



# Climate Change Adaptation and Resilience

TRACK RECORD OF ENVIRO PRO GREEN INNOVATIONS (S) PTE LTD | 2021





### Environmental Impact Assessment for the Proposed Coastal Protection Measures on Sentosa Island, 2018 – 2021

Sentosa is a 500 ha resort island located half a kilometre off the southern coast of mainland Singapore. Despite the developments over the years, the island still retains a portion of ecologically significant natural areas. 70% of the island was historically covered by secondary rainforest, providing the habitat to species such as monitor lizards, monkeys, peacocks and other flora and fauna.

Enviro Pro will examine how the projected rise in sea level will affect the coast around Sentosa Island, and what measures are needed to be implemented to safeguard the island. The EIA will assess the predicted environmental impacts on Sentosa due to climate change and associated sea level rises, and it will assess how the environmental impacts identified can be reduced and mitigated against.

#### Key Study Methods

- **Literature Review & Site Inspection** – Government authorities may be consulted to ascertain if data capture under previous studies can be shared with the study team.
- **Risk Identification & Recommendation of Coastal Protection Measures** – To see the detailed modelling works carried out and to identify potential flooding for various climate scenarios. A cost-benefit analysis will be carried out to.
- **Conceptual Design** – This stage focuses on developing the potential solution to a concept level of design including build schedule and cost planning.



*Sentosa  
Beach  
Front*



*Coastal  
Area of  
Sentosa  
Island*



*Coral  
Reefs*





### Technical Assistance on Environmental and Social Safeguards and Climate Change for PT Sarana Multi Infrastruktur (PT SMI), Indonesia, 2016 – Present

PT Sarana Multi Infrastruktur (PT SMI) is an infrastructure financing company, which was established on 26 February 2009, as a state owned enterprise (SOE) under the Ministry of Finance.

With approximately USD 1.8 billion in lending funds, PT SMI plays an active role in facilitating infrastructure financing as well as preparing infrastructure projects and serving in an advisory role for projects in Indonesia.

Enviro Pro was tasked with reviewing the newly developed Environmental and Social Management Framework (ESMF) and Environmental and Social Safeguards – Operation Manual (ESS OM). ESMF and ESS OM are meant to ensure that the environmental and social safeguard standards and management procedures meet international requirements and were according to the multilateral financial institutions. The introduction of the ESMF and ESS OM is undertaken in a phased approach to allow a smooth transition from national to international safeguard systems.

Enviro Pro's engagement is part of a soft loan and grant facility for Energy Efficiency and Renewable Energy, funded by Agence Francaise de Developpement (AFD). This includes the identification of fundable energy efficiency and renewable energy projects in Indonesia and their eligibility for the AFD facility.

Enviro Pro assisted PT SMI in the assessment of the projected environmental, social and climate change impacts in this context.



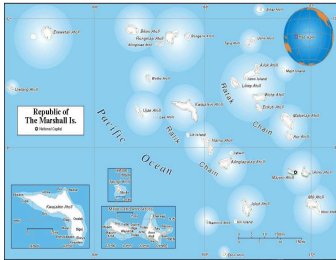
*Tenayan Coal-Fired Power Plant*



*Cikopo-Palimanan Toll Road*



*Air Putih Hydropower Project (Renewable Energy)*



### Establishment of the Pacific Region Infrastructure Facility Coordination Office – Strategic Framework for Infrastructure Investment Planning (SFIIP): Marshall Islands, 2015 - 2016

Assistance to Marshall Islands Government in preparing a country led, medium term, prioritized Strategic Framework Infrastructure Investment Plan (SFIIP), which will provide a roadmap for the country's infrastructure sector for the next 5-10 years. Enviro Pro was tasked by Asian Development bank as the International climate change specialist, by providing the following services:

#### Key Study Methods

The International Climate Change Specialist contributed to the SFIIP by carrying out a high level assessment of the potential risks and vulnerability of proposed economic and social infrastructure to climate change and natural disasters.

By reviewing the overall institutional arrangements to manage climate change adaptation activities in Marshall Islands, the consultant identified capacity constraints for climate change adaptation planning and implementation and provided suggestion for a climate change adaptation capacity building program.

