrict in Bintan Regency, located in the middle of the Natuna Sea.

15. Under COREMAP—CTI, Bintan District MPA plans to undertake an investment of over US$4.2 million and Rp4.95 billion over a period of five years (2014-2018) to enhance management effectiveness and environmentally sound tourism. The District Mayor known locally as Bupati has declared the seriously threatened dugong to be a flagship of Bintan. Efforts supported by the Global Environment Facility (GEF) and the United Nations Environment Programme (UNEP) previously have achieved the establishment of a seagrass sanctuary on the eastern side of Bintan island.

16. The outputs to achieve improved management effectiveness include: (i) Institutional strengthening; (ii) biodiversity and ecosystem assessments regularly updated; (iii) MPA infrastructure operational and local livelihoods enhanced; and (iv) project management and monitoring. Tourism based revenue streams, including fees and charges are to flow towards increasing financial sustainability of MPA operations. In particular, Women's groups that have done exceedingly well under COREMAP II, such as pokmas Bandeng in Malang Rapat village are to receive continued support to expand, diversify, and link up to external markets, thus boosting revenues for the members of the pokmas.

17. In addition, it is estimated that investments will generate incremental benefits for at least 300 households involved in tourism-related activities and mariculture by 2018. Furthermore, by 2018, coral reef and ecosystem health is expected to evidence enhancement of live coral cover

in protected zones to above the average of 50%, reduction in coral damage from destructive fishing practices and maintenance of density of coral reef fish and mangroves where these currently appear (baseline of 2010-2014).

18. Under COREMAP- CTI, the investments are to be sourced from an ADB loan, GEF grant, and the Government of Indonesia. Investments in Bintan are expected to contribute to overall objectives of COREMAP—CTI. By 2018, it is expected that baselines of biodiversity and ecosystem health will be updated and monitoring data uploaded on a website, nature-based tourist numbers increased and tourism revenue streams consolidated, and dugong management plan implemented. Investments under COREMAP—CTI are expected to leverage private sector funding under their Corporate Social Responsibility and, if possible, a Payment for Ecosystem Services (PES) mechanism to maintain dugong habitat and increase their population numbers.

19. This environmental assessment will be limited to (i) the Bintan MPA infrastructure that needs upgrading to effectively manage the zoning and reach its management effectiveness targets; and (i) small scale livelihood improvement on a CDD basis that may be requested by the villages. These investments are listed in Table 1 below.

Table 1. Infrastructure and livelihood improvement activities for Bintan MPA Subproject

Intervention	Number of units
A. Infrastructure:	
1) MPA office complex	1
2) Surveillance post and surveillance tower	To be decided
B. Livelihood	
1) Alternative Livelihoods development activities (CDD approach-livelihood models)	To be decided
2) Support to Women Fish Processing Group "Pokmas Bandeng": Upgrading fish processing facility	To be decided

20. **Implementation Schedule**. The schedule of implementation for infrastructure and livelihood improvement activities is shown in Table 2 below.

Table 2: Schedule of Implementation of Subproject Interventions

Type of Interventions	Unit	Physical Target	Implementation Schedule				
			Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
INFRASTRUCTURE AND LIVELIHOODS							
Feasibility Study and Detailed Engineering Design							
Infrastructure							

Type of Interventions	Unit	Physical Target	Implementation Schedule				
			Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
Livelihoods							

III. Description of the Environment[1]

21. Bintan Island is located at 10 km east of Batam Island, near Singapore. Bintan Regency includes 240 islands, with 201 islands remain uninhabited. It covers a land area of 1 946 sq. km and sea area of 86,092 sq. km. The region is located adjacent to the western edge of the Coral Triangle (CT), renowned for its globally outstanding marine biodiversity.

22. Bintan Regency consists of 10 subdistricts, and 51 villages. These subdistricts, with their corresponding land area, number of villages and capital, are listed in the table below.

Table 3. Bintan regency subdistricts and their area, number of villages and capital

Subdistrict (Kecamatan)	Area (Sq. Km) (Luas Kecamatan)	Villages	Capital (Ibu Kota Kecamatan)
Teluk Bintan	185	6	Tembeling
Seri Kuala Lobam		5	Teluk Lobam
Bintan Utara	219.25	5	Tanjung Uban
Teluk Sebong	408.34	7	Sebong Lagoi
Bintan Timur	461	4	Kijang
Bintan Pesisir		4	Kelong
Mantang		4	Mantang
Gunung Kijang	503.12	4	Kawal
Toapaya		4	Toapaya
Tambelan	169.42	8	Tambelan
Total	**1,946.13**	**51**	

Source: Bintan in Figures 2011

23. Some of the environmental issues and concerns in the Subproject that were elicited during the field visits include: illegal and destructive fishing, overfishing, coral bleaching, coral destruction, illegal sea turtle egg and meat collection, mining in southern part of the island, and pollution from big ships docked near Batam island.

[1] Mostly sourced from 'Bintan in Figures 2011', Katalog BPS: 1102001.2102. BPS Bintan Regency.

A. Physical Resources

24. **Topography and geology.** Bintan is part of the continental shelf called "Paparan Sunda". The islands in this area were formed by erosion landslide in the pre tertiary era. The land is generally flat to hilly. The only mountain can be found in Teluk Bintan, which is the Gunung Bintan with a height of 380 m.

25. **Land.** The potential area for paddy, crops, vegetables, and fruits are 1,050 ha, 3,994 ha, 7499ha, and 12,780 ha, respectively. Forest area comprises 4,490 ha.

