

*EMPRESA NACIONAL
DE ENERGÍA
ELÉCTRICA*

*FONDO SOCIAL DE DESARROLLO
ELÉCTRICO*

HONDURAS, C. A.

PROJECT CONCEPT PAPER
**GREEN ENERGY ISLAND
PROJECT IN GUANAJA,
BAY ISLANDS**

February 14th, 2020

Project Concept Paper
(Green Energy Island project in Guanaja, Bay Islands, Honduras)
February 2020

1 Project Background

The Republic of Honduras is partly depending on the fossil fuel to produce the electricity spending USD 19.7 billion (10.2% of Gross Domestic Product (GDP) in 2014) though it has enough potential renewable energy sources. In response, the Honduras government embarked on the energy sector reform in 2013 and revised the law of power industry in 2014 to promote competition in power generation, transmission and distribution.¹

In Honduras, in the urban area about 92% of population can access to electricity, but only 64% of rural resident can access (national average of 84%). The low rate of access to electricity in rural areas is caused by the geographical complexity of Honduras, which makes it economically inefficient to install a grid. Thus, people in some of the islands use small fossil fuel generator or live without electricity. According to the United Nations Sustainable Development Goals, Honduras aims to achieve 100% electrification rate by 2030.

People living in islands of Honduras rely 100% on thermal power generation (diesel) despite the country has rich renewable energy potential, such as solar, wind and hydropower. Most islands are far from the mainland. Fuel for power generation is transported by ship, which is influenced by weather condition. Therefore it is difficult to transport diesel regularly and the price of fuel is so high in the islands. The island's electricity price is as three times high as that of the mainland. In addition, the diesel generators are old and frequently fail to produce expected power generation, and maintenance cost is also high. Sometimes it stops working; it takes long to be repaired. The residents in the islands have difficulty of receiving stable electricity.

Due to these two problems (insufficient and unstable electricity supply), residents living in the island cannot access to electricity as much as they need. And citizens might be exposed

¹ Knowledge Sharing Program 2016

to waterborne diseases because public facilities are not being operated normally. The water-pumping does not work properly and does not supply water to the remote villages. The major industry in the islands, tourism is also negatively influenced by the unstable energy supply. In addition, malfunction of the waste-water pump is a big threat to coral reef ecosystems, which attracts many tourists to the islands. If the sewage treatment facilities are not working properly, the untreated sewage will flow into the ocean and destroy the aquatic ecosystem.

The Archipelago of Bay Islands is characterized for having the highest electricity price in the country. The average price from the companies who supply electricity varies between US¢45/kWh and US¢55/kWh (based on current fossil fuel prices). These Islands are the country's famous tourist attracting sites with affluent terrestrial ecosystem and very precious marine ecosystem forming the second largest coral reef in the world. They have a total population of 43,575 according to the 2013 Census. The islands have the highest population growth rate in the country, because there are more work opportunities and safe. However, high price and unstable electricity are affecting tourism business in the Islands according to the Honduran tourism market diagnostic report². They affect basic services such as the drinking water supply and sewage treatment.

The Government of Honduras plans to reduce use of fossil fuel for removing the risk of oil spill in the fragile ecosystem of BI and mitigate CO₂ emission. In order to implement the plan, the government shared the fuel reduction and ecosystem issues with the Inter-American Development Bank (IDB). It prepares one strategy to reduce use of fossil fuel for power generation through harnessing renewable energy sources in the BI in 2014. IDB conducted a technical cooperation – HO-X1030 - in the Bay Islands funded by the Nordic Development Fund- NDF from 2015 until 2018 with the view to assess the renewable energy potential in Utila, Guanaja and Roatán; evaluate the feasibility of using wind, solar and thermal energy through an integration of multiple renewable energy sources and prepare a strategy to reduce use of fossil fuel in the Islands.

Guanaja Island is the second most densely populated island in the Bay Islands, where 5.445

² Ramirez, Yanu & Erazo, Benjamín. Honduran tourism market diagnostic report. IDB, September 2016.

people live. 63% of them are Black English speakers. A large part of the population, with limited financial income, is concentrated in Bonaca Cay. Guanaja produces its electricity burning diesel. Diesel is transported to the Island and it has a high fuel transportation cost due to diesel is transported from mainland. In addition to high fuel price, security of supply, oil spill in a highly sensitive environment is one of the main risks.

The main industry in Guanaja Island is fishing, followed by trade, construction and finally tourism. Guanaja is the island with fewest tourists at present in spite of having very beautiful landscape and rich natural resources. Therefore, it is expected to have more tourists in the future. The island was seriously affected by hurricane Mitch in 1998, which depressed its economic development. Guanaja is the only island with freshwater sources, but it has serious problems with distribution as well as with sewage treatment, because of high energy price. In the island, the electricity is provided by a private operator using diesel generators.

As part of the technical cooperation, the potential of solar power was assessed in the BI. Since, Guanaja is the Island with the highest potential of tourism business and has the best renewable energy potential especially solar and wind resources. The contract with electricity supplier in Guanaja will ends soon, and the Government of Honduras prioritized Guanaja as the Island to develop renewable energy power and set the target “Guanaja as the green island”.

IDB technical cooperation HO-X1030 confirms the adequacy of renewable energy generation in the island of Honduras. In 2017, the Honduras government jointly conducted a survey and analysis project to establish early, medium and long term plans for introducing renewable energy power plants on Guanaja Island through the KSP (Knowledge Sharing Program) of the Korean Ministry of Strategy and Finance.

