



Environmental and Social Review Summary

Rajamandala Hydropower Project

This Environmental and Social Review Summary (ESRS) is prepared by MIGA staff and disclosed prior to the date on which MIGA's Board of Directors considers the proposed issuance of a Contract of Guarantee. Its purpose is to enhance the transparency of MIGA's activities. This document should not be construed as presuming the outcome of the decision by MIGA's Board of Directors. Board dates are estimates only.

Any documentation that is attached to this ESRS has been prepared by the project sponsor, and authorization has been given for public release. MIGA has reviewed the attached documentation as provided by the applicant, and considers it of adequate quality to be released to the public, but does not endorse the content.

Country:	Indonesia
Sector:	Power
Project Enterprise:	Rajamandala Electric Power
Environmental Category:	B
Date ESRS Disclosed:	October 1, 2013
Date ESRS Revised:	April 14, 2014

A. Project Description

The proposed Rajamandala Hydro Electric Power Plant ("Rajamandala HEPP" or "Project") consists of the development and operation of a 47MW run-of-river hydro power plant on a build-operate-transfer basis. The Project is located within a cascade of existing hydropower plants, between the Saguling Dam and Cirata Dam, along the Citarum River in West Bandung Regency and Cianjur Regency, West Java Province, Indonesia (approximately 200 km south-east from Jakarta). The Project is being developed by Rajamandala Electric Power ("REP"). REP is jointly owned by KPIC Netherland B.V, a wholly owned subsidiary of Kansai Electric Power Co., Inc ("Kansai") and PT Indonesia Power ("IP"), a subsidiary of PT Perusahaan Listrik Negara (Persero) ("PLN"). Kansai holds a 49% stake in REP and IP the remaining 51%.

The Project consists of a weir, intake, headrace, head tank, spillway, penstock, powerhouse (including turbine and generator), tailrace, outlet, switchyard, access road, access bridge, and transmission line. The weir (4.7 m high by 55.9 m wide) and intake structure will be located at the outlet of the Saguling Hydro Electric Power Plant ("Saguling HEPP"). The Rajamandala HEPP head tank, spillway, penstock, powerhouse, tailrace, outlet and switchyard will be located on an approximately 17 ha site approximately 3 km downstream from the intake. The approximately 1.2 km headrace will consist of tunnel and open channel sections connecting the intake and the head tank, which regulates water flow volumes. The approximately 8 km 150 kV transmission line will supply power to the grid, connecting the switchyard to an existing 150 kV transmission lines and grid network owned by PLN.

The Project will be constructed over a 33 month period under an EPC contract, with construction expected to start within 2014. Operation of the Project will be jointly conducted by REP and IP,

with advisory of Kansai. The Rajamandala HEPP will be controlled from the Saguling HEPP which IP is managing.

B. Environmental and Social Categorization

The Project is Category B under MIGA's Policy on Social and Environmental Sustainability because the potential risks and impacts of this project are limited, few in number, site specific, and readily addressed through mitigation measures. The Project location within a cascade of existing large hydropower plants and reservoirs along the Citarum River, in particular between the Saguling and Cirata Dams and Reservoirs, the incremental social and environmental risks and impacts resulting from the Project are expected to be of limited significance. Key expected social and environmental risks and impacts include soil erosion, water quality, water resources, aquatic ecology, terrestrial vegetation, vegetation influx and community and occupational health and safety. The measures to mitigate these impacts have mostly been identified and an environmental and social action plan ("ESAP") will be agreed with MIGA's Guarantee Holders as a requirement of MIGA's guarantee contract to ensure that the Project will be expected to comply with the Performance Standards and World Bank Group ("WBG") General Environmental, Health and Safety ("EHS") Guidelines.

C. Applicable Standards

While all Performance Standards are applicable to this investment, based on current information the investment will have impacts that must be managed in a manner consistent with the following Performance Standards:

- PS1: Social and Environmental Assessment and Management Systems
- PS2: Labor and Working Conditions
- PS3: Pollution Prevention and Abatement
- PS4: Community Health, Safety & Security
- PS6: Biodiversity Conservation & Sustainable Natural Resource Management

PS 5: Land Acquisition and Involuntary Resettlement does not apply as all land acquisition was conducted on a willing seller-willing buyer principle with no involuntary resettlement and/or economic displacement. Performance Standard 7: Indigenous Peoples and Performance Standard 8: Cultural Heritage, do not apply as the Project will not affect indigenous territories and communities and no known archeological, cultural heritage or paleontological sites exist.

