Workshop for the JCM utilization to introduce advanced decarbonizing technology in the PALM countries

～The 9th Pacific Islands Leaders Meeting (PALM9)～

Financing Programme for JCM Model Projects

22nd September 2021

Global Environment Centre Foundation (GEC)

Financing Programme for JCM Model Projects

1. **Overview and Recent trend of JCM Model Projects**
2. **Projects examples can be applied to PALM partner countries**

Outline of JCM Model Projects

Global Environment Centre Foundation

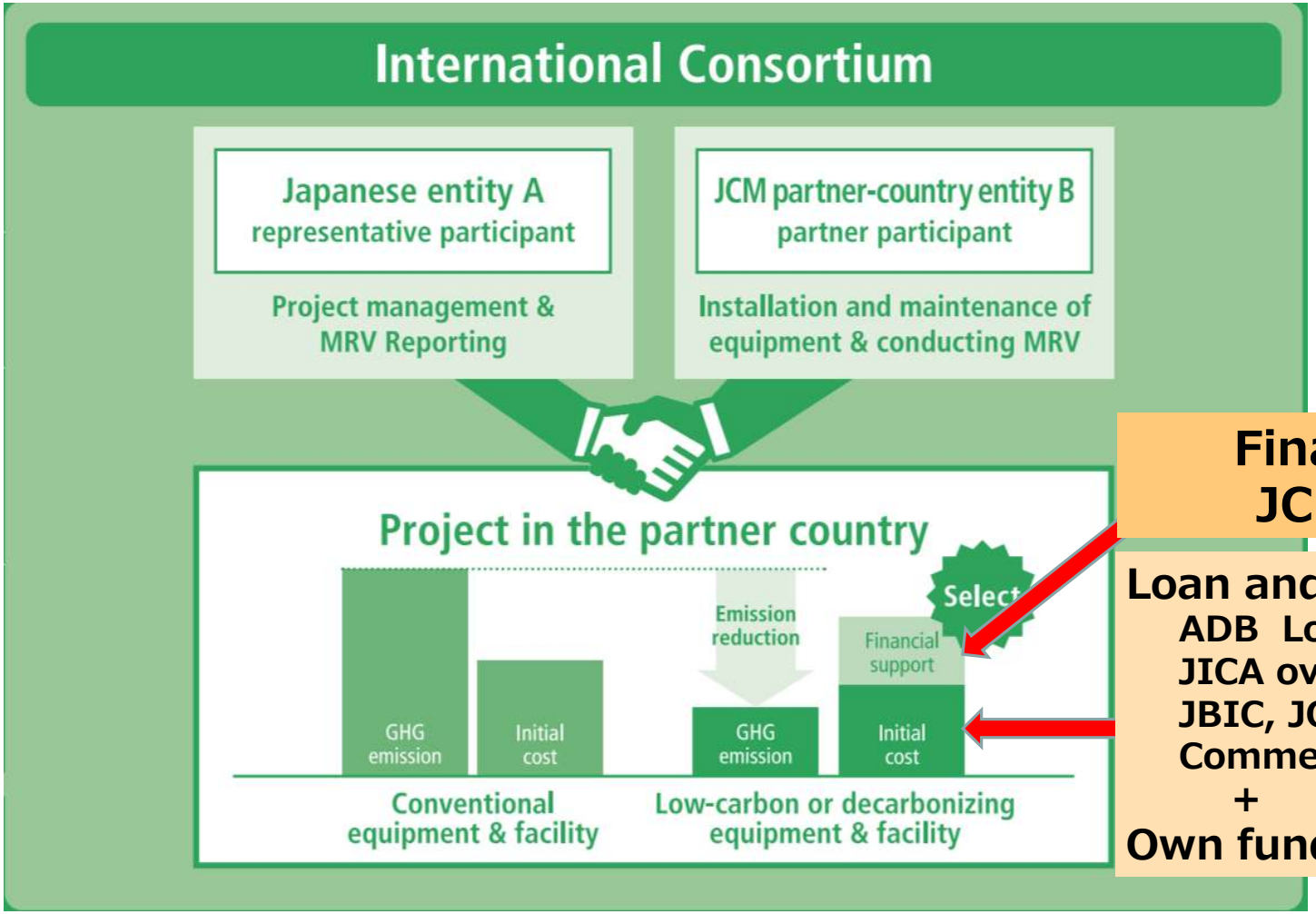
Budget	JPY 9 billion (Approx. USD 90 million) in FY2021
Executing Entity	International Consortium that consists of a Japanese entity and a JCM partner-country entity (ies)
Scope of Financing	Facilities, equipment, vehicles, etc. which reduce CO2 from fossil fuel combustion
Requirements	Start installation after the Contract of Finance is concluded and finish installation within 3 years. Conduct measurement, reporting and verification (MRV) of GHG emission reductions.
Maximum Percentage of Financial Support	Maximum of 50% or lower according to the number of already selected project (s) using a similar technology in each partner country.
Cost-effectiveness	Cost-effectiveness of GHG emission reductions is expected to be JPY4,000/tCO2eq or lower.

Financial support per project

Up to Approximately ¥2billion

Guideline for Submitting JCM model project proposal

Basic Concept of JCM Model Projects



Financial Support of JCM Model Project

Loan and/or Investment
- **ADB Loan w/JFJCM**
- **JICA overseas investment and loan**
- **JBIC, JOIN, World bank**
- **Commercial banks**

