Philippine Energy Sector Opportunities:

Everything, Everywhere, All at Once

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Who We Are

Developer, Investor and Operator – Facilitators of Energy Transition





Project Initiation, Development
Financing & Compliance

RE/Hybrid Power Generation & Micro Grids
Feed-in-RE in Island Grids Replacing Diesel Power

Planning, Design, Engineering, Procurement,
Construction, Operations Management

Rooftop, Ground-mounted and Floating Solar PV,
Small Wind Power Systems, Battery Storage Systems,
Micro Power Grids, Billing and Payment Systems





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Energy Transition towards Zero-Carbon

4D Transition



Decarbonisation **Decentralisation** **Digitalisation** **Deregulation**

source:
https://medium.com/@d33p/the-4ds-transforming-the-energy-market-1fb61fba385e

Sustainable and Smart Solutions

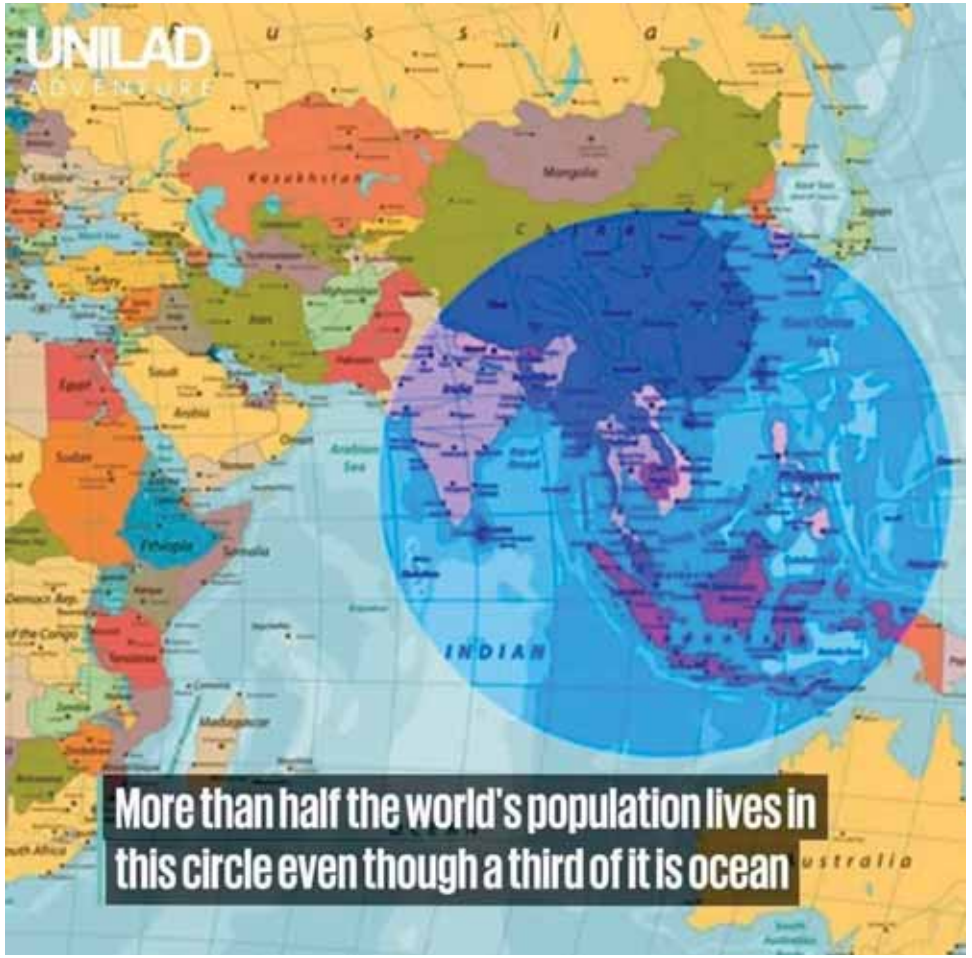
Renewable Cities, Communities and Campuses