In addition, the WBG General EHS Guidelines are applicable to this project.

D. Key Documents and Scope of MIGA Review

An environmental and social due diligence site visit was conducted by a MIGA environmental specialist in August 2013. The site visit included visits to the intake area, access road, headrace area, powerhouse area, transmission lines area, and Saguling Dam. Site visit meetings were conducted with representatives of REP, IP, Kansai and affected communities.

In addition to the due diligence site visit, the following documents were reviewed by MIGA:

- *Environmental Management Effort (UKL) and Environmental Monitoring Effort (UPL), Rajamandala 47 MW Hydro Electric Power Plant (HEPP), West Bandung and Cianjur Regency, West Java Province* (January 2012), Indonesia Power and Kansai Electric Power Co., Inc;
- *Environmental Management Effort (UKL) and Environmental Monitoring Effort (UPL), Rajamandala 150 kV Transmission Line, Cianjur Regency, West Java Province* (December 2011), Indonesia Power and Kansai Electric Power Co., Inc;
- *Technical and Environmental Due Diligence Report: Rajamandala Hydro Electric Power Plant* (February 2013), Sinclair Knight Merz;
- *Framework of Environmental and Social Management System* (September 2013), PT. Rajamandala Electric Power;
- *Sanghyang Tikoro Cultural Heritage Assessment for Cave* (September 2013), PT. Rajamandala Electric Power;
- *Report for Hydrological Flow for Cave* (September 2013), PT. Rajamandala Electric Power;
- *Report for Social Baseline and Assessment for Access Road & P/S Village* (September 2013), PT. Rajamandala Electric Power;
- *Relevant Provisions of the EPC Contract* (September 2013), PT. Rajamandala Electric Power;
- *Ecological Minimum Flow Analysis* (September 2013), PT. Rajamandala Electric Power;
- *Report on Potential Impacts of Rajamandala Hydropower Development on the Preservation of the Biota* (September 2013), PT. Rajamandala Electric Power;
- *Report for Social Baseline and Assessment for Access Road & P/S Village* (September 2013), PT. Rajamandala Electric Power;

These documents adequately assess the environmental risks and impacts of Rajamandala HEPP and provide a sound basis for the proper mitigation of the environmental and social risks and impacts posed by this Project.

E. Key Issues and Mitigation

PS1: Social and Environmental Assessment and Management Systems

Social and Environmental Assessment: Separate *Environmental Management Effort (UKL) and Environmental Monitoring Effort (UPL)* documents were prepared for the Rajamandala HEPP and 150 kV transmission lines (collectively “UKL/UPL”) to meet Government of Indonesia (GoI) requirements. A full environmental and social impact assessment (known as an AMDAL) was not required under GoI requirements because the Project did not meet specific regulatory criteria related to height of the dam (< 15 m), area of inundation (< 200 ha), installed capacity (< 50 MW) and transmission lines (\leq 150 kV). The UKL/UPL provides environmental and social baseline information; assesses risks and impacts of the Project for pre-construction, construction and operation phases; and provides environmental management, mitigation and monitoring requirements to manage and monitor environmental and social risks and impacts. Adverse environmental and social risks and impacts were identified and assessed related to: public unrest, public health, waste and sanitation, air quality, noise, damage to public infrastructure, slope

stability, erosion and sedimentation, water quality, flora, fauna, aquatic biota, and decrease in water discharge.

Gaps in the impact identification and assessment of the UKL/UPL against the Performance Standards identified through MIGA's environmental and social review were related to hydrologic and cultural heritage impacts to a limestone karst cave, known as SanghyangTikoro, located a few meters downstream the weir, assessment of ecological minimum flow, and social baseline and assessment for affected communities, specifically the Cisameng Sub-Village and Bentacaringin Sub-Village, which are directly impacted by the project. Supplemental studies provided by REP/Sponsors and reviewed by MIGA have addressed these gaps.