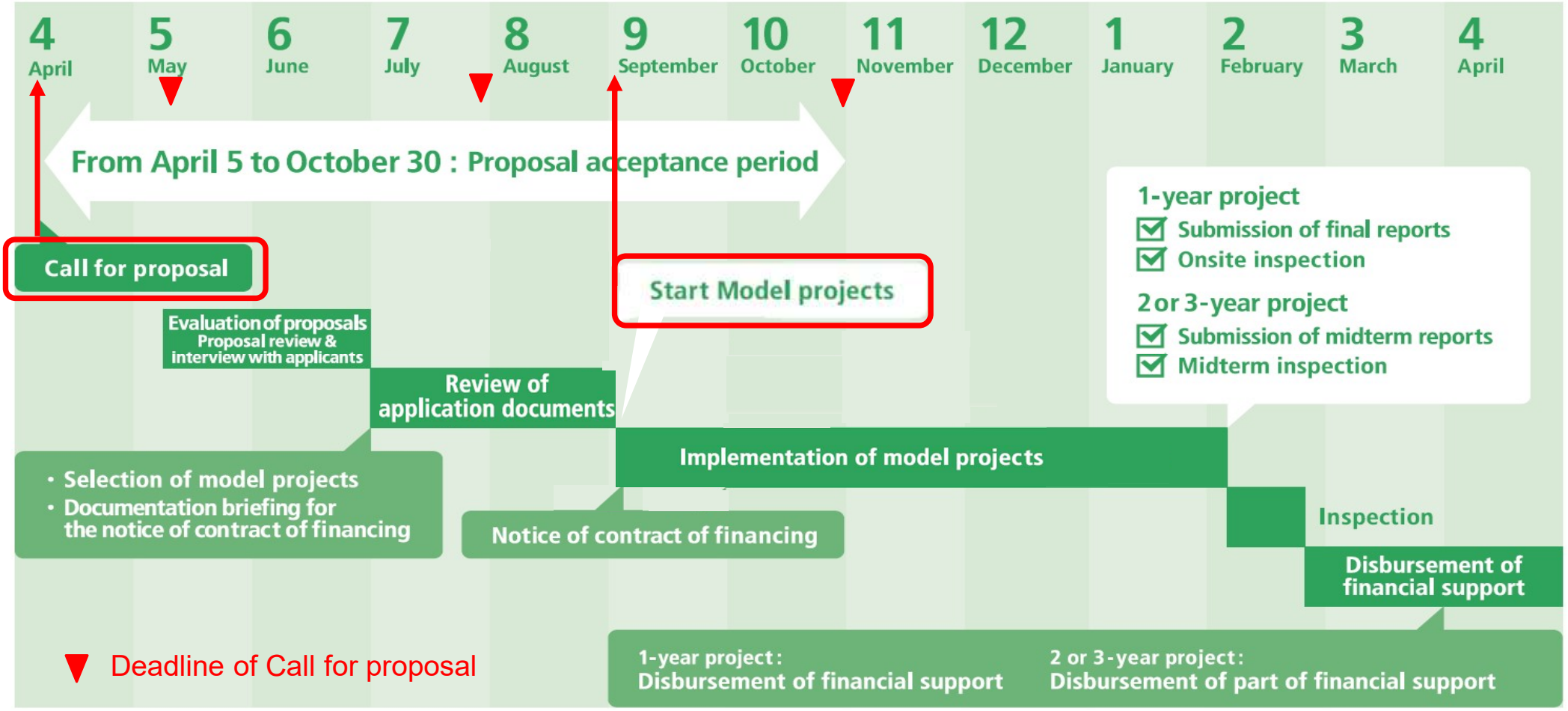
+

Own funds

Guideline for Submitting JCM model project proposal

JCM Model Projects Schedule in FY2021

Global Environment Centre Foundation



Guideline for Submitting JCM model project proposal

Categorization by applied technology type

Global Environment Centre Foundation

Sector	Technology	Mongolia	Bangladesh	Ethiopia	Kenya	Maldives	Viet Nam	Lao PDR	Indonesia	Costa Rica	Palau	Cambodia	Mexico	Saudi Arabia	Chile	Myanmar	Thailand	Philippine	
		MN	BD	ET	KE	MV	VN	LA	ID	CR	PW	KH	MX	SA	CL	MM	TH	PH	
1. Energy Efficiency	Air Conditioning System						4		1								1		6
	Chiller		2				4		4	1		1				1	4		17
	Refrigerator								1							2	4		7
	Absorption Chiller Using Waste Heat								2								2		4
	Swirling Induction Type Air-conditioning System																1		1
	Air Conditioning System with Total Heat Exchanger															1			1
	Fridge and Freezer Showcase								1								1		2
	Boiler	2					2		3				1			2	1		11
	Double Bundle-type Heat Pump						1		1								1		3
	Water Heater Using Waste Heat									1						1			2
	Waste Heat Recovery System															2	1		3
	Heat Exchanger																1		1
	Transformer						4	1											5
	LED Lighting								2								1		3
	LED Street Lighting with Dimming System								1			1							2
	Pump						1												1
	Air Compressor						1										1		2
	Aeration System								1										1
	Regenerative Burners								1										1
	Gas Fired Furnace						1												1
	Gas Fired Melting Furnace																1		1
	Air Conditioning Control System						1										1		2
	Frequency Inverter for Pump						1					1							2
	Ventilation Control System															1			1
	Loom		1						2								1		4
	Old Corrugated Cartons Process								1										1
	Battery Case Forming Device						1												1
	Electrolyzer in Chlorine Production													1			1		2
	Wire Stranding Machines						1												1
	Autoclave								1										1
	Multi-effect Distillation System												1						1
	Injection Modling Machine								1										1
2. Renewable Energy	Solar Power Plant	4	1	1	2	1	4	3	3	1	5	4	3	1	4	1	15	6	59
	Solar Power Plant with Battery								1										1
	Small Hydropower Plant								8									3	11
	Wind Power Plant																	1	1
	Geothermal Power Plant																	1	1
	Biomass Power Plant								1			1			1	1	1	1	6
	Biogas Power Plant																	1	1
	Biomas boiler						2										1		3
	Biogas boiler															1		1	2
	Biomass Co-generation						1										1		2
3.Effective Use of Energy	Power Generation by Waste Heat Recovery								1							1	1		3
	Gas Co-generation								2								3		5
4. Waste Handling and Disposal	Waste-to-Energy Plant															1			1
	Power Generation by Methane Recovery												1						1
5. Transportation	Digital Tachograph System						1												1
	CNG-Diesel Hybrid Bus								1										1
	Reefer Container						1												1
Total	Number of technology : 51	6	4	1	2	1	31	4	40	3	5	8	6	2	5	15	45	14	192

Summary by FY2020 projects

Selection of Projects in FY2020 (25 projects)

Global Environment Centre Foundation

Partner Country	Entity	Project Title	Sector	Expected GHG Emission Reductions (tCO2/y)
Vietnam	Kanematsu KGK Corp.	57MW Solar Power Project in An Giang Province	Renewable Energy	28,208
Vietnam	DAIICHI JITSUGYO CO., LTD.	Introduction of Biomass Co-generation system to Food Factory	Renewable Energy	24,115
Vietnam	Marubeni Corporation	Introduction of Biomass Boiler to Soluble Coffee Manufacturing Plant	Renewable Energy	19,498
Vietnam	Acecook Co., Ltd.	Introduction of High Efficiency Boiler System to Food Factory	Energy Efficiency Improvement	7,631
Vietnam	Hitachi-Johnson Controls Air Conditioning, Inc	Introduction of High Efficiency Air-conditioning System to Hotel in Ho Chi Minh City	Energy Efficiency Improvement	184
Lao PDR	Kayama Kogyo Co., Ltd.	14MW Solar Power Project in Vientiane Province and Borikhamxay Province	Renewable Energy	8,104
Indonesia	NiX Co., Ltd.	6MW Mini Hydro Power Plant Project in West Pasaman, West Sumatra	Renewable Energy	18,319
Thailand	The Kansai Electric Power Company, Incorporated	Introduction of 8.1MW Rooftop Solar Power System in Motorcycle Factory and Fiber Factory	Renewable Energy	3,797
Thailand	The Kansai Electric Power Company, Incorporated	Introduction of Energy Saving Centrifugal Chillers to Machinery Factory	Energy Efficiency Improvement	225
Philippines	Mitsubishi Heavy Industries, Ltd.	29MW Binary Power Generation Project at Palayan Geothermal Power Plant	Renewable Energy	72,200
Saudi Arabia	Marubeni Corporation	400MW Solar Power Project in Rabigh Region	Renewable Energy	477,129
Chile	FARMLAND Co., Ltd.	3MW Solar Power Project Utilizing Farmland in Valparaiso Region	Renewable Energy	2,397
Myanmar	Tokyo Century Corporation	7.3MW Solar Power Project in Mandalay International Airport and Yangon City	Renewable Energy	3,276
Thailand	Sumitomo Mitsui Finance and Leasing Company, Limited	Introduction of 5MW Rooftop Solar Power System to Aluminum Building Materials Factory	Renewable Energy	2,200
Thailand	The Kansai Electric Power Company, Incorporated	Introduction of 2.6MW Rooftop Solar Power System to Semiconductor Factory	Renewable Energy	1,188
Thailand	Inabata Co., Ltd.	2.5MW Solar Power Project with Blockchain Technology in Chiang Mai University Town Community	Renewable Energy	1,041
Philippines	Tokyo Century Corporation	Introduction of 2MW Solar Power System to Shopping Mall （JCM Eco Lease Scheme）	Renewable Energy	1,476
Indonesia	Voith Fuji Hydro K.K.	5MW Hydro Power Project in Bengkulu Province	Renewable Energy	15,299
Myanmar	Yuko Keiso Co., Ltd.	Introduction of Energy Saving Equipment to Complex Buildings of Smart Urban Development Project in Yangon	Energy Efficiency Improvement	1,544
Vietnam	Idemitsu Kosan Co., Ltd.	Introduction of 2MW Solar Power System for Pellet Factory	Renewable Energy	1,024
Indonesia	Alamport Inc.	4.2MW Rooftop Solar Power Project to Pharmaceutical Factories, Vehicles Dealers, and Timber Factories	Renewable Energy	3,961
Thailand	SHIZUOKA GAS CO., LTD.	Introduction of 2MW Rooftop Solar Power System to University	Renewable Energy	868
Indonesia	AURA-Green Energy Co., Ltd.	8MW Mini Hydro Power Plant Project in Maluku Province	Renewable Energy	18,034
Chile	Sharp Energy Solutions Corporation	34MW Solar Power Project in Nuble Region	Renewable Energy	25,576
Thailand	Shizen Energy Inc.	30MW Floating Solar Power Project in Industrial Park	Renewable Energy	13,739

1st Selection of Projects in FY2021 (10 projects)