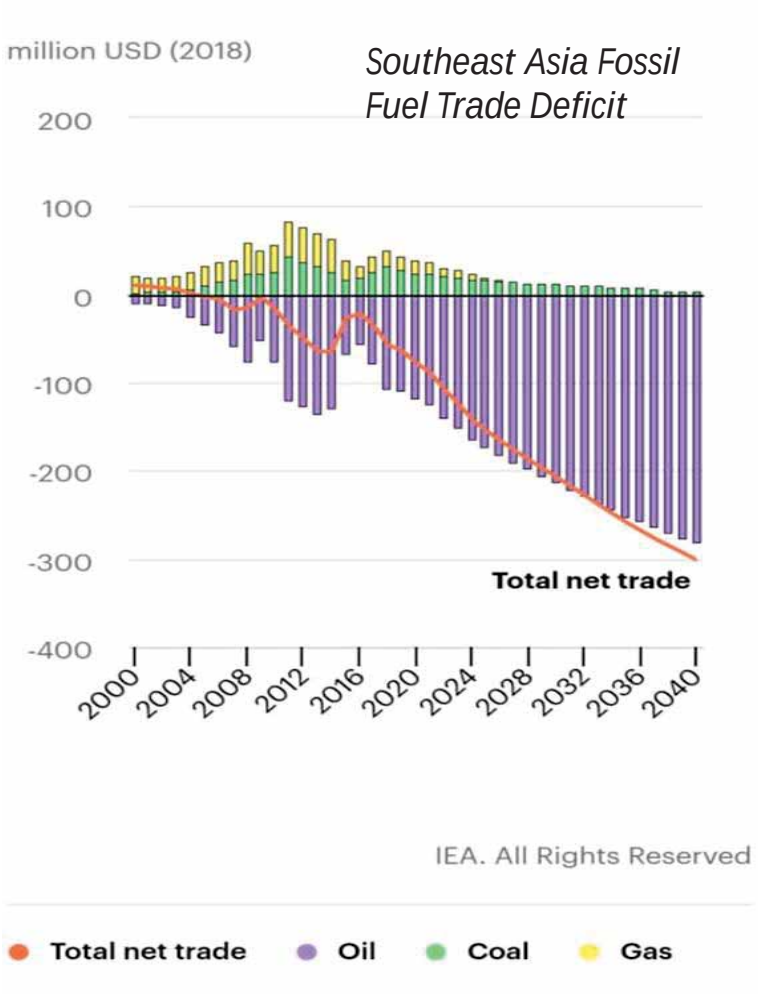


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Asia is Where it's at

Regional Energy Appetite Exceeds Supply





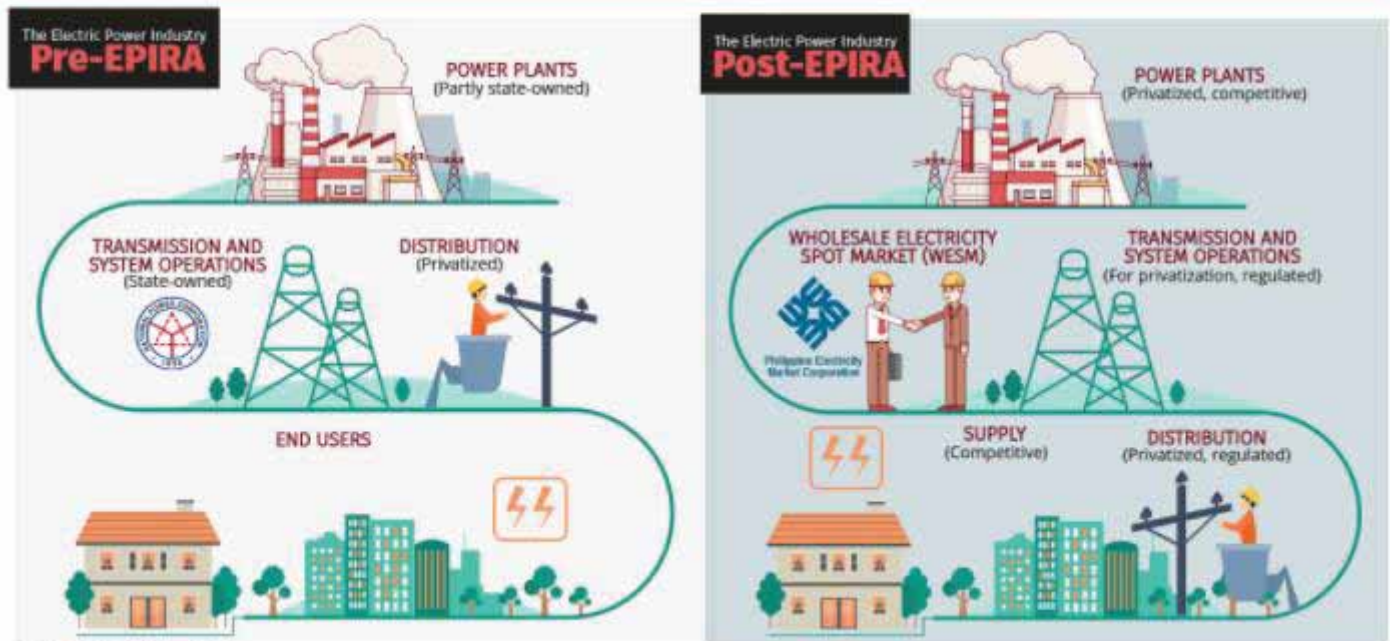
Southeast Asia Fossil Fuel Trade Deficit

Enabling Laws

- Electric Power Industry Reform Act (2001)
- RE Law (2008)
- Ease of Doing Business Act (2018)
- Energy Virtual One Stop Shop (EVOSS) Act (2019)
- Microgrid Systems Act (2022)

Major Restructuring Under EPIRA

The **EPIRA Law** (Republic Act 9136) restructured the country's power sector by removing monopolies in the power industry and fostering competition in the generation and retail supply subsectors. Transmission and distribution, however, remained partly regulated to ensure stable supply of electricity for the entire country.



SOURCE OF DATA: Tan (2010)

A. Renewable Energy Target and Goals

The NREP, 2020-2040 aims to revert the share of RE to at least 35% of the power generation mix by 2030, similar to the 2008 level when the RE Act was promulgated. With key policies and programs already in place, the government aspires to further increase this target to at least 50% by 2040 in line with the following goals:

NREP, 2020-2040
sets a target of at least
35% RE share
in the power generation mix **by 2030** and aspires to **increase it to at least 50% by 2040.**



Figure 8. Overarching RE Goals

RA 11646: Microgrid Systems Act

The Recently Passed Law to Achieve 100% Household Electrification

The Act strengthening the **development of microgrid systems** in unserved and underserved areas in the Philippines.

- Caters to the remaining unserved **1.27 Million** Filipino Households
- Replaces the Qualified Third Party Program of the Government
- Prioritizes low-cost, indigenous, renewable and environment-friendly sources of energy





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REPUBLIC ACT NO. 11032

Ease of Doing Business Act of 2018

REPUBLIC ACT NO. 11234

Energy Virtual One-Stop Shop (EVOSS) Act
Department Circular No. DC2019-05-0007
EVOSS Implementing Rules and Regulations