26. **Rivers/Lakes.** Generally, rivers in Bintan are small and shallow. It is not used for transportation but for drainage only. The largest river, Sungai Pulai, is being used to supply freshwater for the population in Tanjungpinang

27. **Climate.** The climate of Bintan is typical with south monsoon winds from May through October, and north monsoon winds from November through April. It is tropically wet in general. The temperature ranges from 21.2 to 34.2 °C while the humidity ranges from 49 to 85%. The average atmospheric pressure is 1010.2 Mbs. The islands received an average of 273.6 mm of rainfall annually, with an average of 10 rainy days per month.

B. Ecological Resources

28. **Forest/Vegetation.** Bintan has few secondary forests of *Dipterocarps* left. This was due to the conversion of most forest lands to the cultivation of gambier (*Uncaria gembieri*), which decimated the forests for firewood before the 20th century. When the forests were gone, these gambier plantations were replaced by rubber plantations, which were eventually abandoned due to water logging problem. Along the coastlines, among the mangrove species that can be found are those belonging to the genera of *Avicennia, Rhizophora,* and *Sonneratia*.

29. **Wildlife/Biodiversity.** Various species of sea animals and plants are found underwater. From squids to snails, from various fish to oyster – several marine species including dolphins and sea turtles are found. Bintan Island was one of the locations where sea turtles were found in large numbers in the past. The hawksbill turtle *(Eretmochelys imbricata*) [2] and the green turtle (*Chelonia mydas*) [3] have been recorded in Bintan. In terms of reef fish biodiversity, Bintan has mostly gobies (*Gobiidae*), wrasses (*Labridae*), damselfishes (Pomacentridae), groupers (Serranidae), cardinalfishes (*Apogonidae*), blennies (*Blenniidae*), butterflyfishes (*Chaetodontidae*) and parrotfishes (*Scaridae*). In the forests, various animals can still be found such as silver leaf monkey (*Trachypithecus cristatus)*, sunbirds (*Nectariniidae*), and unknown species of eagles and kite birds.

C. Economic Development

30. **Agricultural crops.** In the year 2011, Bintan regency had 60 hectares of rice paddy that produced 145 tons of rice; 246 hectares that produced 87.5 tons of maize; 135 hectares that produced 2,251 tons of cassava; 5,714 hectares that produced 8,761 tons of rubber; 5,168 hectares of farm that produced 6,112 tons of coconut; 1,107 hectares that produced 1,107 tons of oil palm; 400 hectares that produced 100 tons of cloves; and 40 hectares that produced 28 tons of pepper. It has also produced different kinds of fruits such as mangos, rambutan, nangka, papaya, banana, pineapple, orange, durian, guava, sepadile, slacia, lanza, mangistan,

[2] Critically endangered according to the IUCN Red List
[3] Endangered according to the IUCN Red List

bengkoang, water melon, dragon fruit as well as different vegetables like beans, chilly, small pepper, cucumber , cabbage, spinach, mustard, string bean, celery, petai, jengkol, squash, and bitter melon.

31. **Livestock.** The regency recorded 1,039 cows, 3,500 pigs, 1,048 goats, 2,524,200 broiler chicken, 267,500 layers, 196,451 hens and 7,977 ducks in the year 2011. They produced 25, 470 tons of cow meat, 49, 770 tons of pork, 1,113,250 tons of poultry meat, 1,670 tons of goat meat, 104 million pieces of chicken eggs and 477 kg of duck eggs.

32. **Fishery**. The regency has 9,933 marine cages (budiya laut), 7,260 hectares of brackish ponds and 176 hectares of freshwater ponds. About 21,442 tons of fishery products were produced in 2010 by 240 fishing groups and 8 cooperatives. The regency has 3 ice factories, 3 cold storages, and 39 dockyards.

33. **Forestry.** There are 4,490 hectares of protection forest (mostly located in Bintan Utara and Bintan Timu subdistricts) while there are no production forest, nature reserve, national park or nature reserve in Bintan.

34. **Commerce, Trade and Industry.** Bintan has 56 large industries that employ 14,111 people; 124 small industries that employ 450 people, and 94 medium industries that employ 4,787 people. Mining of bauxite is being extensively undertaken in 5 subdistricts covering 3,208 hectares by 14 companies, which produced 5.87 million tons in 2010. Granite is being mined by 4 companies and 2.3 million m^3 were produced in 2010. About 158,760 m^3 of sand were also mined by 5 companies. The value of export in 2010 is $330 million while its import is valued at $955 million. There are 43 state banks, 33 private banks and 14 development banks operating in Bintan.

35. **Tourism.** There are 29 hotels (5 in Bintan Utara, 6 in Teluk Sebong, 4 in Bintan Timur, 12 in Gunung Kijang, and 2 in Toapaya), which have a total capacity of 1,932 beds or 3,354 beds, in Bintan Island. It received about 312,514 tourists from different countries in 2010 but most came from Singapore, Japan and South Korea. There are also 126 restaurants with a total capacity of 4,843 seats. The major tourist destinations are Penyengat, Tanjung Pinang city, Raja Ali Haji Monument, the Colonial Graveyard, Chinese Pagodas, Banyan Tree Temple, and its many beaches and resorts.

36. **Water Resources.** The state-owned water company (PDAM) provided 2.5 million m^3 of water to 17,095 customers, which are mostly households.

37. **Communication.** Mail/postal service is provided to 5 sites (Kijang, Tanjunguban, Trikora, Lobam, and Lagoi), which sent 4,809 domestic parcels and 114 international parcels, and received 5,470 domestic parcels, and 241, 914 mails in year 2010. Television and radio stations are also available in Bintan.

38. **Electricity.** Electricity service is provided by 7 power stations of PT PLN (Persero) Cab. Tanjungpinang (State Electricity Company of Tanjungpinang) with 17 units of generators, which has a combined installed capacity of 6,286 Kwh. About 30.1 million Kwh were produced and 2.99 Kwh were sold.