The consultant further contributed to the funding strategy of the SFIIP by identifying potential sources of funding from various climate change funding initiatives and their possible contribution to funding of new infrastructure.

The consultant prepared recommendations on other policies, strategies and measures that should be undertaken to mainstream climate change adaptation and natural disaster issues in the SFIIP.



Stakeholders:  
Youth



Marshall  
Islands



Extreme  
Weather  
Conditions





Developing And Designing a Logic Model and Business Process (contributing to the development of strategic plan) [RENSTRA] for the Ministry Of Environment (KLH): Indonesia , 2014

Technical assistance was provided to the development of a strategic plan for KLH.

Enviro Pro was tasked by Ministry of Environment Indonesia as the climate change specialist.

Key Study Methods

- The project provided inputs into the next strategic plan and re-organization of KLH's management systems. The consultant team provided technical inputs to KLH on international benchmarking on strategies for climate change, biodiversity and sustainable development. The project also reviewed KLH's institutional arrangement to manage these key strategic areas in Indonesia and provided technical support for an improved institutional structure of the ministry. This project formed part of Component 1 of the DANIDA funded Environmental Support Programme ESP3, which aims at supporting the effective implementation of consolidated environmental management and climate change policies by combining support to three thematic areas, at both national and decentralized levels. One of the thematic areas is improved implementation of existing planning and management systems by environmental management institutions, aiming at a more efficient use of environmental funds. This planning support will be provided to Ministry of Environment (KLH), Bureau of Planning and International Cooperation.



*Assistance given for the ESP3 Programme*



*Examples of Extreme weather conditions in Indonesia*



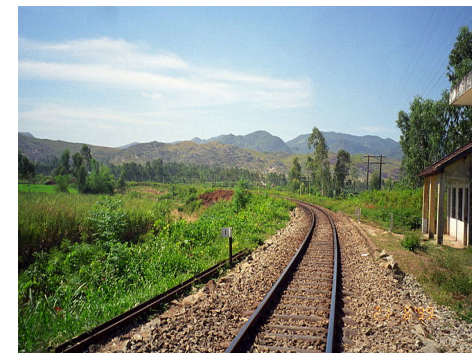


### Public-Private Partnership Support Project (P3SP) – in Vietnam, 2015 – 2018

The project supports the PPP Office at the Ministry of Planning and Investment on the proposal and appraisal processes for PPP in Vietnam.

#### Key Services

- Support the PPP Office in establishing standard procedures for environmental screening and assessment of PPP projects during preparation and approval, and environmental monitoring during implementation procurement.
- Review and if needed develop national environmental sustainability policy for PPPs in Viet Nam in line with international best practice.
- Develop program and modules and deliver targeted trainings to PPP Office and ASAs on compliance and application of environmental sustainability analysis in PPP projects at critical project cycle phases.
- Advise and support the PPP Office and ASAs on environmental sustainability aspects of the PPP infrastructure projects proposed for and supported by PDF through: (i) review the proposed PPP projects' overall soundness of environmental sustainability and risk mitigation at submission for PDF support, (ii) review of TORs of the PDF consultants to ensure adequate coverage of environmental issues, and (iii) comprehensive and constructive review of outputs produced by the consultants funded by PDF to ensure adequate mainstreaming of environmental sustainability issues in the PPP projects under preparation.



*Public-Private  
Partnership  
Support  
Project*





### Establishment of the Pacific Region Infrastructure Facility Coordination Office – International Climate Change Specialist, 2014

Assistance to Cook Islands Government in preparing a country led, medium term, prioritized National Infrastructure Investment Plan (CI-NIIP), which will provide a roadmap for the country's infrastructure sector for the next 5-10 years. Enviro Pro was tasked by Asian Development bank as the International climate change specialist, by providing the following services:

#### Key Services

The International Climate Change Specialist contributed to the CI NIIP by carrying out a high level assessment of the potential risks and vulnerability of proposed economic infrastructure to climate change and natural disasters.

By reviewing the overall institutional arrangements to manage climate change adaptation activities in Cook Islands, the consultant identified capacity constraints for climate change adaptation planning and implementation and provided suggestion for a climate change adaptation capacity building programs in conjunction with the Climate Change Office of the Cook Islands.