RE: A Growing Pipeline

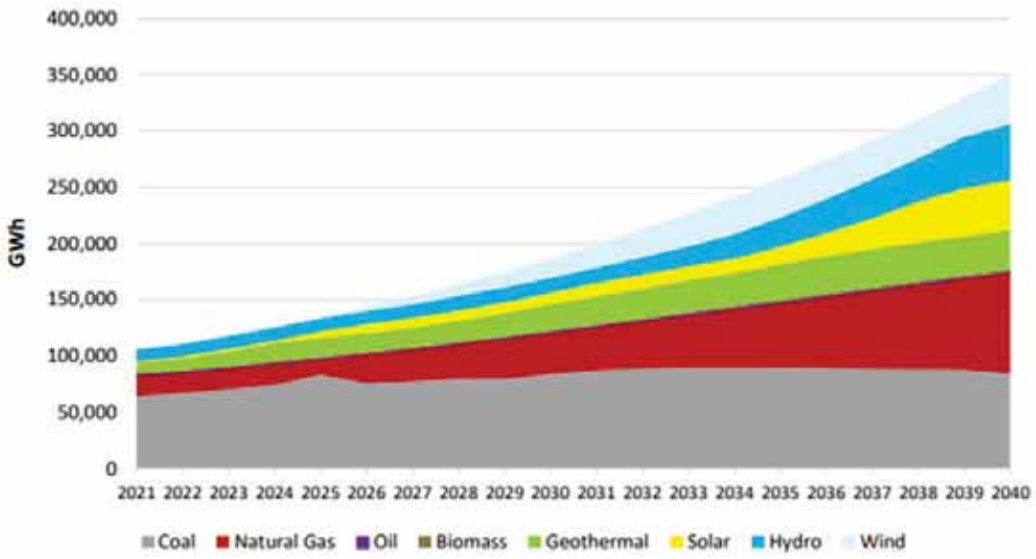


Figure 10. Philippines' Power Generation Mix, 2021-2040, in GWh

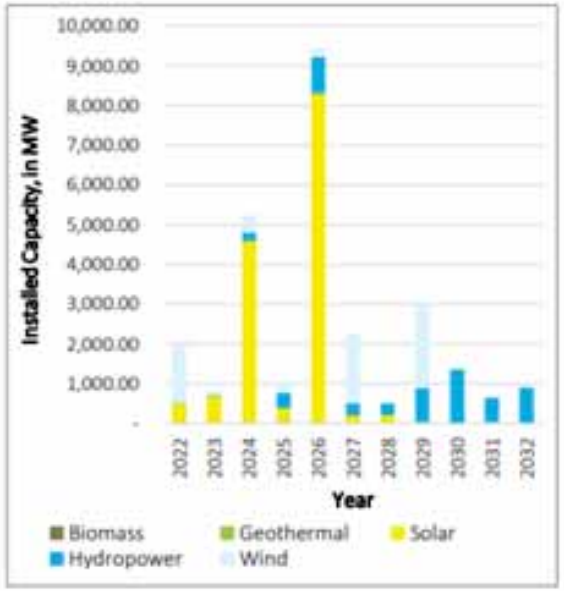


Figure 12. Indicative RE Power Projects as of 31 December 2021, in MW

As of 2022: RE Generation allows 100% foreign ownership

Source: DOE

Renewable Portfolio Standards: The Battleground

Table 7. RPS Requirement and Compliance of DUs, as of July 2020

Philippines	GWh								
	2018	2019	2020	2021	2022	2023	2024	2025	2029
RPS Requirement	0	0	2,624	3,402	4,389	6,407	8,616	11,024	22,578
RPS Compliance	2,723	5,870	9,383	10,052	9,918	8,794	6,238	5,008	4,536
REC Shortfall	0	0	0	0	0	440	3,885	7,252	18,319