Global Environment Centre Foundation

Partner Country	Entity	Project Title	Sector	Expected GHG Emission Reductions (tCO2/y)
Vietnam	JFE Engineering Corporation	Waste to Energy project in Bac Ninh Province	Waste handling and disposal	41,805
Vietnam	Electric Power Development Co., Ltd.	10MW Rice Husk Power Plant Project in Hau Giang Province	Renewable Energy	22,315
Vietnam	Sharp Energy Solution Corporation	Introduction of 9MW Rooftop Solar Power System to Factories	Renewable Energy	3,618
Vietnam	ENDO Lighting Corporation	Introduction of High Efficiency LED Lighting with Dimming and Tunable Function to Office Building in Ho Chi Minh City	Energy Efficiency Improvement	196
Indonesia	Sumitomo Forestry Co., Ltd.	Introduction of 3.3MW Rooftop Solar Power System in Woodworking Factories	Renewable Energy	2,396
Indonesia	FUMAKILLA LIMITED	Introduction of High-Efficiency Thermal Oil Heater System in Chemical Factory	Energy Efficiency Improvement	1,942
Mexico	Sharp Energy Solution Corporation	20MW Solar Power Project in Guanajuato	Renewable Energy	20,023
Thailand	Osaka Gas Co., Ltd.	Introduction of High Efficiency Once Through Boiler to Garment Factory	Energy Efficiency Improvement	2,665
Philippines	MITSUI & CO., LTD.	60MW Solar Power Project in Cordon, Isabela	Renewable Energy	44,860
Philippines	Mizuho-Toshiba Leasing Company Ltd.	Tanawon 20MW Flash Geothermal Power Plant Project	Renewable Energy	38,312

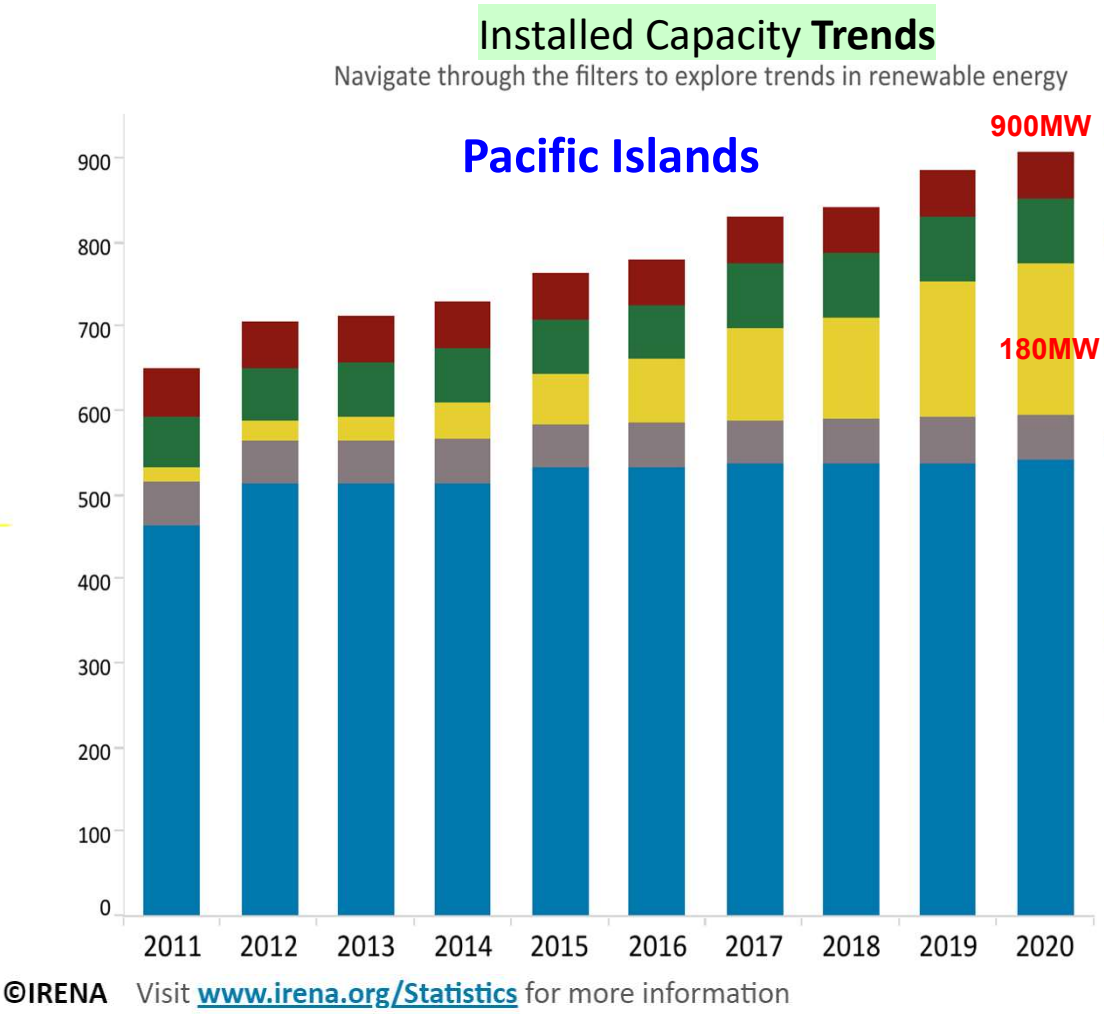
The results of the 2nd selection result will be announced at the end of September.

Financing Programme for JCM Model Projects

1. Overview and Recent trend of JCM Model Projects
2. **Projects examples can be applied to PALM partner countries**

Trends of Renewable Energy Projects

Global Environment Centre Foundation



Country/area
Pacific Islands
Excl. Australia, New Zealand
Technology
ALL Renewable Energy Projects

- Geothermal
- Bioenergy
- Solar
- Wind
- Hydropower (excl. Pumped Storage)

- ☐ PALM's strong political commitment
- ☐ Technology improvement and cost reduction (solar power generation and onshore wind power)
- ☐ Support for a wide range of partners

Renewable energy has become an affordable solution with limited funding and technical capabilities.

JCM can contribute to NDC in each country by utilizing various proven technologies.

Achievements of Renewable Energy Installed Capacity(MW) by 2020

Pacific Islands	Solar	Wind	Geothermal	Bioenergy	Hydro
Cook Islands	7	1			
Federated States of Micronesia	2	1			1
Fiji	10	10		43	140
French Polynesia	40	1			50
Kiribati	3				
Marshall Islands	2	1			
Nauru	2				
New Caledonia	80	37		3	80
Niue	1				
Palau	2				
Papua New Guinea	2		55	19	260
Samoa	14				
Solomon Islands	3	1		3	2
Tonga	6	6			
Tuvalu	2				
Vanuatu	5	4		3	2

※This number is for reference only and is an approximation.

New Candidate of JCM Model Projects for Pacific Islands

Global Environment Centre Foundation

Refer to the details of each projects in Appendix.

No.	Technology	Classification	NDC
A	Solar Power Generation	RE	Energy sector
-1	➢ on roof top		
-2	➢ with Batteries and EMS to provide a stable power supply		
-3	➢ with Blockchain Technology		
-4	➢ With farming-type solar power plant that combines agriculture		
B	Small scale of Wind Power Generation	RE	Energy sector
C	Micro & Mini Hydro Power Plant Project (Volcanic Islands)	RE	Energy sector
D	Small scale of Waste to Energy Plant	WtE	Energy sector
E	Introduction of CNG-Diesel Hybrid Public Bus	EE	Transport Sector
F	Produce and storage renewable hydrogen in a third country where renewable energy is abundant, and transport to supply and use	RE	Energy sector