For projects shortlisted by the Cook Islands government to be included in the CI NIIP, the consultant provided a short description of the climate change and natural risk adaptation and mitigation measures.

The consultant further contributed to the funding strategy of the SI – NIIP by identifying potential sources of funding from various climate change funding initiatives and the private sector for the Cook Islands and their possible contribution to funding of new infrastructure.



*Cook Islands*



### System Analysis And Programme Assessment : Indonesia, 2013 - 2014

Technical assistance was provided to the development of a strategic plan for KLH.

Enviro Pro was tasked by Danida and Ministry of Environment Indonesia as the climate change specialist.

#### Key Study Methods

Support to KLH in conducting system analysis and programme assessment of the priority and strategic programmes of KLH. The output to be fed into the ongoing development and design models and business processes as part of the RENSTRA planning. SWOT analysis and focus group discussions. This project formed part of Component 1 of the DANIDA funded Environmental Support Programme ESP3, which aims at supporting the effective implementation of consolidated environmental management and climate change policies by combining support to three thematic areas, at both national and decentralized levels. One of the thematic areas is improved implementation of existing planning and management systems by environmental management institutions, aiming at a more efficient use of environmental funds. This planning support will be provided to Ministry of Environment (KLH), Bureau of Planning and International Cooperation.



*An Example of Extreme weather conditions in Indonesia*





### Solomon Islands Transport Sector Development Project , 2012

The project will support the Solomon Islands Government in the effort to address these crucial national development issues by improving countrywide access to socio-economic opportunities.

Enviro Pro was tasked by SKM and Asian Development Bank as the International Climate Change Specialist (IES) , by providing the following services:

#### Key Study Methods

Identify the climate parameters of concern for the project, assess the climate change risk associated with the subprojects and recommend adaptation options by implementing the adaptation assessment framework tables prepared by ADB. Conduct community and expert consultations to verify and refine selected adaptation options.



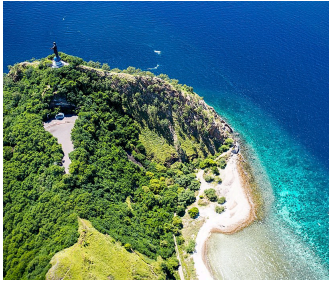
*Extreme Weather Conditions in Solomon Islands*



*Assessment of the factors*



*People of Solomon Islands*



### Climate Resilience Road Project For Timor Leste , 2011

The project provided feasibility assessment services for the rehabilitation of the road link in Timor Leste (Dili to Ainaro)

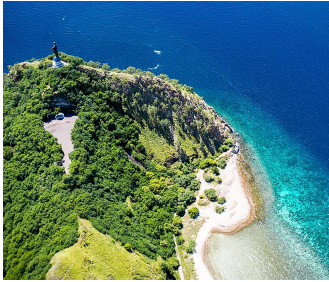
Enviro Pro was tasked by SKM and The World Bank as the International Environmental Specialist (IES) , by providing the following services:

#### Key Study Methods

- Provided an Environmental Management Plan (EMP) and climate change impact assessment for the road link from Dili to Ainaro in Timor Leste, including the identification of significant environmental impacts from project activities based on a desktop environmental sensitive area analysis (ESM) and ground assessment data. Develop a set of site-specific environmental impact mitigation measures for the project, including recommendations for capacity building, disclosure of information and EMP budget.







### Feasibility Study of the Rehabilitation and Maintenance of District Roads in Timore Leste, 2011

The project delivered full complete documentation to allow for a sound implementation of the envisaged rehabilitation/upgrading of around 150 km of selected district roads.

Enviro Pro was tasked by EGIS and EDF as the International Climate Change Specialist/International Environmental Specialist (IES) , by providing the following services:

#### Key Study Methods

- Provide an Environmental Management Plan (EMP) for 150km of district roads, including the identification of significant environmental impacts from project activities based on a desktop environmental sensitive area analysis (ESM) and ground assessment data. Develop a set of site-specific impact mitigation measures for the project, including recommendations for capacity building, disclosure of information and EMP budget. Develop a methodology to assess risks of slope failures and recommend suitable bio-engineering measures as non-engineering climate change adaptation measures. Provide detailed particular specifications for bio-engineering measures for tender documentation.