39. **Transportation.** The regency is traversed by 596,632 km of roads, and registered 14,691 vehicles. There are three major sea ports: Sei Kolak Kijang Port, Tanjunguban Port, and

Kijang Port. Kijang Port reported 9,011 passenger arrival and 5,639 passenger departures in 2010.

D. Social and Cultural Resources

40. Population. The population of Bintan in 2011 reached 142,300 with 73,885 males and 68,635 females, and the average population density was 73 persons/km^2. This represented an increase of 2.1% from the population in the year 2010, which was 139,407. The total number of households was 36,613, while average number per household was 4. The biggest population was in Bintan Timur (39,006) and the smallest population can be found in Mantang (3,896).

41. Health Facilities**.** As of 2010, Bintan has 1 hospital, 12 public health centers, 15 outlying health centers and 13 medical units. It has also 43 general doctors, 17 dentists, 160 paramedics and 2 child health specialists. It recorded a total of 104,275 patients on the same year.

42. Educational facilities. In 2011, there were an aggregate of 32 units of kindergarten schools, 95 elementary schools, 32 junior high schools, 10 high schools and 5 vocational schools in Bintan. It also listed 980 classrooms and 157 teachers as of 2011.

43. Economy. The Gross Regional Domestic Product (GRDP) of Bintan in 2011 was Rp3.11 billion at constant 2000 price, with the manufacturing industry contributing the highest, at Rp1.63 billion or 51% of the total GRDP. Per capita GRDP was Rp31 million and the regional income per capita was Rp25.53 million, at current 2010 price. The growth rate was estimated at 5.56% in 2010. It was estimated that 10,500 people or 7.34% of the population fall below the poverty level on the same year.

44. Religion**.** The religions of people in Bintan consist of 85% Islam, 6% Protestant, 5% Buddhist, 3% Catholic, and 2% other religions.

IV. Screening of Potential Environmental Impacts and Mitigation Measures

A. Screening and Categorization of Subproject Components

45. This report has been prepared in accordance with the ADB's Safeguard Policy Statement (SPS)4, which became effective on 20 January 2010. The SPS governs the environmental and social safeguards of ADB's operations. Environmental Safeguard Requirements 1 (SR1) of the SPS outlines the requirements that borrowers/clients are required to meet when delivering environmental safeguards for projects supported by the ADB. These requirements include assessing impacts, planning and managing impact mitigations, preparing environmental assessment reports, disclosing information and undertaking consultation, establishing a grievance mechanism, and monitoring and reporting. SR1 also includes specific environmental safeguard requirements pertaining to biodiversity conservation and sustainable management of natural resources, pollution prevention and abatement, occupational and community health and safety, and conservation of physical cultural resource.

46. The ADB Rapid Environmental Assessment checklists (See ADB REA Checklists) screening process, as applied to the Bintan subproject interventions, results in the identification of the following potential impacts:

[4] SPS is available at http://www.adb.org/documents/safeguard-policy-statement?ref=site/safeguards/publications

Table 4. Subproject activities/interventions and potential impacts

Activity/Intervention	Checklist Used	Potential Impacts
MPA Office	Infrastructure development	The MPA Office Complex may induce ▪ wastes generation; ▪ water resource problem; ▪ social conflicts between construction workers from other areas and local workers; ▪ noise and dust from construction activities; ▪ temporary silt runoff due to construction; ▪ water depletion and/or degradation; ▪ contamination of surface and ground waters due to improper waste disposal;
Surveillance post and surveillance tower	Urban development	▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services. ▪ social conflicts between construction workers from other areas and local workers?
Upgrading community fish processing facility	Infrastructure development	▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services; ▪ water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality, and pollution of receiving waters; ▪ social conflicts between construction workers from other areas and local workers; ▪ noise and dust from construction activities; ▪ hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation; ▪ contamination of surface and ground waters due to improper waste disposal;

47. The Indonesian environmental assessment regulations are embodied in the AMDAL - *Analisis Mengenai Dampak Lingkungan Hidup* or the Indonesian EIA system. Based on the AMDAL project screening criteria shown above, a project categorized by the responsible agency into one of three types: (i) business and/or activity having substantial impacts requiring Environmental Impact Analysis (ANDAL)5;(ii) business and/or activity requiring Environmental Management Efforts/Plan (UKL) or Environmental Monitoring Efforts/Plan (UPL)6; and (iii) business and/or activity with no substantial impact and that does not require ANDAL nor UKL/UPL, but require a statement of readiness to manage and monitor the environment (SPPL)7.

48. The initial category/type of the subproject components, under ADB SPS 2009 and the Indonesian AMDAL regulations, are presented in Table 5 below.

[5] Based on the 'positive list' of project/activities that requires EIA/ANDAL under Minister of Environment Regulation No. 11/2006 and Article 23 of the Environmental Protection and Management Law (Law 32/2009).
[6] Based on Article 43 of Law 32/2009.
[7] Based on Article 35 of Law 32/2009.

Table 5: ADB and AMDAL Category of Subproject Intervention

Subproject Intervention	ADB Category	AMDAL Type[8]
MPA Office	B[9] – IEE needed	UKL/UPL required
Surveillance post and surveillance tower	C[10] – No IEE is required	SPPL required
Upgrading community fish processing facility	C – No IEE is required	SPPL required

49. As a subproject with multiple interventions, an IEE (being of the highest documentary requirement) compliant with ADB SPS 2009 is followed. The development of an MPA Office Complex shall require the preparation of an individual UKL/UPL based on their specific site and context. Other interventions including (i) the surveillance post and surveillance tower, and (ii) upgrading the community fish processing facility, will require an SPPL under the new AMDAL regulation. These UKL/UPL and SPPLs will be developed in both the Bahasa Indonesia and the English languages, and made available to the public on ADB website.