Management Program: The UKL/UPL includes measures to mitigate, manage and monitor assessed adverse risks and impacts. These measures are outlined in the Environmental Management and Monitoring Program ("EMMP"), which is benchmarked to GoI standards. Management of environmental and social risks and impacts during construction will be the responsibility of the EPC contractor through the EPC contract, while significant aspects of environmental and social management during operations will be borne by IP who will operate the Rajamandala HEPP. REP will prepare the operations and maintenance (O&M) plan and manage O&M work, with an advisory agreement with Kansai to provide technical assistance in establishing the O&M platform (including O&M plan) and supporting REP in preparing the O&M plan and managing O&M work at the Project site. REP will be responsible for additional special inspections, planning and evaluation of periodical maintenance, special patrols and trouble shooting for emergency stop, and planning and evaluation of repair work. IP will be responsible for implementing REP's O&M plan including daily patrols and maintenance inspection, operating the Rajamandala intake and generator, recordkeeping and reporting, maintenance inspections, execution of routine maintenance in accordance with the REP O&M plan, and emergency stop of operation and incident reporting. IP has third-party certified environmental and social management systems in place, including ISO 14001 environmental managements systems.

The *Technical and Environmental Due Diligence Report* identified gaps in the EMMP against the Performance Standards and Equator Principles requirements and recommends REP conduct the following gap filling measures: preparation and implementation of an ESAP that will describe and prioritize the actions needed to implement mitigation measures, corrective actions and monitoring measures necessary to manage the impacts and risks identified in the assessment; and preparation and implementation of an environmental and social management system ("ESMS") for both construction and operation phases of the Project. Implementation of these requirements and ensuring that construction and O&M of the Project complies with the Performance Standards and WBG EHS Guidelines will be a condition of MIGA's guarantee contract.

Monitoring and Reporting: REP is responsible to report every six months during both the construction phase and operations phase to relevant authorities, including the Environmental Office in the West Java Province for the Rajamandala HEPP and the Environmental Office in Cianjur Regency for the 150 kV transmission line. Monitoring during the construction phase will be assisted by a environment consultant, who have prepared monitoring plans for the pre-construction phase based on the EMMP and GoI requirements. Monitoring plans for the construction phase are expected to be prepared by REP prior to the start of construction. As a

condition of the guarantee contract, MIGA will require that the construction and operations ESMSs are prepared with monitoring plans benchmarked against the Performance Standards and WBG EHS Guidelines. MIGA will also require submission of semi-annual environmental and social monitoring reports during the construction phase, with reports submitted on an annual basis during operations.

Organizational Capacity: REP is a new entity formed to develop and operate the Project, however the sponsors and EPC contractor have experience and capacity in the sector. Kansai was founded in 1951 and has significant experience developing and operating hydropower projects in Japan. IP are experienced as operators of both the Saguling Dam and Mrica Dam in Central Java and have achieved ISO 14001 and OHSAS 18001 certification. As part of the construction and operations ESMSs required by MIGA as a condition of the guarantee contract, MIGA will require the identification of the knowledge and skills necessary for implementation of the ESMS and training requirements for personnel.

PS2: Labor and Working Conditions

REP have prepared human resources (“HR”) policies and procedures and are developing an HR manual consistent with the requirements of PS2 and GoI labor laws as part of the ESMS. The HR policy and manual will provide standard compliance with local labor laws, description of functions/positions and requirements, general benefits, and give guidance on employee’s selection, hiring and promoting procedures. All employees receive a copy of this manual at their first day at work. The HR manual will include: (i) prohibition of any type of child and/or forced labor, (ii) the implementation of equal opportunity and non-discriminatory hiring and promotion policies, (iii) description and full disclosure of the workers/employees rights and duties, including freedom of association and collective bargain, (v) a non-retaliatory grievance mechanism to receive and process any complaints from employees on work related conflicts or issues. Compliance with these policies and procedures will also be mandatory to all contractors, suppliers, and sub-contractors.

Construction is expected to last approximately 33 months. Total direct workforce at peak of construction is expected to be around 500 to 1000 fulltime workers. Operation of the Rajamandala HEPP will primarily be conducted remotely at the Saguling HEPP and will be the responsibility of IP staff, with some O&M responsibilities of REP and Kansai staff. Total direct workforce requirements (including IP, REP and Kansai staff) during operation are expected to be approximately 10 fulltime workers.