The project determined that the successful installation and operation of micro grids in Korea's isolated areas can be applied to the Honduras islands. The government of Honduras plans to install power generating facilities that Guanaja Islanders can afford to purchase and use with the financial and technical support from the Korean government.

In response, the Honduras government requests the Ministry of Trade, Industry and Energy (MOTIE) of Republic of Korea to support a micro-grid project based on solar energy with

energy storage devices and **energy management system**. As a result, it is possible to continue supplying clean energy to **over 7,000 inhabitants of Guanaja Island**. The project will be a best practice and applied to other islands that aim to improve the electric accessibility.

2 Project Objective (Short Term and Long Term)

(Impact) Improvement of living environment of residents in Guanaja Island by introducing the affordable, reliable, sustainable and modern energy supply.

(Outcomes) By ensuring access to affordable, reliable, sustainable and modern energy in the project site [relevant to Sustainable Development Goals (SDG) 7], it is expected to have

- A. Lower price of electricity with more stable supply than the current
- B. High proportion of population with primary reliance on clean fuels and technology
- C. High quality of water supply and treated sewage
- D. CO₂ reduction and air-contaminants reduction and
- E. Ultimately, income increase of the island residents by improving the tourism industry environment of the island.

3 Relevance with the National Development Plan of the Host Country

The Project is aligned with the **Vision of the Country** and the **National Plan** as follows:

Objective 3: A productive Honduras generating opportunities and employment that sustainably uses its resources and reduces vulnerability.

Target 3.3: Raise the participation rate of renewable energy in the country's electricity generation matrix to 80%.

Guideline 8: Productive Infrastructure as an Engine of Economic Activity.

Monitoring Indicator: % of renewable energy participating in the generation matrix.

And with the Current Government plan, Everyone's Plan for a Better Life:

Purpose 4: Transparency and Modernization of the State.

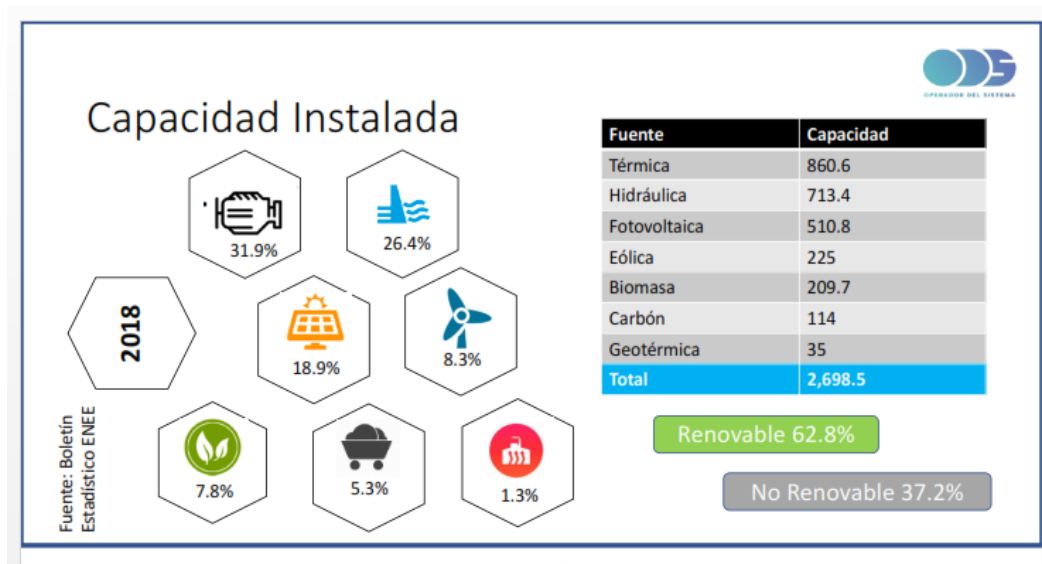
○ Electrical Subsector in Honduras

The National Electric Power Company (Empresa Nacional de Energía Eléctrica, ENEE) is in a transition process which began in 2014 with the Electric Subsector Reform through the General Industry Law. This process has made some actors make up the Electric Subsector, among which we can mention: the Ministry of Energy, The Electricity Regulatory Commission (CREE); the System Operator, known as “ODS”, each with different competencies.

Within the powers of the System Operator or ODS, we can identify the Operation of the National Electric System and administration of the wholesale electricity market as the main function, which leads to having inputs such as the preparation of the Indicative Plan for Generation Expansion in this opportunity for the period of the year 2018-2030. This document is prepared every 10 years and should be reviewed every two years.

The Generation Expansion Plan document, among other relevant data, has the following aspects:

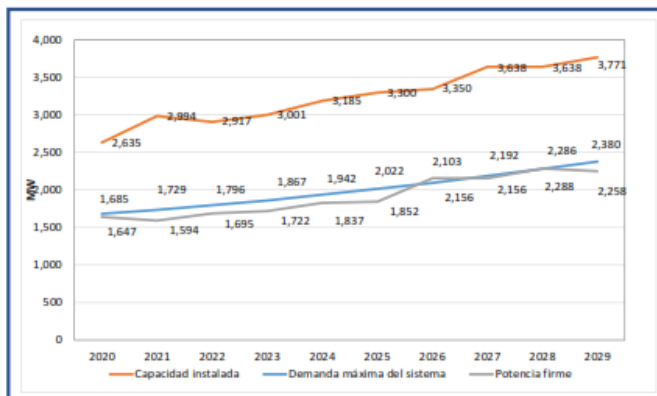
Detail of the installed capacity of the generation park in its different sources:



Analysis of the Characteristics of the National Demand for Electric Power in its different scenarios.