### Building Climate Change Resiliency for Roadworks within the Sustainable Transport Initiative , 2010-2011

ADB's Sustainable Transport Initiative supports The Solomon Islands Road Improvement Project 2 (SIRIP2), which provides feasibility study and engineering design services for the Solomon Islands Infrastructure Ministry to improve roads on various islands in the country.

Enviro Pro acted as the International Climate Change Specialist in this project.

#### Key Study Methods

Conducted a field visit to the Solomon Islands to collect local information relevant to climate change vulnerability (temperature/precipitation) and qualitative flood risk assessment in parts of the Malaita Province. B. Performed a Rapid Desktop Assessment of anticipated Climate Change Impacts considering storm surges affecting proposed road works (home-based):

a) Reviewed relevant documents of the Project with respect to climate change impact analysis. (b) Assessed the project area climate change regime and its impacts along the project site, (c) Liaised with other agencies/organizations to collect raw downscaled climate data for impact assessments. (d) Liaised with other consultants, in particular high resolution Climate Modellers for required assessment. (e) Determined climate change evolution at the horizon 2030 and 2050 (temperature and precipitation). (f) Formulated downscaled climate change scenarios for 2030 and 2050 time slice. (g) Provided an expert opinion of probability and reliability of climate change modeling scenarios. (h) Provided advice on reliable data and downscaling climate models, Using the model output data, developed climate change adaptation options to reduce the impacts of freshwater flooding, sea level rise etc surge on Malaita roads. (i) Finalized the report based on comments by the client.





### The Solomon Islands Road Improvement Project (SIRIP) , 2010



The project provides feasibility study and engineering design services for the Solomon Islands Infrastructure Ministry to improve roads on various islands in the country. Enviro Pro acted as the International Climate Change Specialist in this project.

#### Key Study Methods

Conduct a Climate Change Adaptation Study and coordinate the vulnerability to climate change for road links in Solomon Islands's Guadalcanal Province.

a) Coordinate the implementation of the draft strategy for vulnerability, impact and adaptation assessment as prepared by ADB; b) Identifying the climate parameters of concern for the road rehabilitation project, in coastal areas including but not limited to changes precipitation, hydrological and temperature regimes ; c) Collect data relevant to climate change predictions of Solomon Islands, particularly those relevant to the impact of and to road sector activities; d) Verify in the field, the outputs from the impact assessment, conduct field level consultations on existing climate changes and collect recommend adaptation options to be further assessed, Implement an adaptation assessment; e) Conduct a community and expert consultations to verify and refine selected adaptation options; f) Identify all benefits of the various adaptation options, including engineering and environmental strategies; g) Assist the Transport Economist and Road Engineer ,to make adjustments to the Project design to incorporate climate change adaptation; h) Assist Transport Economist and Road Engineer in estimating the life-cycle project costs and benefits of climate change risk management measures; i) Formulate prioritized list of adaptation measures to incorporate into the program.





### Preparing the Road Network Development Project, 2009

The project provided TA in road network planning and related studies for climate change adaptation and environmental impact assessment.

Enviro Pro acted as the International Climate Change Specialist in this project.

#### Key Study Methods

Conduct a Climate Change Adaptation Study and coordinate the vulnerability to climate change for two proposed road links in East Timor. *This included the following:* a) Oversee and coordinate the implementation of the draft strategy for vulnerability, impact and adaptation assessment as prepared by ADB; b) Identifying the climate parameters of concern for the road network development (sector) project, c) Collect data relevant to climate change predictions of Timor-Leste, particularly those relevant to the impact of and to road sector activities; d) Verify in the field, the outputs from the impact assessment, e) Conduct a community and expert consultations to verify and refine selected adaptation options; f) Identify all benefits of the various adaptation options, including engineering and environmental strategies; g) Revise EMP in line with findings; h) Assist the Transport Economist and Road Engineer ,to make adjustments to the Project design to incorporate climate change adaptation; i) Assist Transport Economist and Road Engineer j) Formulate prioritized list of adaptation measures to incorporate into the project.

Prepare an initial environmental examination (IEE) or environmental impact assessment (EIA) and a summary IEE or a summary EIA for the whole Project, in accordance with applicable national standards, and in line with ADB requirements. Synchronize environmental assessment requirements between government and ADB.