Using adjusted K_m of 2.52% starting 2023

1 REC = 1 MWh

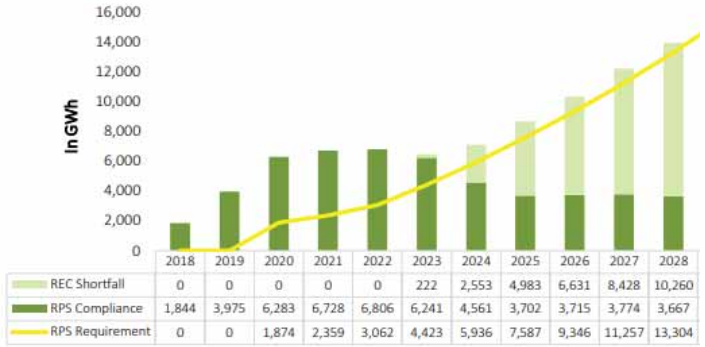


Figure 15. RPS Requirement and Compliance of Luzon DUs, as of July 2020



Figure 16. RPS Requirement and Compliance of Visayas DUs, as of July 2020



Figure 17. RPS Requirement and Compliance of Mindanao DUs, as of July 2020

Source: DOE



Figure 18. CREZ Solar Resource Map



Figure 19. CREZ Wind Resource Map

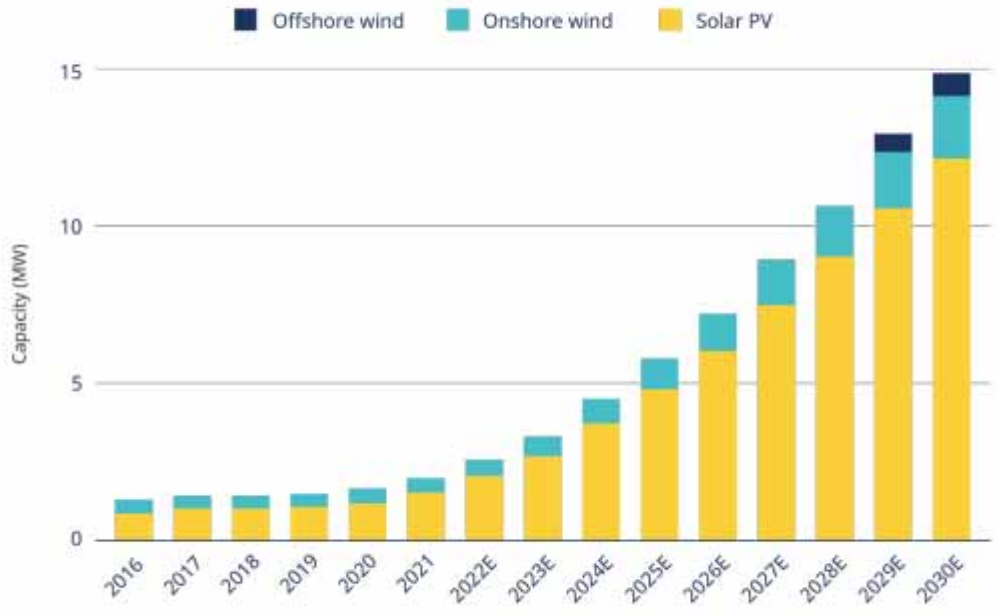
Solar and Wind to Lead the Way

The Philippines could become Southeast Asia's next big renewables market

Forecasts point to strong growth.

While the country does not receive the same attention as the likes of Vietnam, it has the potential to be the region's next rising star. Along with its immense solar potential and Southeast Asia's most thriving battery market, the Philippines could also be one of the region's largest offshore wind markets, and it is already attracting would-be developers to its shores. Solar and wind capacity is expected to surge to 15 GW in 2030 from 1.9 GW in 2021, forecasts BloombergNEF. The right policies could, therefore, dramatically reduce the country's emissions, all while attracting significant foreign investment and reducing its import bill.