Características de la Demanda

- La demanda pico se registra generalmente entre Abril y mayo.
- La capacidad instalada no representa el mantenimiento de la seguridad de abastecimiento.
- El concepto de potencia firme es el concepto adecuado para asegurar el abastecimiento de la demanda.



Capacidad instalada, demanda máxima y potencia firme del SIN

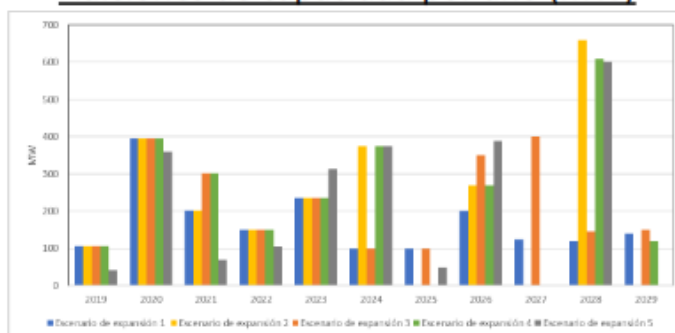
www.enefc.enee.hn

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Analysis of the installed capacity additions in its different sources and projection of the power needs.

Escenarios de Expansión

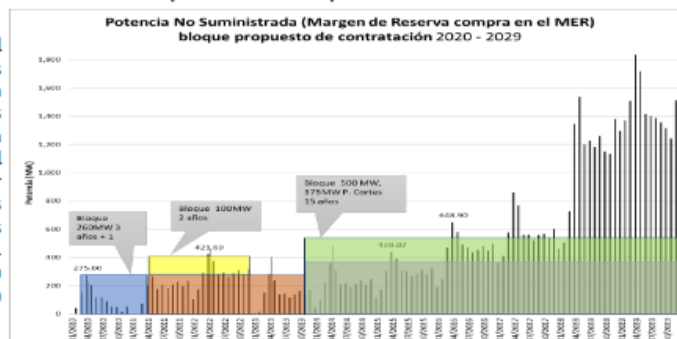
Adiciones de capacidad por año (MW)



	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Escenario de expansión 1	106.5	394.69	202	150	235.55	100	100	200	125	120	140
Escenario de expansión 2	106.5	394.69	202	150	235.55	375	0	270	0	658	0
Escenario de expansión 3	106.5	394.69	302	150	235.55	100	100	350	400	145	150
Escenario de expansión 4	106.5	394.69	302	150	235.55	375	0	270	0	608	120
Escenario de expansión 5	41.2	359.3	70	104	314.35	375	50	388	0	600	0

Proyección de necesidades de potencia de 2020 al 2029 para el Sistema Eléctrico Nacional y posibles bloques de capacidad para contratación

Es vital la potencia firme para el sistema eléctrico Hondureño, los resultados indican contratar un bloque de capacidad firme los meses secos 260MW, con duración de 3 años a partir del 2021, con incentivo de ampliar por un año si se conectan antes de abril 2020 para las plantas que puedan resolver ese déficit. Y abrir la posibilidad a contratación mensual para plantas en la Región.



- Honduras government's renewable energy expansion policies:
 - According to Secretaria de Finanzas (SEFIN) (2010) National Vision 2010-2038 and National Plan (2010-2022), by 2038, more than 80% of electricity generation will be produced by using renewable energy resources. As a result, the government of Honduras actively promotes the construction of renewable energy plants to raise 70 ~ 80% of renewable energy generation, which was 32% of the total electricity generation in 2009, resulting in 62.4% (1,686.3MW) of the total electricity generation in 2018. Renewable Energy projects have attracted the fourth largest investment (more than \$ 500 million) among Latin American countries.
 - Honduras Government Renewable Energy Industry Promotion Policy: The Renewable Energy Source Promotion Act “Law for the Promotion of Electric Power Generation with Renewable Resources” (Ley de Incentivos a la Generación de Energía Eléctrica con Recursos Renovables Decree 70-2007 amended by Decree 138-2013), which took effect in October 2007, requires incentives such as exemption of corporate tax and simplification of operating license acquisition requirements for power generation investments using renewable energy (hydropower, wind power, regions, biomass, etc.).
 - Renewable Energy Law, (Ley de Energía Renovable, Decreto 85-98)

- Special Law Regulating Public Renewable Energy Projects (Ley Especial Reguladora de Proyectos Públicos de Energía Renovable, Decreto 279-2010)

4 Project Description

- A. Title: Green Energy Island project Guanaja, Bay Islands, Honduras
- B. Target site (location) : Guanaja Island, Bay Island, Republic of Honduras
- C. Target Group: Approximately 7,000 residents (1,300 households) including public institutions and facilities such as city hall, police offices, and harbor, etc.
- D. Outputs
- (1) Construction and operation of Renewable energy micro-grid
 - (2) Consultancy provision for legal system to expand renewable energy to rest of isolated areas in Honduras
 - (3) Transfer of operation technology about Renewable energy micro-grid
 - (4) Development local condition specific micro-grid business models & application to Guanaja island
 - (5) Consultation on policy support mechanism for sustainable operation of micro-grid systems in Honduras
 - (6) Identification of Technical Assistance (TA) needs for micro-grid in Caribbean islands utilizing CTCN platform
- E. Activities
- (1) Renewable energy micro-grid construction**
- Final design of the Renewable energy micro-grid aligned with the current grid system. The design will confirm the capacities of the Renewable energy micro-grid to be installed.
 - Procurement and deployment of equipment for Renewable energy micro-grid
 - Construction completion according to detailed design