50. According to the Environmental Assessment and Review Framework (EARF) of the Project, with assistance from the district environment officer and the national environmental safeguard specialist, the Bintan Project Implementation Unit (PIU) will prepare the UKL-UPL or SPPL of the respective subproject intervention/activity and submit it to the head of the district, the governor or through its local environmental department (BAPEDALDA), for approval.

51. Upon approval by the governor or regent of the UKL-UPL or SPPL, the PIU will submit the UKL-UPL or SPPL to the PMO for consolidation and a selected numbers will be submitted to ADB for review (see para. 52 below) but the information has to be retained in PMO for ADB review and audit purposes.

52. The first UKL-UPL of each type of intervention/activity will be submitted to ADB for review and concurrence. If this is deemed by ADB as of satisfactory quality, subsequent UKLs-UPLs will be certified by the Project Director and submitted to ADB upon request. ADB may conduct assessment of the compliance with its environmental safeguards policy of the Project on a random basis.

B. Potential Environmental Impacts and Mitigation Measures

53. The potential environmental impacts of the Subproject interventions and the corresponding mitigating measures are to be classified according to the different stages of the Subproject components (design, construction, and operation stages).

[8] Subject to the final determination by relevant environmental authority.
[9] Category B- proposed project's potential environmental impacts are less adverse and fewer in number than those of category A projects; impacts are site-specific, few if any of them are irreversible, and impacts can be readily addressed through mitigation measures. An initial environmental examination (IEE), including an EMP, is required.
[10] Category C- Projects unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are still reviewed (ADB Environmental Assessment Guidelines (2003)

1. Project Location/Design Stage

54. By design, the subproject is located within the Marine Protected Area as it intends to rehabilitate, protect and sustainably manage this protected area. The Project interventions are designed to enhance the resources of the protected areas, and reverse environmental degradation.

55. **MPA Office Complex**. The MPA Office is presumed to be of small-scale and therefore, the impact is not significant. This office is expected to improve the management effectiveness of the MPA. The following safeguards are recommended to be put in place during the design stage to avoid or prevent any negative environmental effect of the subproject:

(i) To discourage the influx of workers from other areas and social conflicts, local residents, indigenous peoples and women are given priority in hiring;
(ii) The siting of the facility should be in compliance with the approved MPA zoning and management plan, or the draft management guidelines if the approved management plan is not available; and
(iii) The facility is to be located in an area where no live corals, seagrasses and mangroves or natural habitats would be affected.

56. **Surveillance post and surveillance tower**. This is presumed to be of small-scale, located in outer islands, and will be used for monitoring, control and surveillance purposes, and therefore produces general positive impacts to the marine conservation and the environment. There is no significant impact at this stage but additional safeguards are recommended as follows:

(i) Hiring of local workers to avoid social conflicts; and
(ii) The siting of the surveillance post should comply with the approved MPA zoning and management plan, or the draft management guidelines if the approved management plan is not available.

57. **Upgrading community fish processing facility**. This is just an extension of an existing kitchen and fish processing facility being used by Pokmas Bandeng in Malang Rapat, in addition to the procurement of equipment and tools to improve the diversity and quality of its products. No significant impacts are expected at the design stage. Local workers are to be hired to avoid social conflicts.

2. Construction/Establishment Stage

58. **MPA office complex**. With the relatively small dimension of this complex, the impacts are temporary and minimal, and no significant environmental impacts at construction stage are anticipated which would require mitigating measures. All the same, additional safeguards to avert any adverse environmental effect during construction are to be adopted by the subproject, including but not limited to:

(i) Noise and dust from construction activities can be minimized by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and follow government's standards;
(ii) Temporary silt runoff maybe reduced by scheduling the drilling when the waves are calm; and

(iii) The contractor shall provide workers with safe and healthy working conditions to prevent accidents, injuries, and diseases, following the World Bank Group Environmental, Health, and Safety Guidelines.

59. **Surveillance post and surveillance tower**. Assuming this structure is of small size, no adverse environmental impacts are expected during the construction. However, as additional safeguards, it is recommended that:

(i) A waste management plan shall be implemented during the construction stage to prevent pollution of the surrounding environment;
(ii) Noise and dust from construction activities can be minimized by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and follow government's standards;
(iii) Construction activities shall be confined only on the project site, and due diligence shall be exercised so as not to spill activities to adjacent areas or surroundings; and

The contractor shall provide workers with safe and healthy working conditions to prevent accidents, injuries, and diseases, following ADB's SPS 2009 and related guidelines on Environment, Health, and Safety.

60. **Upgrading community fish processing facility**. The impacts are expected to be minimal and temporary. Additional safeguard measures are recommended:

(i) Noise and dust from construction activities can be minimized by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and follow government's standards; and
(ii) The contractor shall provide workers with safe and healthy working conditions to prevent accidents, injuries, and diseases, following the World Bank Group Environmental, Health, and Safety Guidelines.

3. Operation/Maintenance Stage

61. **MPA office complex**. The office is expected to attract unspecified number of visitors. Its operation will generate wastes, mainly solid wastes, and sewerage/sanitary wastes. The latter will be treated by the septic tank, which is part of the office' structures. The former will be treated under a waste management plan, where solid wastes are collected, segregated and disposed accordingly. There is also a need to identify and assess the water supply requirement of the office to portend any problems that may arise in the future such as water depletion, contamination and degradation. A water conservation measure shall also be implemented.