Figure 2: Solar and wind forecast capacity additions in the Philippines



Source: BloombergNEF

Opportunities: Luzon

Figure 1. Supply-Demand Profile of Luzon DUs

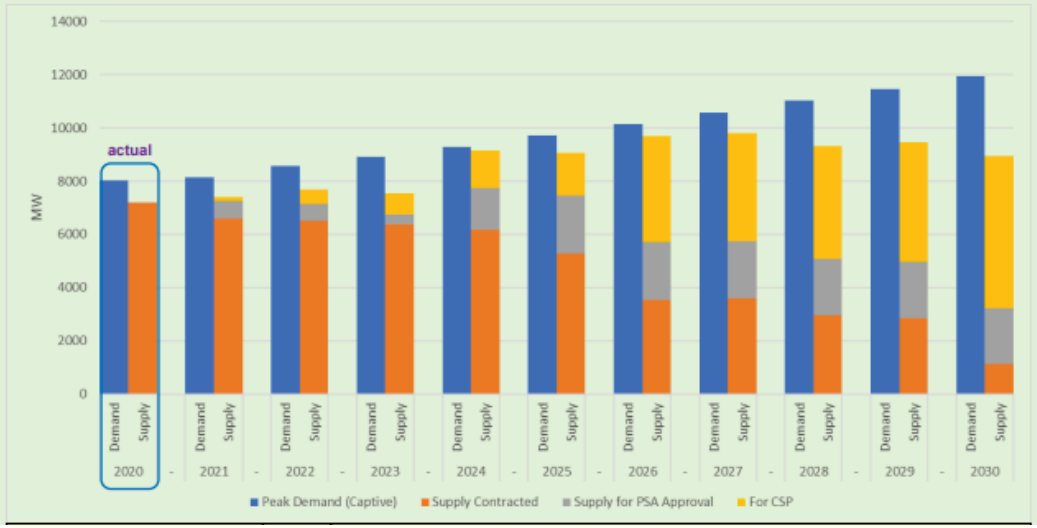
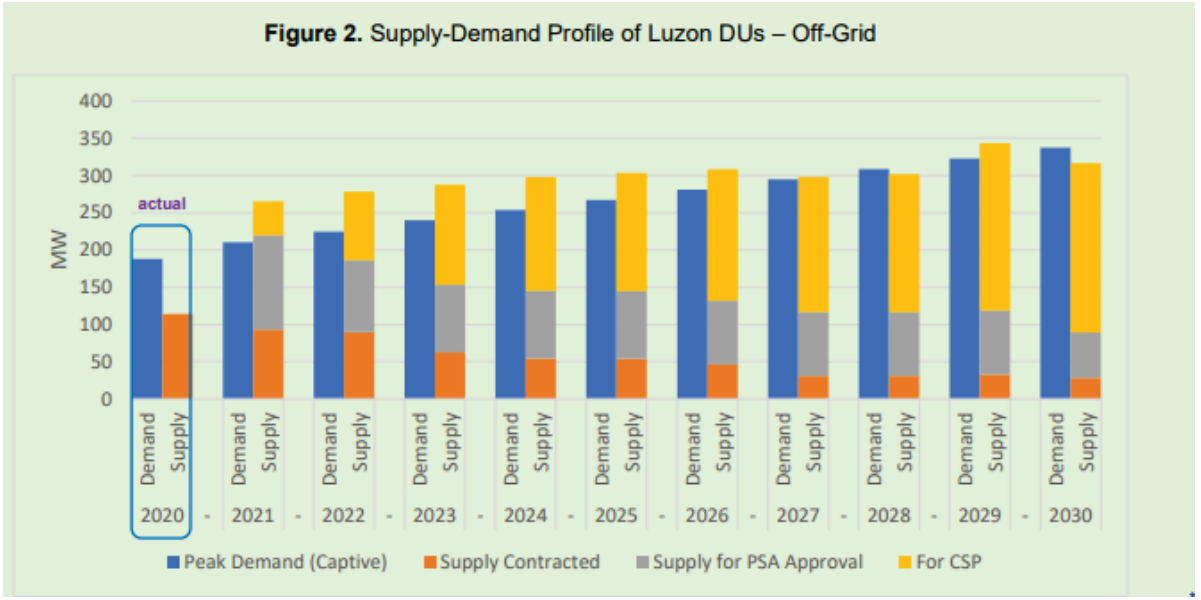