- Commissioning of the constructed power plan

(2) Capacity building for operators and technicians

- The project management unit (PMU) will be housed at the Empresa Nacional de Energía Eléctrica (ENEE)
- Technology transfer on Renewable energy micro-grid operation and maintenance through training and education for operators and technicians

(3) Legal system inspection and improvement consulting for the high level policy makers for the purpose of stable renewable energy operation and expansion

- Invitation to Republic of Korea to share the prior experiences
- Workshops to examine the current power policy of Honduras and find out the potential improvements cooperating with the power management policy experts in Korea
- Report on how to empower high-level officials who can determine the electricity power regulations and policies of Honduras by inviting to training workshops

(4) Development of local condition specific business models

- Survey Korean & Global best practices on micro-grid business cases
- Classification of local condition specific micro-grid business models
- Application to Guanaja case

(5) Policy support mechanism for sustainable operation

- Consultation on tariff system for micro-grid in remote areas in Guanaja & Honduras
- Consultation on incentive mechanism for micro-grid in Guanaja & Honduras
- Consultation & Capacity building for standards & certificate system on micro-grid system

(6) Identification of Technical Assistance (TA) needs for micro-grid in Caribbean

islands utilizing CTCN platform

- CTCN collaborative ‘South-South workshops on electrification in remote areas’
- Development of CTCN Technical Assistance (TA) requests for Honduras & Caribbean island countries

F. Inputs

(1) Energy station and micro grid management system

- PV Plant: 4,000kW
- Energy Storage System (ESS) Station: PCS 1MW / Li-Ion Battery 8MWh
- Diesel Generator : 1,200kVA
- Energy Management System (EMS): Micro-grid Controller, Human Machine Interface (HMI), Server
- Transformer : Grid Connection

(2) Experts

- Project management: Project manager, Project Assistance Officer
- Renewable energy micro-grid construction: Procurement and logistics expert(s), Construction supervisor(s), Commissioning engineer(s)
- Renewable energy micro-grid operation and maintenance (O&M) training: O&M engineer(s)
- Renewable energy policy study and consulting: Renewable energy economy and policy expert(s)
- Project performance management: Monitoring and evaluation expert(s)

5 Estimated Project Cost

- **Total cost: USD 15 Millions for (1)-(3)**

Item (inputs)	Amount (USD)
• Renewable energy micro-grid construction - Design, procurement and construction - Equipment, machinery, materials, and logistics - Trainings and workshops • Performance management - Surveying, consulting, and training • Monitoring and evaluation	15,000,000

• **Total cost: USD 1 Millions for (4)-(6)**

Item (inputs)	Amount (USD)
• Development local condition specific micro-grid business models • Consultation on policy support mechanism for sustainable operation • Identification of Technical Assistance (TA) needs for micro-grid in Caribbean islands utilizing CTCN platform	1,000,000

6 Project Sustainability

A. Transfer operation and maintenance technology

- Sufficient operational technical training is provided during the process of the project the aim of ensuring that ENEE can operate the plant on its own.

B. Maintenance plan of facilities, building and equipment of the proposed project and the financing plan for the maintenance

The State of Honduras, through ENEE, as the main stakeholder in the development

of these Projects, and the Ministry of Energy, as responsible for the implementation of the policies, will guarantee the operation, maintenance, sustainability and future expansions, complying with national and international regulations.

7 Project Implementing Organization

A. Name of the organization

- The National Power Utility (Empresa Nacional de Energía Eléctrica, ENEE)

B. Project management unit (PMU) and project steering committee (PSC)

- PMU consists of Korean experts and ENEE field experts, and conducts project activities. At the beginning of the project, both Honduras and Korean experts develop the ToR (Terms of Reference) of the PMU members.
- PSC consists of the Project Management Officers from Korea and the key decision makers of the Honduras government, and makes important decisions about the project. At the beginning of the project, both Honduras and Korean experts develop the ToR of the PSC members.

8 Undertakings of the Host Countries

- Participates in PMU and PSC activities with taking cost for Honduras experts under the ToR.
- Maintains affordable electricity price for the beneficiaries.
- Provides project site and prepare the site for the power plant complying with the relevant laws and regulations.
- Take responsible for Environmental impact assessment (EIA).
- Take responsible for administrative procedures for necessary permits and/or approvals to the construction and logistics from the competent authorities.
- Exempts custom for the project items and equipment, and provides custom-free administrative procedures.
- Provides the inland logistics for all project equipment from the sea port of mainland

to the project site.

- Exempts value added tax (VAT) for the items and equipment which will be purchased in local markets, and provides VAT-free administrative procedures.
- Provide long-term visa eligibility and support safety for Korean experts

9 Assistance of other Countries (including NGOs) or International Organizations in the related field or sector:

- IDB supported USD 486.7 million in Honduras in 2018, totaling USD 7,461.6 million in 1961-2018.
- According to IDB's Honduran program evaluation report, the energy sector provided approximately USD 2.66 million in 2013-2017 and USD 0.5 million in 2015 for the energy sector technical cooperation project.