Website/Publication

■ **GEC's Website on JCM**

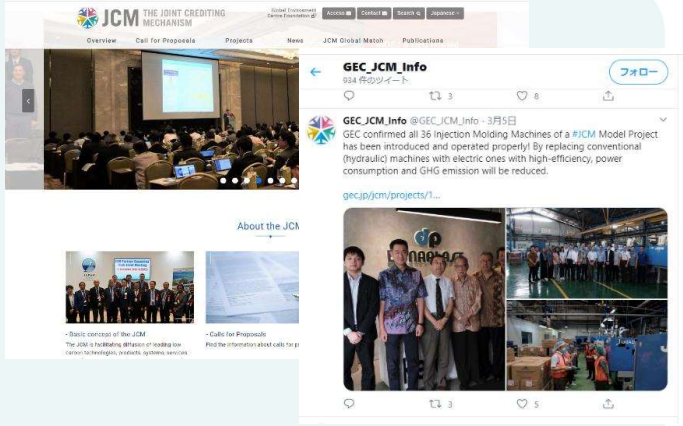
http://gec.jp/jcm/

■ **GEC's JCM Twitter**

https://twitter.com/GEC_JCM_Info

■ **JCM Booklet**

http://gec.jp/jcm/jp/publications/



■ **Contact:**

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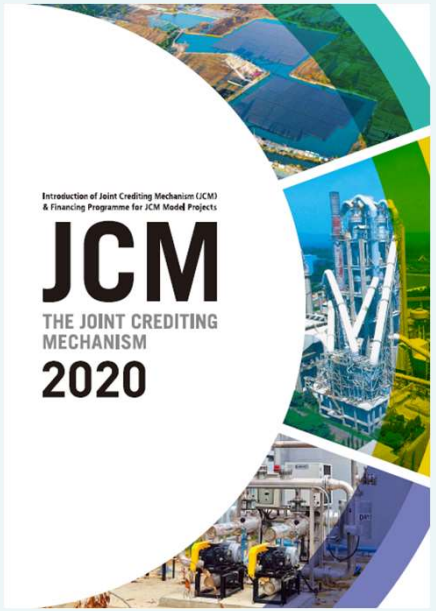
■ **Business matching site**

"JCM Global Match"

https://gec.force.com/JCMGlobalMatch/



JCM Global Match is an effective tool to connect entities who are interested in the JCM financing programme.

Seller -offers decarbonizing facilities

Buyer -acquires decarbonizing facilities

Consultant -familiar with JCM

Financier -supports remaining cost of …

Thank you very much！
ありがとうございました。

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GEC

Appendix

1. **Detail of Projects examples can be applied to PALM partner countries**
2. **JCM for SDGs**

A-1

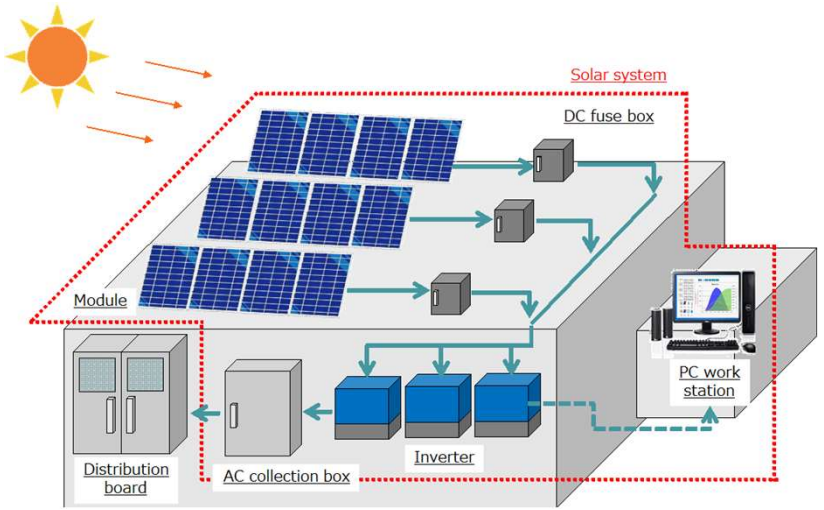
Palau/ Introduction of 1MW Solar Power System on Supermarket Rooftop

PP (Japan): Sharp Energy Solutions Corporation, PP (Palau): Surangel & Sons Company

Outline of GHG Mitigation Activity

1MW solar power system is installed on the rooftop of a new supermarket to be built in Airai State, Republic of Palau, for self-consumption purposes. This is the first introduction of a mega solar system in Palau.

This project contributes to the achievement of Palau's policy for a renewable energy ratio target of 45% in 2025.



Expected GHG Emission Reductions

843 tCO_2/year

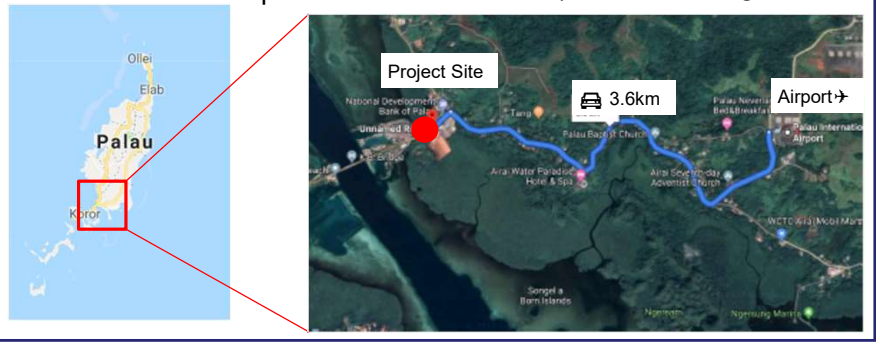
= (Reference CO_2 Emissions) [tCO_2/year]
- (Project CO_2 Emissions) [tCO_2/year]

= ((Reference Power Consumption) [MWh/year]
- 0 [MWh/year]) × Emission Factor [tCO_2/MWh]

Site of Project

Installation Site : Approx. 4km west of Palau International airport

Map Data ©2019Google



Development of an energy management system (EMS) to provide a stable supply of renewable energy

Representative Participant: Kyudenko Corporation

A-2

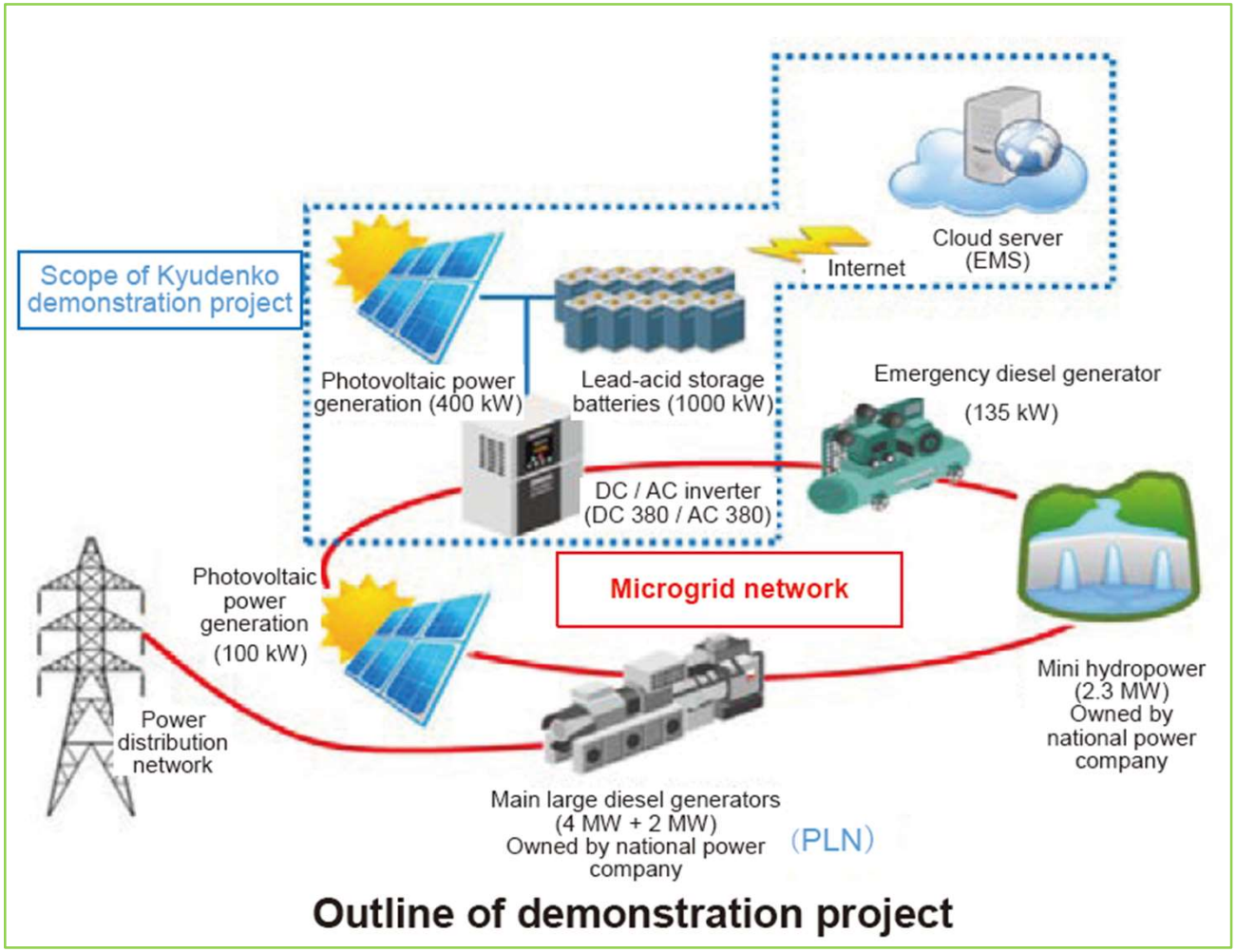
Outline of project

This project aims to;