Figure 2. Supply-Demand Profile of Luzon DUs – Off-Grid



Source: DOE

Opportunities: Visayas

Figure 86. Supply-Demand Profile of Visayas DUs

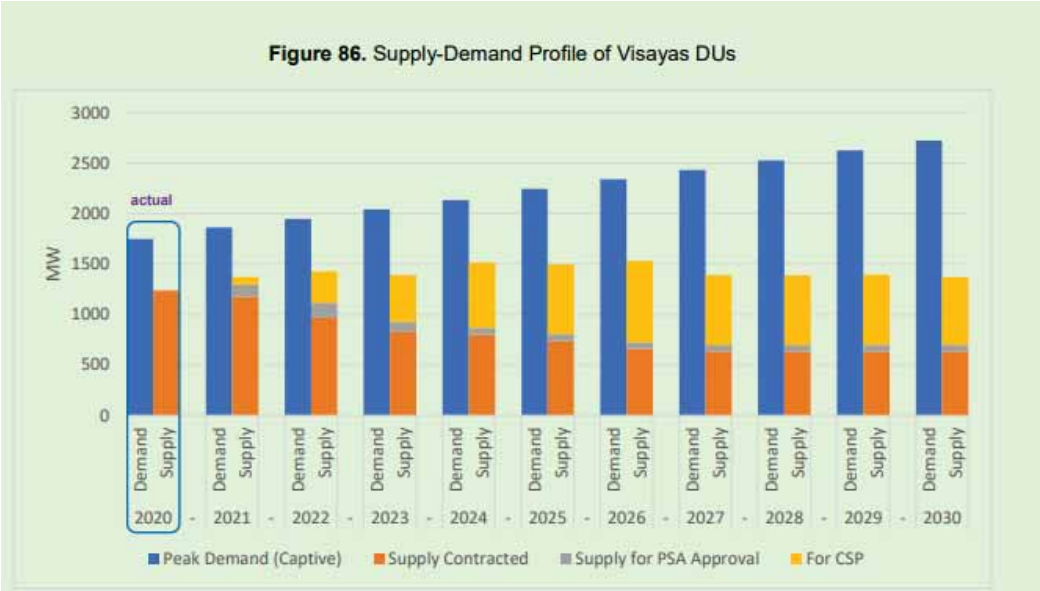