[Table] Loan portfolio (Sovereign-guaranteed loan portfolio)

Intervention area	sector	Operation		Year approved	Amount (US\$ millions)
Sustainability and competitiveness of the energy sector	Energy	HO-L1189	Programmatic Support for Structural Reforms in the Electricity Sector. Third loan	2017	50
		HO-L1070	Programmatic Support for Structural Reforms in the Electricity Sector	2014	130
		HO-L1118	Programmatic Support for Structural Reforms in the Electricity Sector. Second loan	2015	40

		HO-L1102	Cañaveral-Río Lindo Hydropower Complex Rehabilitation and Upgrading Project	2015	23
		HO-L1039	Support for the Integration of Honduras in the Regional Electricity Market	2013	22
		Total		-	266

[Table] Technical cooperation portfolio

Intervention area	sector	Operation		Year approved	Amount (US\$ millions)
Sustainability and competitiveness of the energy sector	Energy	HO-T1221	Support for the renewable energy transmission program in the western and northern parts of the country	2015	50

[Table] International cooperation in the electrification field in Honduras, Source: Climate Investment Funds (CIF)

Intervention area	sector	Operation		Year approved	Amount (US\$ millions)
Sustainability and competitiveness of the energy sector	Energy	HO-G1247	Rural Electrification Program in Isolated Places (Brus Laguna, Guanaja, Concepción de María and El	2018	6.42

			Corpus)		
		HO- T1214	Support for the Strategic Plan of Universal Access to Electricity	2018	0.45

Assistance from other countries or international organizations in Guanaja:

CEPUDO³ and Food for the Poor Program has provided support to Guanaja with the following projects:

- Two fishing villages, \$ 50,000
- Two engines for the ambulance, \$ 38,000
- 32 houses for poor people, \$ 8,500 each
- Ice maker, \$ 12,000
- Lobster fishing improvement project, \$ 30,000

The MOTIE project practically helps not only the CEPUDO and Food for the Poor Program but also any future international cooperation project which needs the electrical power in Guanaja island to be more successful and effective.

10 Attachments

- (1) PDM (Project Design Matrix)
- (2) Project Location Map
- (3) Project Work Plan

³ CEPUDO is a non-profit organization that serves the most needed communities in Honduras (<https://englishcepudohonduras.wordpress.com/>)

(4) Environmental and Social Safeguard Screening Questionnaire

This project concept paper is submitted to the Ministry of Trade, Industry and Energy (MOTIE) of Republic of Korea.

Date:

Title:

Name:

Signature:

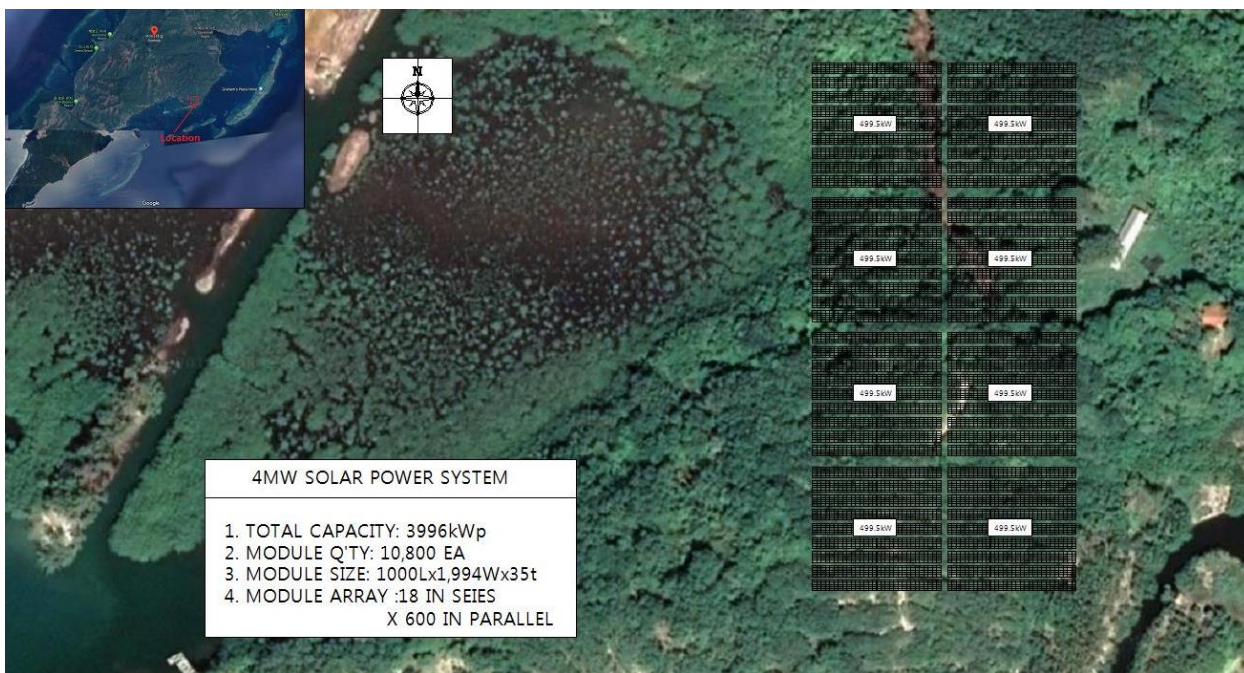


[Attachment (1)] PDM (Project Design Matrix)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS AND RISKS
Impact 1.Improvement of living environment of residents in Guanaja island by the affordable, reliable, sustainable and modern energy supply	II.1. Income increase II.2. Diversification of occupation	SDG monitoring and evaluation report	•○Securing renewable energy(RE) expandability of power capacity to maintain affordable electricity price
Outcome(s) 1.Ensure access to affordable, reliable, sustainable and modern energy in the project site [relevant to SDG 7]	OC1.1. Proportion of population with primary reliance on clean fuels and technology OC1.2. Quality of water supply and treated sewage OC1.3. Certified CO ₂ reduction amount	OCM1.1 SDG monitoring and evaluation report OCM1.2 O&M survey report OCM1.3 O&M survey report	•○Maintaining affordable electricity price •○Working with competent construction contractor •○Stable technology transfer to successors •○Government’s necessity to expand RE sources •○Stable operation of GHG MRV system
Output(s) 1. Construction and operation of Renewable energy micro-grid 2.Operation technology transfer on Renewable energy micro-grid 3.Consultancy provision for legal system to expand renewable energy to rest of electricity isolated areas in Honduras	OP1.1. Whether the station is completed or not (Including qualitative measurement) OP1.2. Whether the O&M guideline is completed or not (Including qualitative measurement) OP1.3. Whether the consulting report is completed or not (Including qualitative measurement)	OPM1.1 Design document and completion report OPM1.2 Baseline and endline report OPM1.3 Baseline and endline report	•○Contract with competent construction firm •○Secure competent trainees •○Government’s necessity to expand RE sources
Activities 1-1. Detailed design, procurement and deployment of equipment for Renewable energy micro-grid 1-2. Construction completion according to detailed design 1-3. Commissioning of the constructed power plan 1-4. Capacity building for operators and technicians 1-5. The project management unit (PMU) creation and operation 1-6. Training and education for operators and technicians for Technology transfer on Renewable energy micro-grid operation and maintenance 1-7. Legal system inspection and improvement consulting for renewable energy expansion 1-8. Workshop and invitational training for high-level people to examine the current electricity policy of Honduras and identify future cooperation items. 1-9. Micro-grid business model & policy support mechanism development	Inputs Republic of Korea <MOTIE, MSIT> <u>Hybrid energy station</u> PV Plant: 4,000kW, ESS Station: PCS 1MW / Li-Ion Battery 8MWh, Diesel Generator: 1,200kVA, EMS, HMI, Server, Transformer <u>Korean experts</u> Project management, Renewable energy micro-grid construction: Renewable energy micro-grid operation and maintenance (O&M) training, renewable energy policy study and consulting, project M&E Republic of Honduras <ENEE> <u>Provision of project site</u> <u>Administrative supports for permit/ approval</u> <u>Customs and VAT exemption</u> <u>Provision of Honduras experts for PMU &PSC</u> <u>Power distribution network</u> PSC & PMU members	Pre-conditions •○ Renewable energy micro-grid control & operation. - No big fluctuation on power demand expectation - Smooth termination of the contact with private power supplier - Smooth use of existing and additional power distribution network •○ Operation technology transfer - Stable occupational status of trainees (Honduras technicians) - •○ Consultancy provision for legal system - Existing effective laws and regulations - Government’s recognition on the importance to expand RE sources	

[Attachment (2)] Project Location Map

Coordination: 16°27'17.4"N 85°51'42.5"W



[Attachment (3)] Project Work Plan for (1)-(3)

Activities		2021			2022				2023			
		1	2	3	1	2	3	4	1	2	3	4
		Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Planning establishment	Master plan establishment											
	Detailed schedule establishment											
	Signed Record of Discussion(ROD) between the two countries											
Pre-survey	local power environment analysis											
	Recipient country consultation											
	Review of power equipment standards											
Detailed design	Power generation system design											
	ESS system design											
	Construction design											
Environmental impact assessment	Preparation for application											
	Assessment and permit report											
Training	Training target selection											
	Create educational materials											
	Training and completion											
Materials	Create purchase specification											

	Bid and buy materials											
	Shipping and inspection of materials											
Mid-term evaluation	Review of project performance											
	Create the evaluation report											
	Implementation of external evaluation (MOTIE)											
Construction	Install the field office and working the public works											
	Install the Power plant (PV, Diesel)											
	Install the ESS											
Start-up and Inspection	Pre-commissioning											
	Operation and performance test											
	Test of system operation to power line											
Self-evaluation	Establishment of evaluation plan											
	Test the self-assessment											
	Report of evaluation results											
Final report	Making final report											
	Implement of the completion ceremony											
	Transfer business											

[Attachment (3)] Project Work Plan (4) –(6)

Activities		2021			2022				2023			
		1	2	3	1	2	3	4	1	2	3	4
		Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Local condition specific business models	Analysis Korean & Global best practices											
	Classification of business models											
	Application to Guanaja case											
Policy support mechanism	Consultation on tariff system											
	Consultation on incentive mechanism											
	Consultation & Capacity building for standards & certificate system											
Identification of CTCN Technical Assistance (TA) needs	CTCN collaborative ‘South-South workshops											
	Development of CTCN Technical Assistance (TA) requests											
Documentation	Midterm											
	Final											

[Attachment (4)] Environmental and Social Safeguard Screening Questionnaire

- ☐ Project name
: Green Energy Island project in Guanaja, Bay Islands
- ☐ Prepared on: January 2020
- ☐ Prepared by: ENEE
- Department: Fondo Social de Desarrollo Eléctrico (FOSODE)
- Position: Director
- TEL/FAX: +(504) 2235-2957 Email: mariocardona81@gmail.com
- Name: Mario Cardona (Signature)

1. Preliminary questions

[1-1] Is this a development consultation project?