62. **Surveillance post and surveillance tower**. The operation of these structures is expected to generate significant positive impacts to the environment. No adverse impacts are anticipated but additional safeguards are recommended such as implementing a waste management plan throughout the operation stage.

63. **Upgrading community fish processing facility**. The existing kitchen facility produced a maximum of about 250 kg of fish monthly. Assuming the kitchen extension will increase its capacity by half, the renewed monthly capacity is now 375 kg of fish. The waste generated by kitchen operation consists of solid and liquid or sanitary wastes. Liquid wastes will be treated by the septic tank while solid wastes will be treated according to the waste management plan

where solid wastes are collected, segregated and disposed according to the 3R principle (Reuse, reduce, recycle). Reference is made to the Environmental, Health and Safety Guidelines for Fish Processing by the World Bank Group11 for solid waste and by-pdroducts and wastewater. An estimated 375 kg/month fish capacity may generate 37.5 liters of used cooking oil monthly[12]. Used cooking oil will be collected and will not be discharged in waterways, but it will be reused as fuel.

V. Institutional Requirements and Environmental Monitoring Plan

64. The Directorate General of Marine, Coast, and Small Islands (DG of MCSI) of the Ministry of Marine Affairs and Fisheries (MMAF), as the Executing Agency (EA) of the COREMAP—CTI Project, has responsibility for project management and administration and will host the Project Management Office (PMO).

65. An Environmental and Social Monitoring Unit (ESMU), which will be established in the PMO, will play a lead role in implementing the EARF provisions of Project, and will be responsible for ensuring that the environmental requirements and procedures of the government and ADB are complied with, including the preparation of business plan/project activities, Initial Environmental Examination (IEE), Environmental Management Plan (*Upaya Pengelolaan Lingkungan*, UKL) and Environmental Monitoring Plan (*Upaya Pemantauan Lingkungan*, UPL); other AMDAL requirements; and the corresponding mitigation measures. The environment management plan will be incorporated in every stage of the subproject/MPA activities. Any activity which will require an ANDAL (EIA) by any environmental authority at a later stage or would trigger a category A for environment according to ADB SPS 2009 will not be selected.

66. The ESMU is headed by an assigned government officer with expertise in environmental management, and assisted by a junior government officer with expertise in marine and coastal management, both of whom are appointed by the EA (DGCSI-MMAF). The ESMU will ensure that an environmental management system, including mitigating measures, environmental monitoring, and the acquisition of government permits and clearances, is effectively implemented. Capacity-building activities and budget for environmental management, in particular for training and equipment needs related to compliance monitoring, and water quality monitoring, are listed in Appendix 2. A national environmental safeguard specialist (consultant) will be engaged by the project to assist the ESMU and provide advice in environmental management. The TOR of this specialist can be found in the EARF.

67. The Bintan PIU will be established and assume responsibility for implementing the approved subproject activities. Among other functions, the PIU is also tasked with (i) the preparation of the AMDAL studies and documents pertaining to the UPL-UKL or SPPL, as described in Table 5; and (i) the implementation of UKL and UPL. An environmental safeguard officer will be assigned in the Bintan PIU to assist the PIU in developing and monitoring the implementation of environmental safeguard measures, with support from the national environmental safeguard specialist. The PIU will also be assisted by the Project's district advisor.

[11] http://www.ifc.org/wps/wcm/connect/c7d2710048855d048d9cdf6a6515bb18/Final%2B-%2BFish%2BProcessing.pdf?MOD=AJPERES

[12] Based on assumed consumption rate of 1 liter per 10 kg of fish.

68. The Project partners (LIPI, CI, District Fisheries Office, LPSTK, Pokmas) will also assist in the implementation of environmental safeguards and in environmental monitoring in their area of responsibility.

69. The responsibilities of parties in environmental management are summarized in Table 6 below.

Table 6. Main Environmental Responsibilities of Institutions

Level	Institution	Responsibilities
National or Central	Executing Agency: Marine Coast, and Small Islands, MMAF	Overall Project management and administration
	Implementing Agency: National Marine Conservations Areas (LKKPN)	Technical planning and supervision of national MPAs, including MPA Bintan.
	Project Management Office (PMO)	▪ coordinate overall planning and scheduling (particularly infrastructure related and consultants); ▪ overall supervision and monitoring; and preparation of consolidated monitoring reports; ▪ administer contracts; and submit reports
	Environmental and Social Monitoring Unit (ESMU)	• Oversee implementation of the environmental management and monitoring plan, and ensure that institutional arrangements and responsibilities are followed; • Consolidate environmental performance and impact monitoring reports on behalf of the Project, for submission to the central, provincial and district environment units, relevant government ministries, and public information channels; • Advise the PMO on environmental aspects and impacts of projects, including those requiring corrective action during project implementation; • Assist the PMO in coordinating with the MOE, UPT-LKKPN-Pekanbaru and/or provincial/district environment agencies for the UKL-UPL compliance of projects; • Assist the PIUs in preparing the IEEs for subprojects, UKL-UPL and SPPL for Project intervention/activity, and in monitoring the implementation of these plans. ; • Update the information system on the MPA's baseline environment conditions,
	National Science Agency (LIPI)	Undertake and document baseline surveys and monitoring data on biodiversity, ecosystem, and socio-economic aspects relating to project impacts.
Provincial	Provincial Coordinating Unit	Coordination and guidance, monitoring and reporting, and handling of issues between districts/municipalities.
	The MPA Field Area Management Office	Responsible for day-to-day operation of MPA Bintan.