Occupational health and safety (“OHS”) during construction will be managed by the EPC contractor, through implementation of the construction ESMS, which is required to be prepared as a condition of the guarantee contract. Aspects of the construction ESMS are expected to include OHS policies and procedures applicable to REP, the EPC contractor and sub-contractors relating to managing workforce health and safety. The OHS policies and procedures are expected to include, but not limited to: (i) organizational structure and responsibilities, (ii) identification risks/ hazards associated with the different task, (iii) personal protection equipment (PPE), qualification, restriction and training requirements associated with each task, (iv) documenting and recording accidents and incidents, (v) follow-up and corrective measures, (vi) housekeeping at construction site, (vii) rules and safety procedures for traffic and vehicles at the construction

site,(viii) safety procedures for blasting events, (ix) working at heights and confined spaces, (x) excavation and excavation support, (xi) scaffolding, (xii) prevention of electrical risks, and (xiii) welding and cutting torches. An EHS officer will be expected to be appointed by REP that is in-charge of the development of EHS procedures, maintenance of safety systems, development and implementation of safety management and training programs, and will supervise and assure compliance by the EPC contractor and sub-contractors.

Worker training will also be expected to be provided to raise awareness on water-related and/or communicable diseases (e.g. malaria, dengue, TBC, HIV/AIDS and STDs), covering topics like recognizing infection risks, how to recognize symptoms, what should be done in case of an infection, as well as preventive measures. As part of the EMMP, all workers will be required to receive a pre-employment medical screening.

PS3: Pollution Prevention and Abatement

Adverse pollution risks and impacts during the construction phase were assessed in the UKL/UPL related to waste and sanitation, air quality, slope stability, erosion and sedimentation, and water quality. Identified sources are related to mobilization of labor, access road construction, and civil construction. The EMMP presents standard pollution control measures to avoid, reduce or mitigate these risks and impacts benchmarked against GoI standards.

Waste and sanitation will be managed through providing household waste bins and collection services for workers at the Project site. Air quality impacts will be managed through requiring covered loads when transporting construction materials, conducting regularly watering of dusty roads during the dry season, using heavy equipment that meets exhaust emissions requirements, and imposing a construction vehicle speed restriction of 40 km/h. Slope stability will be managed through phased land clearing, controls against clearing steep slopes, physical stabilization through terracing and biological slop stabilization using native plants. Erosion and sedimentation impact surface water will be managed through installation of temporary sedimentation ponds to prevent runoff to the Citarum River during construction activities.

Excavation and dredging for construction and installation of the headrace, power station, switchyard and tailrace is expected to generate less than 500,000 m³ material which will be backfilled at a disposal area located adjacent the head tank, as much as possible.

During operation, the adverse risks and impacts from pollution would be related to the handling of hazardous materials and storage and disposal of hazardous wastes. Risks and impacts related to hazardous materials and hazardous waste were not identified or assessed during construction or operations phases as part of the UKL/UPL.

As a condition of the guarantee contract, pollution mitigation measures presented in the EMMP are expected to be incorporated into the ESAP and included within the scope of the ESMS for both construction and operations, benchmarked and monitored against the Performance Standards and WBG EHS Guidelines. Procedures will also be required to be prepared as part of the ESMS for both construction and operations regarding the handling of hazardous materials and storage and disposal of hazardous wastes, including accidental releases.

PS4: Community Health, Safety & Security

The population in the Cisameng Sub-Village and Bentacaringin Sub-Village, which are located in the Project's area of influence between the intake and outlet is estimated to be less than 500. More accurate baseline information will be available on the population following completion of the supplemental social impact assessment. REP has prepared a community grievance mechanism to receive, process and track resolution any complaints from affected communities for construction and operations phases.

Adverse community health and safety risks and impacts during the construction phase were assessed in the UKL/UPL and supplemental social impact assessment related to noise from construction and blasting activities. The EMMP presents standard noise control measures to avoid, reduce or mitigate these risks and impacts benchmarked against GoI standards. Noise will be managed through restricting works that generated significant noise to between the daytime hours of 0800 – 1700 and conducting blasting using the smooth-blasting method and a cover screen. Traffic impacts are addressed through a construction vehicle speed limit of 40 km/h. Emergency preparedness and response was not directly identified or assessed.

During operation, adverse risks and impacts to community health and safety are related to river flow (start-up and shut-down of Rajamandala HEPP's operations) and emergency preparedness and response. IP operates an emergency alarm system along the Citarum River, downstream the Saguling Dam. REP's O&M plan is also expected to include emergency stop procedures for the Rajamandala HEPP.

As a condition of the guarantee contract, emergency preparedness and response ("EPR") policies and procedures will be developed and incorporated into the ESMS for both the construction and operations phases. The EPR policies and procedures for the operations phase should specify the roles of responsible parties when expected flow (operational or emergency) releases threatens downstream life, property, and/or economic activities, including (i) types of emergencies/ contingencies, both natural and man-made (e.g. earthquakes, flooding, hurricanes, extraordinary flows, etc), (ii) direct area of influence in case of extraordinary flows, (iii) an early warning system for emergency situations, as well as operational unusual and/or maintenance planned releases, and (iv) community / third party communication and emergency identification / evacuation training.