☒ Yes ☐ No

[1-2] Does this project include facility/infrastructure construction?

☒ Yes ☐ No

☛ If your answer to [1-1] is “yes” and your answer to [1-2] is “no,” please do not proceed to No. 2.

2. Project overview

2-1. Location or address of project site

[Guanaja, Bay Islands, Honduras; Central America]

2-2. Basic information related to project including scale (e.g. facility production capacity, etc.)

Project Components

- 1) **Component 1:** Implementation of the micro-grid system. US\$ 15.0 million
 - A. Final design of the micro-grid system configuration consisting on. The design will confirm the capacities of the system to be installed which could reach the following value.
 - Solar photovoltaic power plant (up to 4 MWp)

- Energy storage system (up to 8 MWh)
- Diesel or alternative fuel power generation (up to 1.20 MW)
- EMS(MG controller, HMI, Server) and Transformer (for Grid connection)

Table 1: Micro grid system elements

Item	Description	Estimated Budget [Million US\$]
Microgrid EMS System	• MG EMS S/W and Servers, Workstations. • MG Controller, communication infra, Control center, etc.	0.3
Energy Storage System	• ESS Power Station (1 MW PCS, SWGR, 30ftContainer) • Battery Station (8 MWh Li-Ion Battery, 40ft Container, AC/DC Panel, BCP)	Up to 2.5
Photovoltaic System & Switchgear	• PV Power Station (4,000 kW Inverter 2 set, PV Modules SWGR, 40ft Container, Junction box , Frame, etc) • Switchgears (step-up Transformer, Circuit breakers, etc)	Up to 2.5
Firm capacity power generation	• Size of different units totalizing 1.20 MW • Technology selection (diesel gen sets vs fuel cells) • Hydrogen production and storage (in the case of fuel cell) • Integration with the EMS.	1.0 (in the case of diesel gen.)
Project Management	• Supervision, expense, field office, shipment, customs, etc	1.1
Installation and commissioning	• Installation and commissioning	7.6
TOTAL		15.0

B. The project will supply electricity to 4,400 inhabitants of Guanaja

- C. This project will harness the renewable energy resources available in the Island
- D. This component will strength the results of the existing IDB operation HO-G1247 that will reduce only 15% of diesel for power generation. With the implementation of PV and energy storage at least 80% of electricity could come from non-conventional renewable energy.
- E. Environmental studies have been conducted for PV and wind project.
- F. Security of terrain for the project development. Considering the project HO-G1247 ENEE is in the process of acquiring more land considering future expansions.
- G. Fuel cells could replace diesel power gen sets and could help eradicating completely the use of fossil fuels but a detailed assessment must be conducted. I case fuel cells will not be installed a new and efficient diesel power plant should be designed and built.
- H. The project will also contribute with reduction in the costs of electricity production to levels that allow competitive socio-economic development in the Island; for the construction it will create employment,
- I. The project will encourage gender equality and the involvement of the private sector;
- J. It will strength the capability of the National Power Utility – ENEE which is responsible for increasing the electricity access in Honduras by the development of micro-grids and its replication in other areas on a national scale . It will be also a show case for productive areas where there is a potential of integrating non-conventional renewable energy based on economic reasons.
- K. The same policies BID included in the HO-1247 Rural Electrification Program in Isolated Places, defined in the Environmental and Social Management Report (IGAS) will be applied to this project.

2) **Component 2:** Capacity Building and training (US\$ 0.5 million)

- A. The Project Management Unit (PMU) will be housed at the National Power Utility – ENEE. The operation cost for the project will be covered by the tariff scheme. The PMU has experience of executing more than 10 years projects for IDB. It has worked for the execution of transmission and generation projects.
- B. The PMU is already executing the IDB Project Rural electrification program for isolated places where the first phase for Guanaja micro grid project (reduction of 15% of diesel consumption) is being financed.
- C. The PMU is familiar with IDB procurement procedures, environmental and financial procedures form IDB.

- D. Provide education training for two months for working-level officials of PMU who can operate the facilities. The contents of education and training include technical training as well as overall inspection related to management.
- E. Guanaja Island charges electricity bills to the customer. The customers pay for the tariff based on diesel power generation. Actually, a new tariff scheme is being developed to include NCRE and transfer the benefit of reducing fuel consumption to customers. The tariff will consider cost of operation and maintenance and the new investment for the replacement of batteries or system components retrofit. Therefore there will be financial sustainability

☒ Drawing/satellite photo (check if attached)

2-3. Major impacts caused by project

① Does the project include construction of a new building, extension of an existing building, or repair of an existing building?

☒ Yes (Land size:) ☐ No ☐ Unknown

② Will the project cause a change in topography or land use?

☒ Yes (Land size:) ☐ No ☐ Unknown

③ Will the project include development or use of water resources?

☐ Yes (Amount:) ☒ No ☐ Unknown

④ Will the project cause occurrence of waste?

☒ Yes (Amount: 50 m³ approximate) ☐ No ☐ Unknown

⑤ Will the project result in involuntary relocation of local residents?

☐ Yes (Number of people:) ☒ No ☐ Unknown

⑥ Is the project likely to cause complaints or disputes with local residents?