- Reduce CO2 emissions by substituting renewable energy for existing diesel generators.
- Also, in collaboration with BPPT, to demonstrate EMS and storage batteries for stable power supply from various sources including renewable energy.

Region: Sumba Island

Map data ©2021 Google



Outline of demonstration project

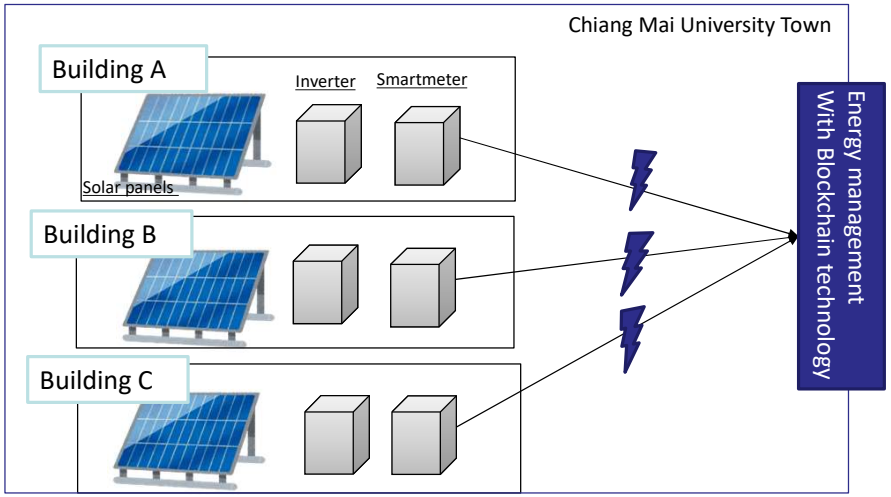
A-3

2.5MW Solar Power Project with Blockchain Technology in Chiang Mai University Town Community

PP (Japan): Inabata & Co.,Ltd , PP (Thailand): Thai Digital Energy Development Co.Ltd

Outline of GHG Mitigation Activity

This project introduces a 2.5 MW solar power generation system on the roofs of multiple buildings in Chiang Mai University, Thailand.
This project is operated by blockchain technology which realizes the expansion and maximum utilization of renewable energy on campus and reduces greenhouse gas (GHG) emissions by introducing renewable energy.

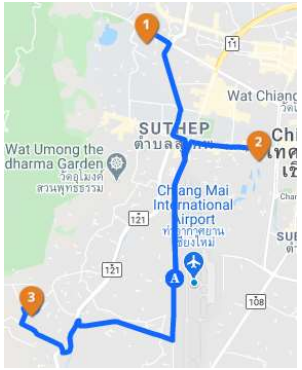


Expected GHG Emission Reductions

1,041 tCO_2/year

= [(Reference power consumptions)
– (Project power consumptions)]
x Emission factor (EF)

Sites of Project



Distance from Chiang Mai International airport

Zone 1:
7 km (NW)

Zone 2:
4 km (NE)

Zone 3:
5 km (SW)

Map data©2020 Google

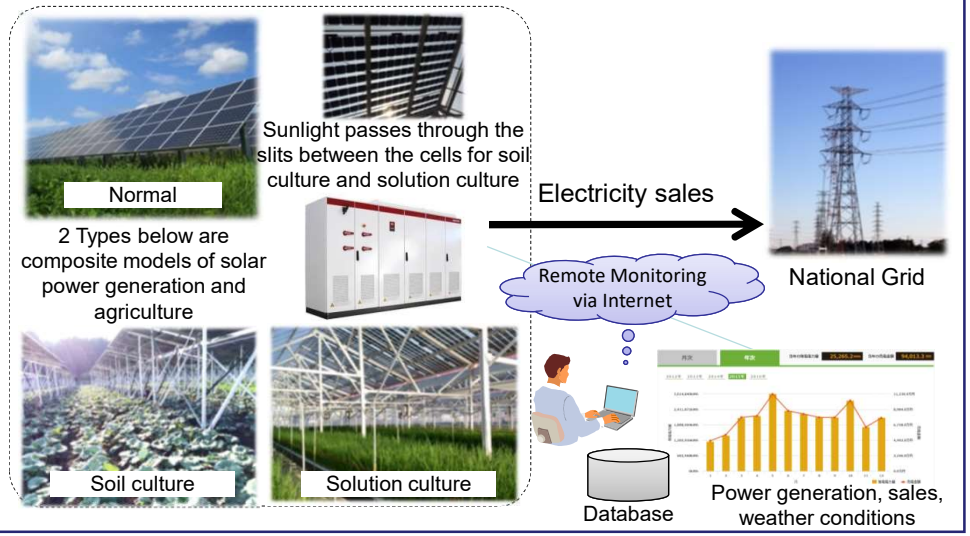
A-4

Installation of 2.1MW Solar Power Plant for Power Supply in Ulaanbaatar Suburb (Farming-type)

PP (Japan): Farmdo Co., Ltd. / PP (Mongolia): Everyday Farm LLC, Bridge LLC

Outline of GHG Mitigation Activity

The purpose of this project is to reduce CO_2 emission, mitigate air pollution and stabilize power supply in Mongolia by installing 2.1MW scale solar power plants in the suburbs of Ulaanbaatar. This power plants can replace some part of power generation by coal-fired thermal power. Moreover, lots of achievements in daily life, mitigating air pollution, resolving power shortage, food supplying, etc., can be expected by synergy of agricultural and solar power generation technology.



Expected GHG Emission Reductions

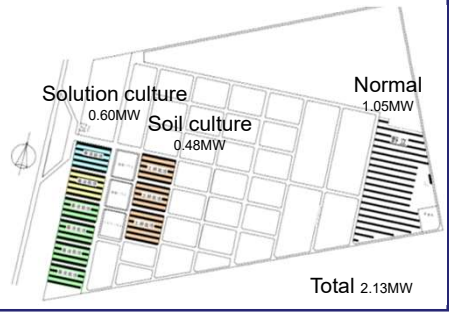
2,424 tCO_2/year

＝Project Electricity Generation(EG)
x Emission Factor (EF)
＝Power Generation Capacity[kW]
x Annual Operating Rate[%]
x 24hours x 365days x EF

Site of JCM Model Project

Monnaran Farm (24ha), District of Songinokhairkhan

Project site situated in the farm Everyday Farm owns is located 37km northwest of Ulaanbaatar city center.