Level	Institution	Responsibilities
	(Satker)	
	Marine and Fisheries Resources Supervision (PSDKP), MMAF	Mainly responsible for monitoring and supervising fisheries surveillance
	District Fisheries Office in Bintan (District Project Implementation Unit)	On behalf of the district, responsible for: • improving and strengthening management and utilization marine and fisheries resources to be optimal, effective, efficient and sustainable; • empowering economic coastal and small islands communities; • improving and strengthen surveillance and law enforcement for marine and fisheries sector; • preparing database and resource potential data of marine and fisheries in Bintan; and • improving quality and quantity marine and fisheries personnel. • preparing and implementing UKL-UPL and SPPL for subproject activities as required
	Non-Governmental Organizations (NGOs): Conservation International (CI)	Collaboration in: • Raising public awareness and dissemination ("socialize") activities and • Monitoring biodiversity and ecosystem
Village [Desa]	LPSTK	• Represents the village in MPA activities, including livelihood programs. • Dispute settlement among the region/community • Assist in environmental monitoring in MPA.
	Community groups (Pokmas)	• Collaboration in fisheries surveillance and environmental monitoring of MPA • Implement livelihood program

70. The potential environmental impacts, mitigation measures, institutional arrangement to implement the mitigation measures are summarized below.

Table 7: Summary of Environmental Impacts, Mitigation Measures and Institutional Arrangement

Stage/Intervention/ Environmental Impacts	Mitigation Measures	Institutional Arrangements
Project Location/Design Stage		

o *MPA Office* o *Surveillance post and surveillance tower* o *Upgrading community fish processing facility*		
Impacts to coral reefs, mangroves and seagrasses	Site selection in compliance with the approved MPA zoning and management plan, or the draft management guidelines if the approved management plan is not available.	ESMU-PMO and Bintan District PIU to coordinate and supervise
Construction/Establishment Stage		
o *MPA Office* o *Surveillance post and surveillance tower* o *Upgrading community fish processing facility*		
Potential impacts to environment and marine ecosystems	Construction activities will be supervised so that impacts to surrounding are minimized, including reduction of noise and dust by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and transfer of waste and debris into surrounding areas. Construction should not be conducted during rainy days as there are potential for silt runoff. The contractor shall provide workers with safe and healthy working conditions to prevent accidents, injuries, and diseases, following the ADB's SPS 2009 and related guidelines on Environment, Health, and Safety is to be followed for upgrading community fish processing facilities activity	ESMU-PMO and Bintan PIU to coordinate and supervise
Operation/Maintenance Stage		
MPA Office		
Waste Generation (solid and sanitary)	• Solid wastes will be treated in accordance with approved Waste Management Plan (WMP), where solid wastes will be collected, segregated and disposed appropriately; • Compliance monitoring	The WMP will be prepared and implemented by MPA Bintan Office, which will submit report on compliance to ESMU-PMO; PIU/LKKPN will evaluate and approve the WMP, and supervise the implementation the WMP.

	Sanitary wastes will be treated in a septic tank unit, which is part of the complex structures.	MPA Bintan will ensure that the septic tank is operating well; and shall report any sanitation problem to PIU and ESMU-PMO.
Water supply problem	identify and assess the water supply requirement of the complex	MPA Bintan to identify and assess the water supply of the complex, and report to PIU and ESMU-PMO
	• water conservation measures • Compliance monitoring	MPA Bintan to propose and implement water conservation measures, and submit report on compliance to PIU and ESMU-PMO
Surveillance post and surveillance tower		
No significant impact	Nothing to mitigate but additional environmental safeguards are recommended	PIU to coordinate and supervise the implementation of additional environmental safeguards
Upgrading community fish processing facility		
Waste Generation (solid and sanitary)	• Solid wastes will be treated in accordance with approved Waste Management Plan (WMP), where solid wastes will be collected, segregated and disposed appropriately; • Compliance monitoring	The WMP will be prepared and implemented by Pokmas Bandeng, which will submit report on compliance to ESMU-PMO; PIU/LKKPN will evaluate and approve the WMP, and supervise the implementation the WMP.
	Sanitary wastes will be treated in a septic tank unit, which is part of the complex structures.	MPA Bintan will ensure that the septic tank is operating well; and shall report any sanitation problem to PIU and ESMU-PMO.

71. Environmental monitoring will be integrated in the GIS-based monitoring and evaluation (M&E) decision support system (DSS) of the Project. At the subproject level, the items to be monitored include environmental impacts, mitigation and environmental safeguards implemented, and environmental parameters/indicators on the condition of the environment like Temperature, Salinity, Water flow, Chlorophyll, Turbidity, pH, Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), Ammonia (NH_3 -N), Nitrite (NO_2 -N), Nitrate (NO_3 -N), Total Phosphate (PO_4-P), Mercury (Hg) Lead (Pb) Cadmium (Cd) , Fecal coliform, Oil and grease in water. Water sampling shall be undertaken every quarter by the PIU and the results will be submitted to ESMU-PMO for compilation and evaluation.

72. The Environmental Monitoring Plan describes the impacts that will be monitored, monitoring activities and frequency, monitoring party and the resources needed to carry out monitoring. These are presented below.

Table 8. Table 1: Environmental Monitoring Plan and Budget

Impacts to be Monitored and parameters	Monitoring Activity and Frequency	Monitoring Party	Resources and Budget (million rupiah)
Preparation, surveys,	UKL-UPL or SPPL	ESMU-PMO	80

Impacts to be Monitored and parameters	Monitoring Activity and Frequency	Monitoring Party	Resources and Budget (million rupiah)
consultation and permitting	documents	and District PIU	
Monitoring Water Quality (DO, BOD, pH, Coliform, Nitrogen, Sulfate, streamflow, Heavy metals, etc.);	Evaluation of Report that will be submitted by MPA Bintan– once every year	District PIU, ESMU-PMO and project proponents and consultants	160
Total			240

VI. Public Consultation and Information Disclosure

73. The consultant team conducted a series of public consultation to refine the project concept and design, selection criteria, and sub-project component coverage.