Security Arrangements: During construction, site security will be managed by unarmed guards contracted by the EPC contractor. During operations, security will be the responsibility of REP.

PS6: Biodiversity Conservation & Sustainable Natural Resource Management

There is no critical terrestrial or aquatic habitat, no protected areas and no endangered or endemic terrestrial or aquatic fauna or flora identified in the Project's area of influence.

The terrestrial habitat in the Project area is modified, featuring agricultural landscapes and introduced species. Land use in the Project area was identified in the UKL/UPL to include settlements, rice paddy, polyculture, plantation (cacao, coconut and banana), and farming forest. MIGA requested a supplemental assessment on impacts to habitat, which confirmed the

UKL/UPL findings. The farming forest is highly degraded and fragmented land featuring agriculture, introduced high value timber (teak), introduced species for fruit / food (banana, coconut, mango, Singapore cherry and ginger) and pioneer species. The UKL/UPL found the distribution of identified tree species proportional to the economic value of the tree for timber or fruit. However, GoI has classified approximately 15 ha of land impacted by the Project as Production Forest, which required REP to acquire a borrow-use permit and purchase an offset twice the area of Production Forest impacted by the Project in addition of compensation payment for the trees.

The quality of the water in Citarum River in the Project area is low, significantly impacted by industrial activity upstream in the watershed. However, the most significant impacts on the river's aquatic ecology occurred with the construction of Saguling Dam in 1981 and its operation for over 25 years. The Saguling HEPP fully regulates river flow on a peak and off-peak basis by the discharges from its outlet at an average flow of approximately 70 m³/sec (ranging from 0 - 224 m³/sec). The regulated discharges from the Saguling HEPP outlet create too fast of a current to support benthos populations. Fish species in the river identified in the UKL/UPL are dominated by species common to aquaculture and aquarium industries (catfish, tilapia, spotted barb).

Impacts related reduced flow conditions are restricted to the approximately 3 km stretch of river between the intake and outlet. REP has agreed with the local authorities to ensure a minimum compensation flow of 1.2465 m³/sec. MIGA requested a supplemental assessment be conducted to assess whether the agreed flow was sufficient to meet ecological needs. The *Ecological Minimum Flow Analysis* was prepared, assessing flow conditions using the Duration Curve with 13 years of flow data method and finding that GoI law requires a minimum compensation flow of 0.33 m³ and during conditions when the Saguling HEPP is not operating (13% per year), average flow is 0.68 m³/sec. The analysis concludes that the 1.2465 m³/sec agreed minimum compensation flow level is greater than baseline flow conditions and four times greater than GoI required compensation discharge. Given the existing flow pattern from the Saguling HEPP and limited distance of river that will be impacted, the Rajamandala HEPP presents incremental ecological risks and impacts and that are limited and for the most part confined to its direct footprint.

F. Environmental Permitting Process and Community Engagement

UKL/UPL approvals for the Rajamandala HEPP were granted by West Java Province on January 4, 2012. And UKL/UPL approvals for the 150 kV transmission line were granted by Cianjur Regency on December 20, 2011.

Community consultation was conducted in November 2011 in preparation of the UKL/UPL and a summary consultation report is attached to the UKL/UPL as an Annex. Key concerns raised during the consultation included: employment opportunities, appropriate compensation for land acquisition, community, health and safety during construction phase, hydro-geologic impacts to irrigation water, need for direct socialization at the project site, safety of transmission lines, water quality, and damage to public infrastructure. MIGA's site visit confirmed that ongoing socialization has occurred with project-affected people by local government authorities.

G. Availability of Documentation

- *Environmental Management Effort (UKL) and Environmental Monitoring Effort (UPL), Rajamandala 47 MW Hydro Electric Power Plant (HEPP), West Bandung and Cianjur Regency, West Java Province* (January 2012), Indonesia Power and Kansai Electric Power Co., Inc.
- *Environmental Management Effort (UKL) and Environmental Monitoring Effort (UPL), Rajamandala 150 kV Transmission Line, Cianjur Regency, West Java Province* (December 2011), Indonesia Power and Kansai Electric Power Co., Inc.

The above listed documentation is available electronically as PDF attachments to this ESRS at www.miga.org.