B

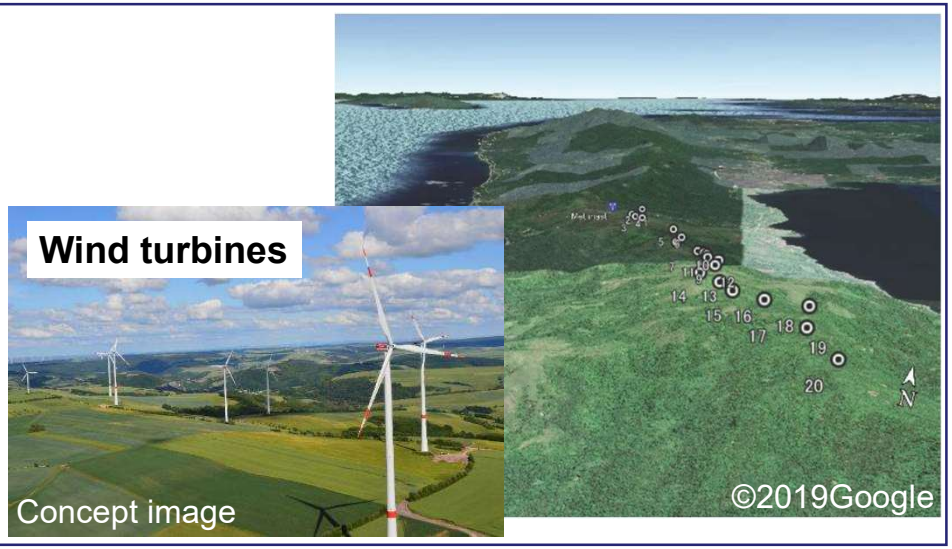
33MW Wind Power Project in Caraga Region, Mindanao

PP (Japan): CHODAI Co., Ltd, Shizen Energy Inc.
PP (Philippines): Equi-Parco Construction Company, Equi-Parco Holdings Corporation, Caraga Wind Energy Corporation

Outline of GHG Mitigation Activity

This project installs wind power generation facilities with a capacity of 33 MW (4.2 MW wind turbine x 8 towers) in Agusan del Norte, Caraga Region, Mindanao.

Generated power is sold to power grid and reduces greenhouse gas (GHG) emissions by replacing grid electricity. Stable supply of wind power from these facilities also helps to develop sustainable economy in Mindanao.



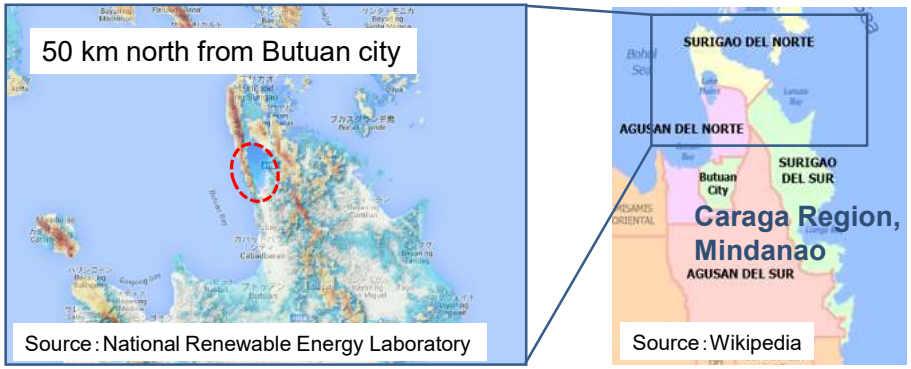
Expected GHG Emission Reductions

35,350 tCO_2/year

= (Reference CO_2 emissions) [tCO_2/year]
- (Project CO_2 Emission) [tCO_2/year]

= ((Reference Power consumption) [MWh/year]
- 0 [MWh/year])) × Emission Factor [tCO_2/MWh]

Sites of Project

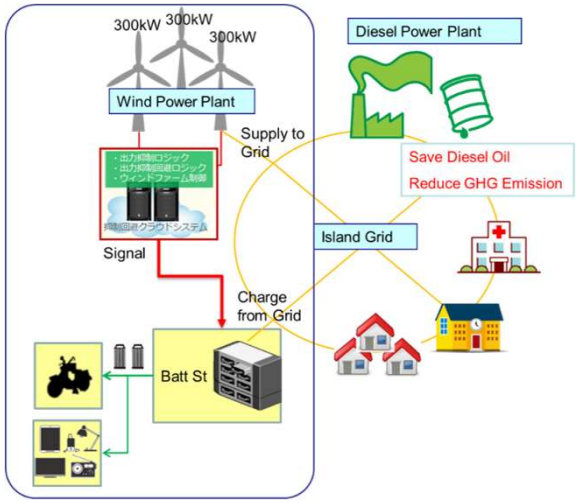


Small scale of Wind Power Generation (Not JCM project but possible)

B

KOMAIHALTEC's 300kW Wind Turbine

- Blade Length：16m
- Nacelle
  - weighs under 18t
- Tower Height：41.5m
  （4 blocks: each weighs under 10t）
- Rated Capacity: 300kW
- Survival wind speed:
- 91.26m/s for Typhoon Model
- Cut-in wind speed: 3m/s
- Cut-out wind speed: 25m/s



A 300kW medium-scale wind power generator suitable for islands and a battery charging station, and the control system will utilize the surplus electricity of the wind turbine to charge the battery. Furthermore, by using the charged battery for EV motorcycles, a further CO2 reduction effect will be created.

Referred to Komaihaltec and Honda project on Financing Program to Demonstrate Decarbonization Technology for Realizing Co-Innovation

PROGRESSIVE ENERGY's 245kW Wind Turbine

Tiltable Wind-Generated Electricity System

The tiltable system enables us to perform maintenance on the ground and largely reduce maintenance cost and stop time for windmills. In addition, we can protect windmills from typhoons by fixing them to the ground.

5 units installed in the Kingdom of Tonga in 2019 realized with PALM7

Groundbreaking ceremony

5 Launch scenery

Referred to Progressive Energy Co.

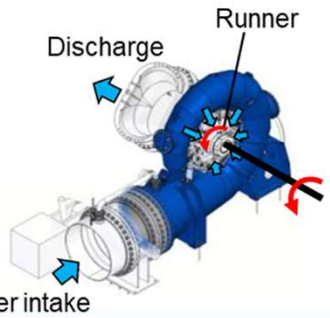
C

2MW Mini Hydro Power Plant Project in East Nusa Tenggara Province

PP (Japan): Aura Green Energy Co., Ltd., Tamagawa Holdings Co., Ltd.
PP (Indonesia): PT. GISTEC PRIMA ENERGINDO

Outline of GHG Mitigation Activity

This project constructs 2MW small hydro power plant in the Wae Lega river (basin area: 20km^2) of Flores island in East Nusa Tenggara Province. The electricity generated by the plant is supplied to PLN, resulting in greenhouse gas (GHG) emissions reductions by replacing grid electricity. Electrification rate in East Nusa Tenggara is only 61.9%, which is the lowest in the country. Therefore, this project is expected to contribute to improving the electrification rate in the region.



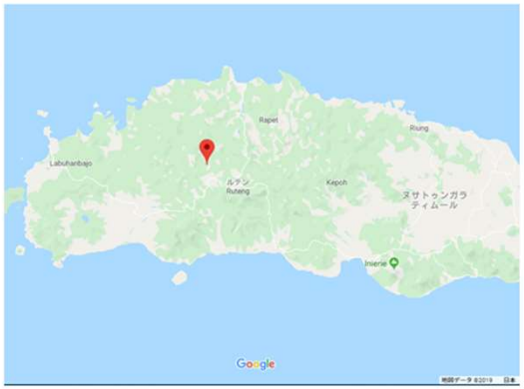
Expected GHG Emission Reductions

6,839 tCO_2/year

Reference Emissions
= [Estimated annual energy generation]
x [Emission factor of grid electricity]
=6,839tCO_2/year