74. Between 27 May and 7 June 2013, a consultant team conducted meetings/interviews/consultation and focus-group discussions with officials or representatives of Directorate General of Marine Coast, and Small Islands (MCSI)-Ministry of Marine Affairs and Fisheries (MMAF), Directorate for Conservation of Area and Fish Species (*Direktorat Konservasi Kawasan Dan Jenis Ikan-KKJI*), *Badan Perencanaan Pembangunan Nasional* (BAPPENAS) or National Development Planning Agency, National Science Agency (*Lembaga Ilmu Pengetahuan Indonesia*-LIPI), *Badan Perencanaan Pembangunan Daerah* (Regional Development Planning Agency), National Marine Conservation Areas (LKKPN or *Kawasan Konservasi Perairan Nasional*), Marine Protected Area *Kawasan Konservasi Laut Daerah* (KKLD), and from project stakeholders like the Kepulauan Bintan Regency, and some of its villages. They were briefed on the proposed project, and clarifications, questions and comments were raised.

75. The draft IEE has been provided to the MCSI-MMAF, KKJI and LKKPN as well as to the Regency of Kepulauan Bintan for comments and suggestions, as part of public consultation of the proposed Subproject. This final IEE will be made available to the public on ADB website. Subsequent UKL-UPLs will also be developed in both the Bahasa Indonesia and the English languages and made available to the public on ADB website.

VII. Findings and Recommendation

76. Based on the evaluation of the different interventions under Bintan Subproject, and its anticipated impacts on the environment, this IEE finds that their impacts on the environment are generally positive, and that the potential adverse impacts can be easily mitigated by adoption of specific measures as outlined in this report. This IEE is adequate and there is no need further detailed study or EIA. UKLs-UPLs will be developed for specific interventions/activities under the subproject at the design stage of the activities as recommended in Table 5.

VIII. Conclusions

77. This IEE finds that the proposed Bintan MPA Subproject will create no significant adverse environmental impacts and substantial and positive environmental benefits are expected for improved MPA effectiveness. This IEE, with the recommended institutional and monitoring program, is sufficient for the sub-project. UKLs/UPLs will be developed for specific interventions/activities under the subproject at the design stage of the activities in line with the recommendations in Table 5.

APPENDICES

Appendix 1: REA Checklists

Infrastructure Development: MPA Office Complex

Rapid Environmental Assessment (REA) Checklist

Instructions:

- This checklist is to be prepared to support the environmental classification of a project. It is to be attached to the environmental categorization form that is to be prepared and submitted to the Chief Compliance Officer of the Regional and Sustainable Development Department.
- This checklist is to be completed with the assistance of an Environment Specialist in a Regional Department.
- This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on (i) involuntary resettlement, (ii) indigenous peoples planning, (iii) poverty reduction, (iv) participation, and (v) gender and development.
- Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title: Coral Reef Rehabilitation and Management Program: Coral Triangle Initiative (COREMAP-CTI)

Sector Division: Environment, Natural Resources and Agriculture Division

Subproject: Bintan MPA Management Effectiveness and Livelihoods Improvement Subproject

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting Is the project area…			
▪ Densely populated?		☑	
▪ Heavy with development activities?		☑	
▪ Adjacent to or within any environmentally sensitive areas?			
- Cultural heritage site		☑	
- Protected Area	☑		This is a project to support Bintan marine protected area. Its establishment and operation shall be guided by the Zoning and Management Plan of the MPA
- Wetland		☑	

SCREENING QUESTIONS	Yes	No	REMARKS
- Mangrove	☑		The location of MPA station may be adjacent to mangrove areas but care will be taken to avoid mangroves.
- Estuarine		☑	
- Buffer zone of protected area	☑		area
- Special area for protecting biodiversity	☑		The project supports biodiversity conservation in the Coral Triangle
- Bay		☑	
B. Potential Environmental Impacts			
Will the Project cause			
▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services.		☑	
▪ deterioration of surrounding environmental conditions due to rapid urban population growth, commercial and industrial activity, and increased waste generation to the point that both manmade and natural systems are overloaded and the capacities to manage these systems are overwhelmed?	☑		The station may induce waste generation. Wastes will be collected, segregated and disposed in accordance with a Waste Management Plan.
▪ degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		☑	
▪ dislocation or involuntary resettlement of people		☑	
▪ degradation of cultural property, and loss of cultural heritage and tourism revenues?		☑	
▪ occupation of low-lying lands, floodplains and steep hillsides by squatters and low-income groups, and their exposure to increased health hazards and risks due to pollutive industries?		☑	
▪ water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality , and pollution of receiving waters?	☑		Water sources will be assessed and water conservation measures will be practiced
▪ air pollution due to urban emissions?		☑	
▪ social conflicts between construction workers from other areas and local workers?	☑		Local workers will be given priority in hiring
▪ road blocking and temporary flooding due to land excavation during rainy season?		☑	
▪ noise and dust from construction activities?	☑		Temporary and minimal disturbance during working hours; maybe reduced by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and follow government's standards

MPA Office Complex- page 2

SCREENING QUESTIONS	Yes	No	REMARKS
▪ traffic disturbances due to construction material transport and wastes?		☑	
▪ temporary silt runoff due to construction?	☑		Minimal and temporary impacts and no need for mitigating measure.
• hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?		☑	
• water depletion and/or degradation?	☑		Water conservation measures will be practiced
• overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		☑	
• contamination of surface and ground waters due to improper waste disposal?	☑		Waste management plan will be implemented
• pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?		☑	