☐ Yes (Reason:) ☒ No ☐ Unknown

3. Assessment of whether project is subject to recipient country's requirements for environmental impact assessment, etc.

3-1. Does the recipient country have laws or regulations related to environmental/social impact assessment?

☒ Yes ☐ No ☐ Unknown

- Constitution of the Republic

- Great Mayan Reef Agreement (Tulum Agreements)
 - Convention Relating to Wetlands of International Importance
 - Convention on Biological Diversity
 - General Environment Law
 - Regulation of the National System of Environmental Impact Assessment (SINEIA)
 - Administrative Procedures Law
 - Health Code
 - Work code
 - General Regulation of Preventive Measures of Work Accidents and Occupational Diseases.
 - Forestry, Protected Areas and Wildlife Law
 - Municipalities Law
 - General Regulation of the Municipalities Law
 - Regulation for Solid Waste Management
 - General Law of the Electricity Industry
 - Law for the Protection of the Cultural Heritage of the Nation.
- Arbitration Plan of the Municipality of Guanaja.

3-2. Is the project subject to environmental/social impact assessment or other relevant impact assessment under these laws or regulations?

☒ Yes ☐ No ☐ Unknown

☛ If your answer to the above question is “yes” and the recipient country separately categorizes laws or regulations to deal with environment and society, please state the relevant category.

The legislation of Honduras has defined the environmental categorization of the projects in the Environmental Categorization Table, ministerial agreement No. 740-2019, the environmental category of the project, corresponds to category 3, according to Sector 06 Energy; Subsector A Power Generation; Activity008 Solar power generation, substation and transmission line; category 3> 15-30MW.

3-3. If the project is subject to environmental/social impact assessment and environmental/social management plan, please mark where applicable.

☐ Completed ☐ Under way ☒ Scheduled ☐ Not Completed

(date / time: July 2020)

4. Project location features and project type

4-1. Is the project site located in or adjacent to an area listed below?

☒ Yes ☐ No

 If your answer to the above question is “yes,” please mark all applicable.

- ☐ Virgin forest or tropical forest
- ☒ Ecologically important habitat areas (coral reef, mangrove wetland, tidal flats)
- ☐ Habitat of rare species protected by domestic laws or international treaties
- ☐ Areas with risk of soil erosion on large scale
- ☐ Areas with notable desertification tendency
- ☒ Government-designated reserve area such as national park
- ☐ Archaeologically, historically, or culturally valuable areas
- ☐ Living areas of ethnic peoples, indigenous peoples, or nomads who retain a traditional lifestyle
- ☐ A densely populated area that poses a risk of large scale involuntary relocation of people
- ☐ An area with special social value

4-2. Does the project fall under one of the categories listed below?

☒ Yes ☐ No

 If your answer to the foregoing question is “yes,” please mark all applicable

- | | |
|---|--|
| ☐ Hydropower, dams, and reservoirs | ☐ Urban development |
| ☐ Roads, railroads, and bridges | ☐ Airport/port |
| ☐ Water supply, sewage treatment | ☐ Solid waste treatment |
| ☐ Stream and erosion control | ☒ Power transmission and distribution lines |
| ☐ Mining development | ☐ Industrial development |
| ☒ Tourism | ☐ Agriculture involving large-scale land clearing or irrigation |

☐ Forestry

☒ Fishery

5. Environmental/social impact

Question	Yes	No	Unknown	Remarks
1. Is the project likely to have an impact on a nearby ecologically important or sensitive area (e.g. wetland, stream, coast, mountain, forest)?		X		
2. Is the project likely to have an impact on nearby natural scenery or geographic feature?	X			
3. Is the project close to a culturally or historically valuable area?		X		
4. Does the project considerably encroach on an area that needs environmental consideration or require the alteration of surface texture or physical properties of the nearby land?	X			Alteration of surface texture or physical properties of the land
5. Does the project require a large amount of water or energy during construction or operation?	X			Exploitation of water during project construction activities
6. Will the project require water supply, sewerage, or transportation that current infrastructure facilities cannot provide?	X			
7. Will the project produce a large amount of waste, particularly of hazardous or toxic nature?	X			Contamination by solid and liquid waste during the construction and operation stage
8. Will the project produce a large amount of drain water or air pollutants?		X		Minimum amount of drain water during the construction stage
9. Will the project have a serious impact on a nearby important body of water?		X		
10. Is the project likely to have a serious impact on surface/underground water in terms of amount or quality?		X		

Question	Yes	No	Unknown	Remarks
11. Does the project require lodging facilities or other accommodations for workers during construction or operation?	X			A dock must be constructed prior to the construction phase
12. Does the project require using a large amount of fertilizers or pesticides?		X		
13. Does the project include introduction of foreign species of wildlife to the area?		X		
14. Does the project involve any risk of turning the area into a habitat for pests or animals carrying infectious diseases?		X		
15. Will the project cause harm to people in a nearby densely populated area due to air pollution, noise, vibrations, or stench?		X		
16. Will the project cause serious soil erosion or degradation due to its location (e.g. steep slope or vulnerable soil area)?	X			It will cause soil erosion, loss of the organic layer and change in land use during the construction stage
17. Will the project cause an influx or relocation of a large number of people in the area?		X		
18. Will the project cause involuntary relocation of a large number of people elsewhere?		X		
19. Will the project cause a change in way of life for local residents?	X			Improvement in living conditions and employment generation
20. Will the project have a negative impact on cultural heritage objects/sites in the area?		X		