Project Emissions=0

Sites of Project



About 13 km northwest from Ruteng, East Nusa Tenggara Province

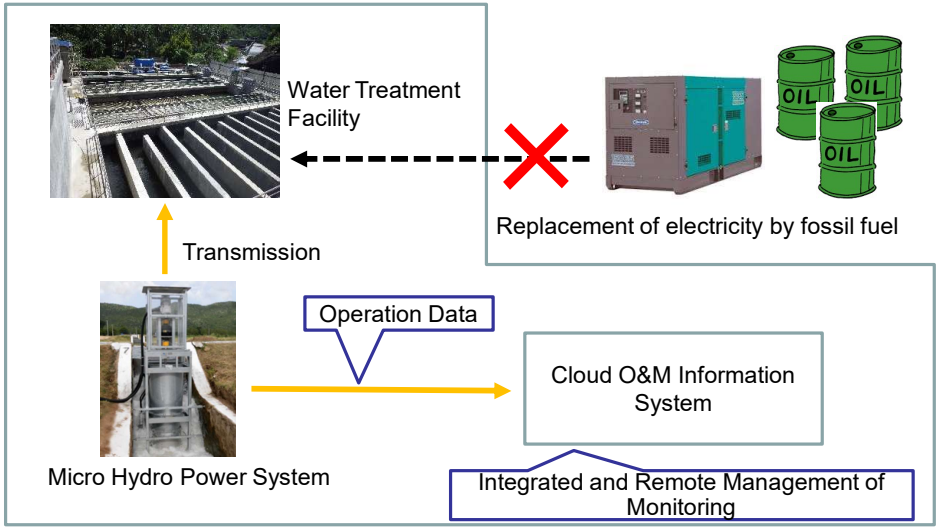
C

0.16MW Micro Hydro Power System in Taguibo Water Supply Facility, Mindanao

PP (Japan): CHODAI Co., Ltd, PP (Philippines): Equi-Parco Construction Company, Taguibo Aquatech Solutions Corporation

Outline of GHG Mitigation Activity

This project aims to be reduced CO2 emissions by Installation of the Micro hydroelectric power System (0.16MW) which will be installed on the Water Intake Dam in the city of Butuan, northern Mindanao Island.
It is expected to contribute to CO2 emissions reduction by replacing grid electricity with renewable energy. The stable power supply by the project will also contribute to the realization of sustainable water supply.



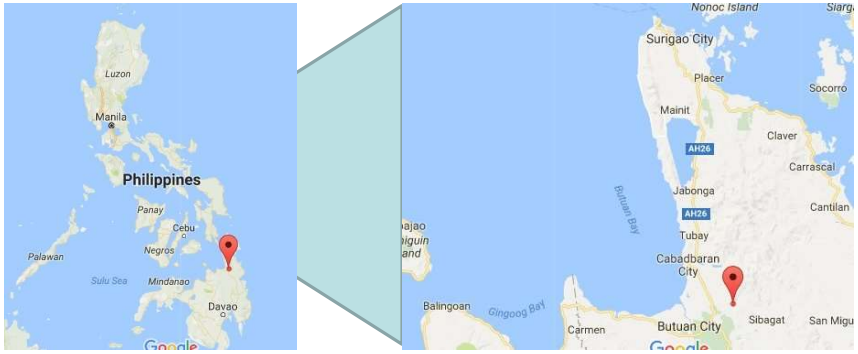
Expected GHG Emission Reductions

488 tCO_2/year

= (Reference CO_2 emissions) [tCO_2/year]
- (Project CO_2 Emission) [tCO_2/year]

= ((Reference Power consumption) [MWh/year]
- 0 [MWh/year])) × Emission Factor [tCO_2/MWh]

Sites of Project



Map data©2018Google Map data©2018Google

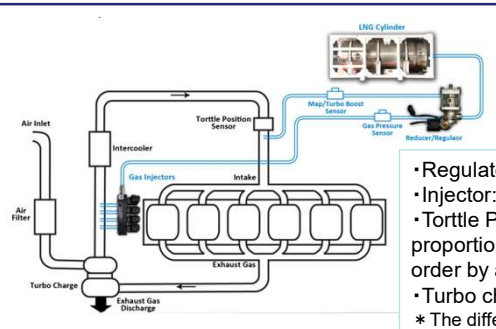
D

Introduction of CNG-Diesel Hybrid Equipment to Public Bus in Semarang

PP from Japan: Hokusan Co.,Ltd. / PP from Indonesia: BLU UPTD Trans Semarang

Outline of GHG Mitigation Activity

Toyama City has concluded a cooperation agreement between Semarang City to realize low carbon society under inter-city cooperation. Based on the cooperation agreement, this project aims to reduce GHG emissions through fuel switch from diesel to CNG. In the project, 72 diesel bases owned by Trans Semarang, including 25 large-sized buses and 47 mid-sized buses, are retrofitted from diesel engine to hybrid engine with CNG system available. These buses are considered more cost-effective through fuel switching.



・Regulator: To reduce the pressure of gas
・Injector: To provide the gas to the engine
・Torttle Position Sensor: To adjust the proportion of air and gas according to the order by acceleration pedal
・Turbo charge: To provide air more
＊The different between Map and Turbo Boost Sensor: It depends on the place to equip

Expected GHG emission reduction

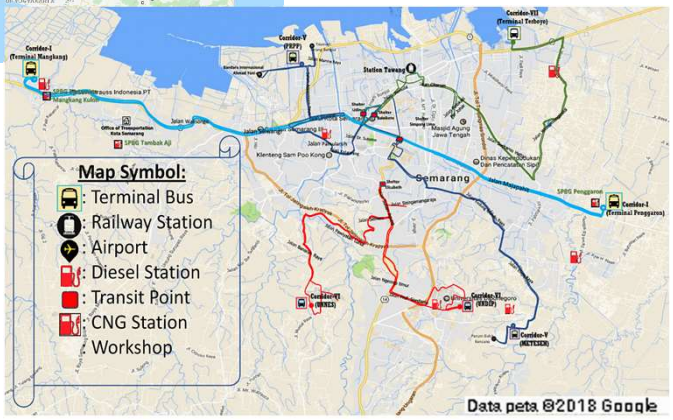
2,667 tCO_2/year

← Reference GHG emission – Project GHG emission
= Reference fuel consumption x Fuel-based emission factor - Project fuel consumption x Fuel-based emission factor

Reference fuel consumption
= Diesel fuel consumption based for bus operation x emission factor of Diesel fuel
Project fuel consumption
= CNG fuel consumption for bus operation x emission factor of CNG + Diesel fuel consumption for bus operation x emission factor of Diesel fuel

Sites of Project

Semarang City



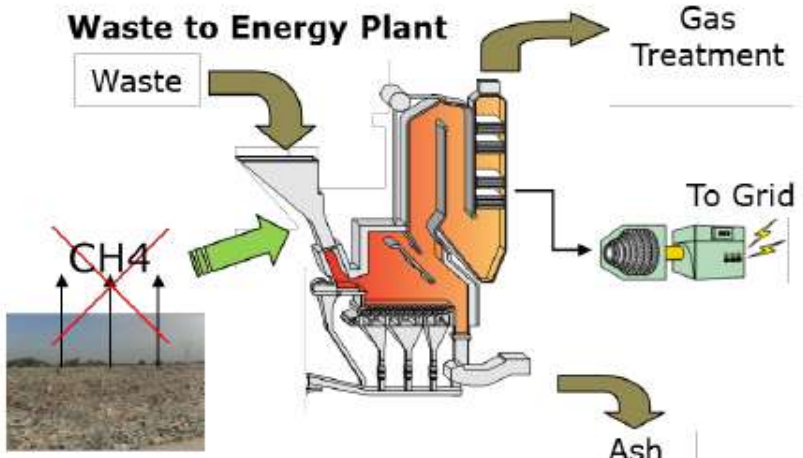
E

Introduction of Waste to Energy Plant in Yangon City

PP(Japan): JFE Engineering Corporation / PP(Myanmar): Yangon City Development Committee

Outline of GHG Mitigation Activity

The objective of this project is to build and operate a waste-to-energy plant that (1) generates electricity, some of which will be supplied to a power company, resulting in reduction of fossil fuel consumption at the power plant, (2) mitigates electricity shortage, (3) reduces CH_4 emissions from landfill disposal, and (4) improvement of waste management in Yangon City.
This is a pilot project conducted by Yangon City for promotion of waste-to-energy, with relatively small capacity (60t of waste per day).