Rapid Environmental Assessment (REA) Checklist

Infrastructure Development: Surveillance post and surveillance tower

Country/Project Title: Coral Reef Rehabilitation and Management Program—Coral Triangle Initiative (COREMAP—CTI)

Sector Division: Environment, Natural Resources and Agriculture Division

Subproject: Bintan MPA Management Effectiveness and Livelihoods Improvement Subproject

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting Is the project area…			
▪ Densely populated?		☑	
▪ Heavy with development activities?		☑	
▪ Adjacent to or within any environmentally sensitive areas?			
- Cultural heritage site		☑	
- Protected Area	☑		This is a project to support Bintan marine protected area. Its establishment and operation shall be guided by the Zoning and Management Plan of the MPA
- Wetland		☑	
- Mangrove	☑		The location of the surveillance post and tower may be adjacent to mangrove areas but care will be done to avoid mangroves.
- Estuarine		☑	
- Buffer zone of protected area	☑		The project supports marine protected area
- Special area for protecting biodiversity	☑		The project supports biodiversity conservation in the Coral Triangle
- Bay		☑	
B. Potential Environmental Impacts Will the Project cause…			
▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services.	☑		Minimal impact. Solid wastes will be collected, segregated and disposed according to an approved Waste Management Plan

SCREENING QUESTIONS	Yes	No	REMARKS
▪ deterioration of surrounding environmental conditions due to rapid urban population growth, commercial and industrial activity, and increased waste generation to the point that both manmade and natural systems are overloaded and the capacities to manage these systems are overwhelmed?		☑	Surveillance post and surveillance tower - page 2
▪ degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		☑	
▪ dislocation or involuntary resettlement of people		☑	
▪ degradation of cultural property, and loss of cultural heritage and tourism revenues?		☑	
▪ occupation of low-lying lands, floodplains and steep hillsides by squatters and low-income groups, and their exposure to increased health hazards and risks due to pollutive industries?		☑	
▪ water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality , and pollution of receiving waters?		☑	
▪ air pollution due to urban emissions?		☑	
▪ social conflicts between construction workers from other areas and local workers?	☑		Minimal impact. Local workers will be given priority in hiring
▪ road blocking and temporary flooding due to land excavation during rainy season?		☑	
▪ noise and dust from construction activities?	☑		Temporary and minimal disturbance during working hours; maybe reduced by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and follow government's standards
▪ traffic disturbances due to construction material transport and wastes?		☑	
▪ temporary silt runoff due to construction?		☑	
• hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?		☑	
• water depletion and/or degradation?		☑	
• overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		☑	

SCREENING QUESTIONS	Yes	No	REMARKS
• contamination of surface and ground waters due to improper waste disposal?		☑	
• pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?		☑	

Rapid Environmental Assessment (REA) Checklist

Infrastructure Development:

(Fish processing/ Kitchen

Country/Project Title: Coral Reef Rehabilitation and Management Program: Coral Triangle Initiative

Sector Division: Environment, Natural Resources and Agriculture Division

Subproject: Bintan MPA Management Effectiveness and Livelihoods Improvement Subproject

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting			
▪ Densely populated?		☑	
▪ Heavy with development activities?		☑	
▪ Adjacent to or within any environmentally sensitive areas?			
- Cultural heritage site		☑	
- Protected Area	☑		This is a project to support Bintan marine protected area. Its establishment and operation shall be guided by the Zoning and Management Plan of the MPA
- Wetland		☑	
- Mangrove		☑	.
- Estuarine		☑	
- Buffer zone of protected area	☑		The project supports marine protected area
- Special area for protecting biodiversity	☑		The project supports biodiversity conservation in the Coral Triangle
- Bay		☑	
B. Potential Environmental Impacts			

SCREENING QUESTIONS	Yes	No	REMARKS
▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services.	☑		Minimal impact. Solid wastes will be collected, segregated and disposed according to an approved Waste Management Plan
▪ deterioration of surrounding environmental conditions due to rapid urban population growth, commercial and industrial activity, and increased waste generation to the point that both manmade and natural systems are overloaded capacities to manage these systems overwhelmed?		☑	
▪ degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		☑	
▪ dislocation or involuntary resettlement of people		☑	
▪ degradation of cultural property, and loss of cultural heritage and tourism revenues?		☑	
▪ occupation of low-lying lands, floodplains and steep hillsides by squatters and low-income groups, and their exposure to increased health hazards and risks due to pollutive industries?		☑	
▪ water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality , and pollution of receiving waters?		☑	
▪ air pollution due to urban emissions?		☑	
▪ social conflicts between construction workers from other areas and local workers?	☑		Minimal impact. Local workers will be given priority in hiring
▪ road blocking and temporary flooding due to land excavation during rainy season?		☑	
▪ noise and dust from construction activities?	☑		Temporary and minimal disturbance during working hours; maybe reduced by proper use and maintenance of construction equipment, wetting of stockpiled material during dry and windy weather, when within 50m of an occupied dwelling, restriction of working hours where there is excessive noise disturbance, and follow government's standards
▪ traffic disturbances due to construction material transport and wastes?		☑	
▪ temporary silt runoff due to construction?		☑	
• hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?	☑		Minimal impact usually, depending on the process adopted.
• water depletion and/or degradation?		☑	

SCREENING QUESTIONS	Yes	No	REMARKS
• overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		☑	
• contamination of surface and ground waters due to improper waste disposal?	☑		Septic tanks will be constructed
• pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?		☑	