Landfill site

Expected GHG Emission Reductions

4,125tCO2/year

*Average of emission reductions from 2017 to 2030

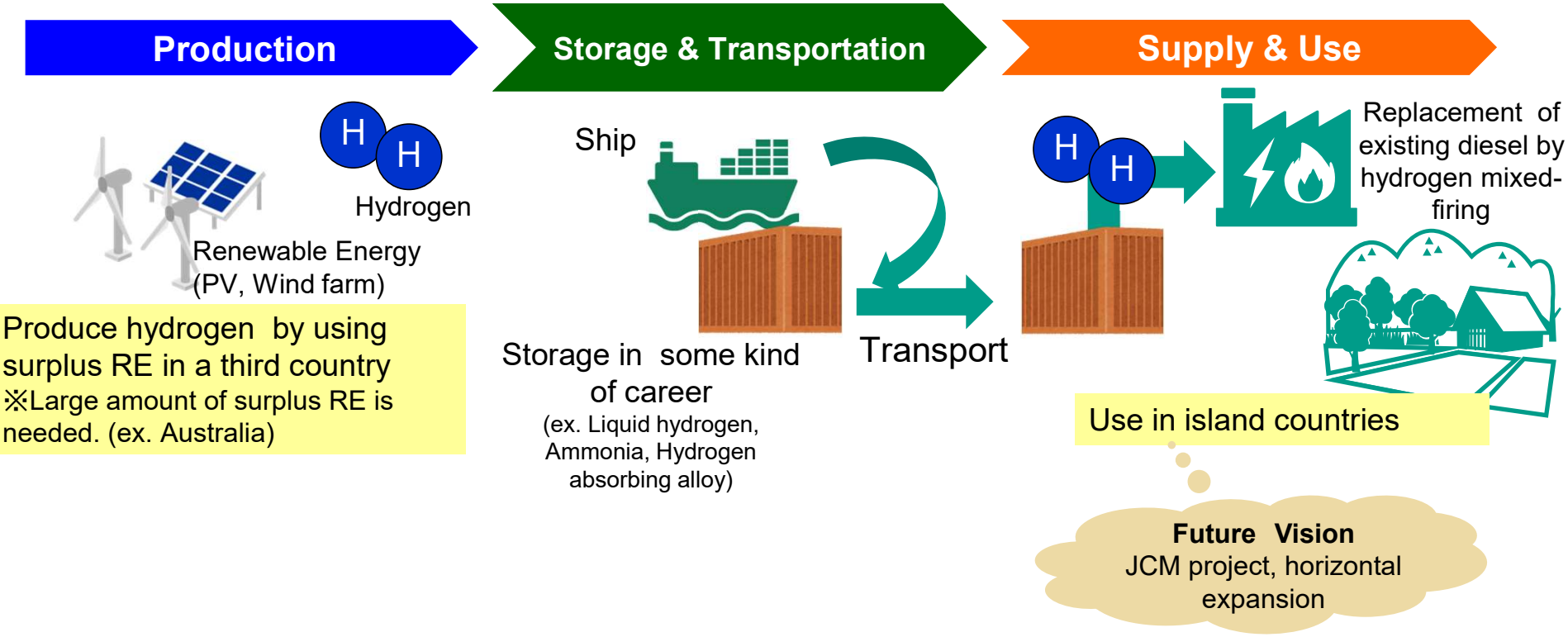
Sites of JCM Model Project

Near Hlawga Lake, 35km north from central area of Yangon City

Pilot Project for Comprehensive Support throughout the Whole Hydrogen Supply Chain Abroad

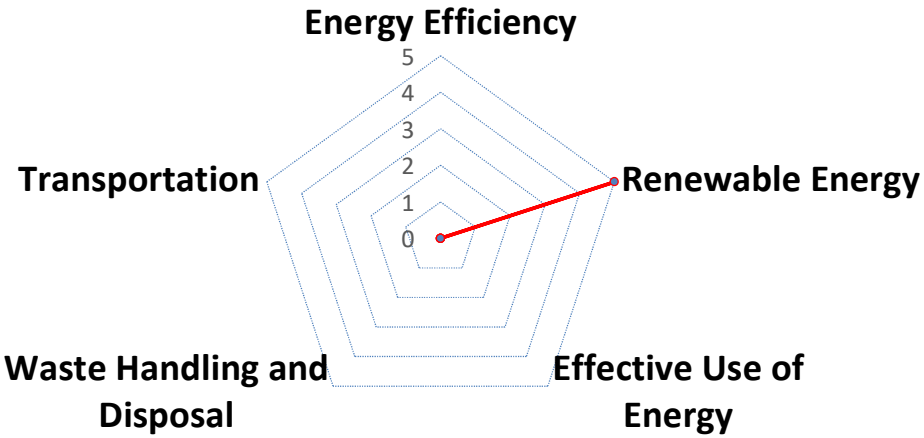
F

- **Produce and storage renewable hydrogen in a third country where renewable energy is abundant, and transport to supply and use in island countries.**
- **Cultivate demand market by supplying renewable hydrogen to island countries, which will lead to JCM projects and help developing countries transition to a decarbonized society.**



JCM Model Projects in Republic of Palau

Global Environment Centre Foundation



Year	Representative Entity	Project Title	Sector	Expected GHG Emission Reductions (tCO_2/y)
2013	Pacific Consultants Co., Ltd.	Small Scale Solar Power Plants for Commercial Facilities in Island States	Renewable Energy	259
2014	Pacific Consultants Co., Ltd.	Small-Scale Solar Power Plants for Commercial Facilities Project II	Renewable Energy	320
2014	Pacific Consultants Co., Ltd.	Solar Power System for Schools Project	Renewable Energy	111
2018	Sharp Energy Solutions Corporation	Introduction of 0.4MW Rooftop Solar Power System in Supermarket	Renewable Energy	284
2019	Sharp Energy Solutions Corporation	Introduction of 1MW Solar Power System on Supermarket Rooftop	Renewable Energy	843

Possible Contribution of Renewable Energy Projects to SDGs

GHG emission reduction can be implemented though renewable energy generation by replacing electric power derived from fossil fuel combustion

- Photovoltaic Generation
- Hydraulic Power Generation
- Wind Power Generation
- Geothermal Generation
- Biomass・Biogas Generation

<Graph Legends>

- Goal to which Renewable Energy Project can contribute
- Common Goal to which JCM Projects can contribute

※The listed goals are no more than recommended examples with high potential to contribute through implementing JCM project. These goals are not limited nor mandatory to contribute.

Planning	Implementation	Operation	Decommission

Consider gender equal access to various benefits from the project such as compensation of land acquisition.

- ・Ensure women's participation such as public hearing (5.5)
- ・Equal rights to ownership and compensation of land acquisition (5.a)

- Equal rights to basic services (1.4)
- ・Increase share of renewable energy (7.2)

- ・Reduce air pollution(11.6)

Reducing consumption of electricity derived from fossil fuel, improve the sustainability of the installed facility such as factory, hotel and hospital.

- ・Increase resource-use efficiency and greater adoption of clean and environmentally sound technologies (9.4)
- ・Sustainable management and efficient use of natural resources (12.2)
- ・Environmentally sound management of all wastes throughout their life cycle (12.4)
- ・Reduce waste generation through prevention, reduction, recycling and reuse (12.5)

Reduce air and water pollution, noise and vibration by implementing proper disposal and recycling.

- ・Sustainable management of all types of forests (15.2)

Prevent adverse effects on forestation and biodiversity conducting proper environment assessment according to the laws and regulations in the partner country.

- ・Reduce inequality by procurement with fare price (10.3)
- ・Publish sustainability reports (12.6)
- ・Education and training for relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship (4.4)
- ・Increase employment of women to managerial and technical positions (5.5) and gender sensitive work environment (Guideline on Gender Equality for JCM)
- ・Full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value. (8.5)
- ・Adopt supply chain without child labor, exploitation, conflict and corruption. (5.2、8.8、16.2、16.5)
- ・Take urgent action to combat climate change and its impacts. (13)
- ・Promote the development, transfer, dissemination and diffusion of environmentally sound technologies (17.7)
- ・Enhance the global partnership for sustainable development. (17.16)

Eligible Projects

What kind of projects are supported by this financing programme?

- Reduce energy-related CO2 emissions with leading low carbon or decarbonizing technologies in partner countries.
- Contribution to sustainable development and the realization of SDGs in partner countries, and in line with gender guidelines.
- Reduction of GHG emissions achieved by the projects can be quantitatively calculated and verified.
- Facilities installed by the projects do not receive any other subsidy by the Government of Japan.

Guideline for Submitting JCM model project proposal