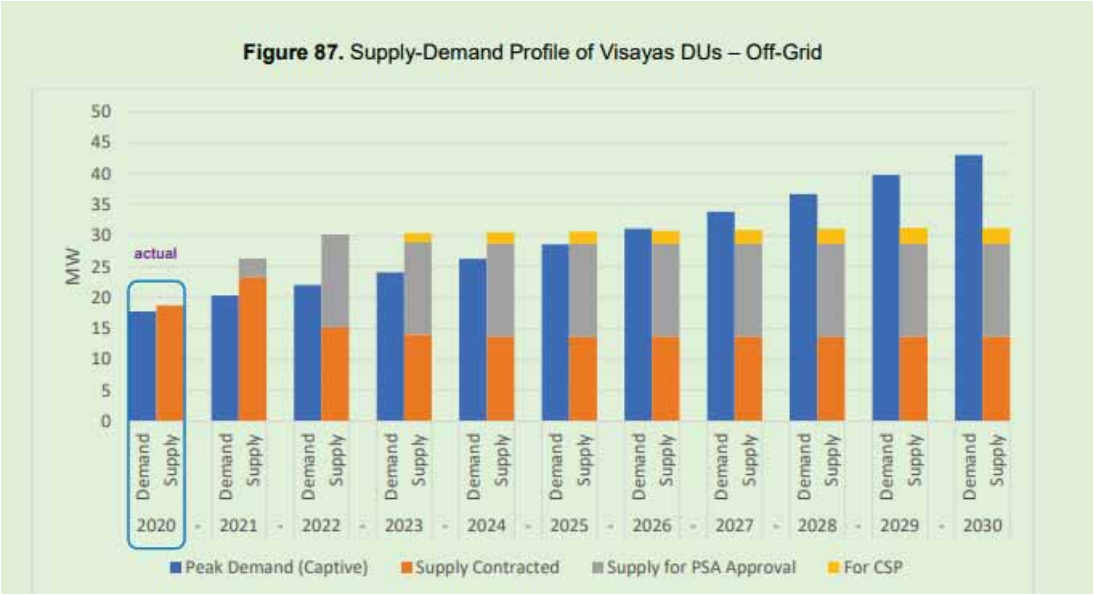
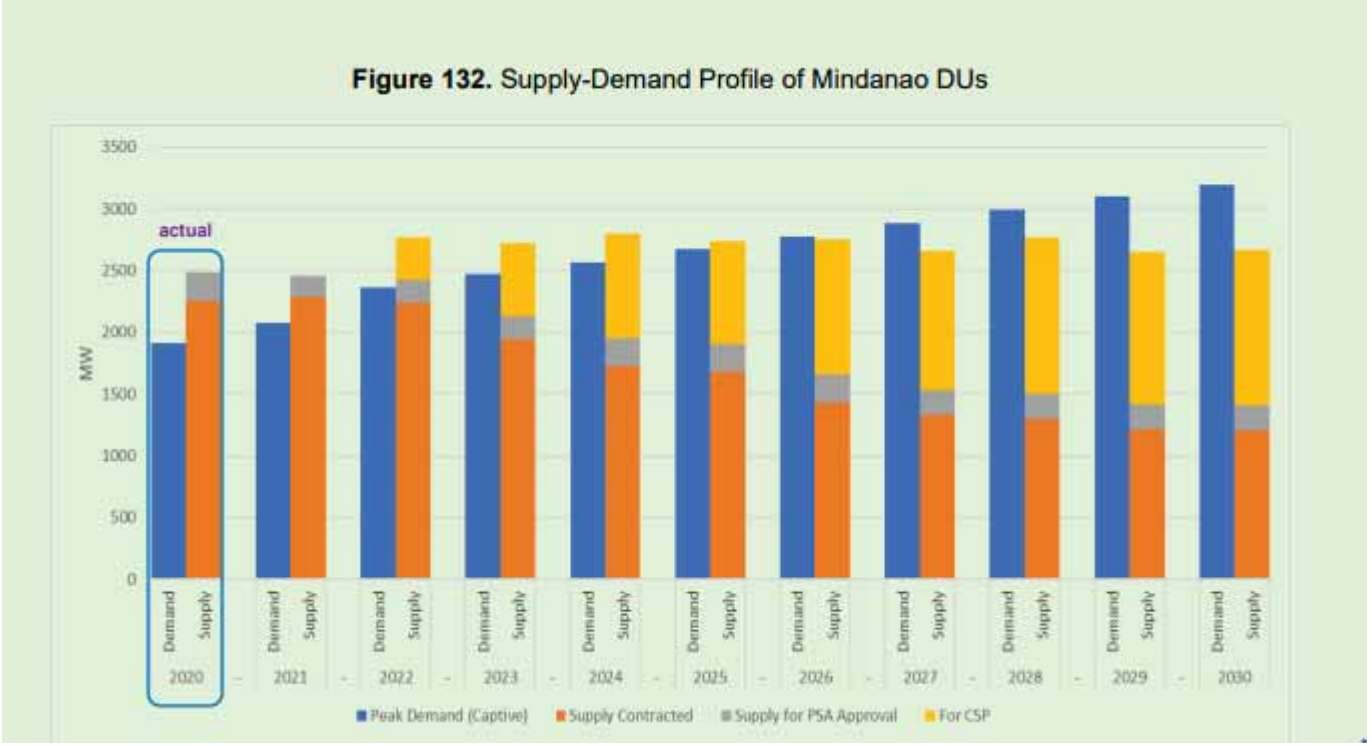


Figure 87. Supply-Demand Profile of Visayas DUs – Off-Grid



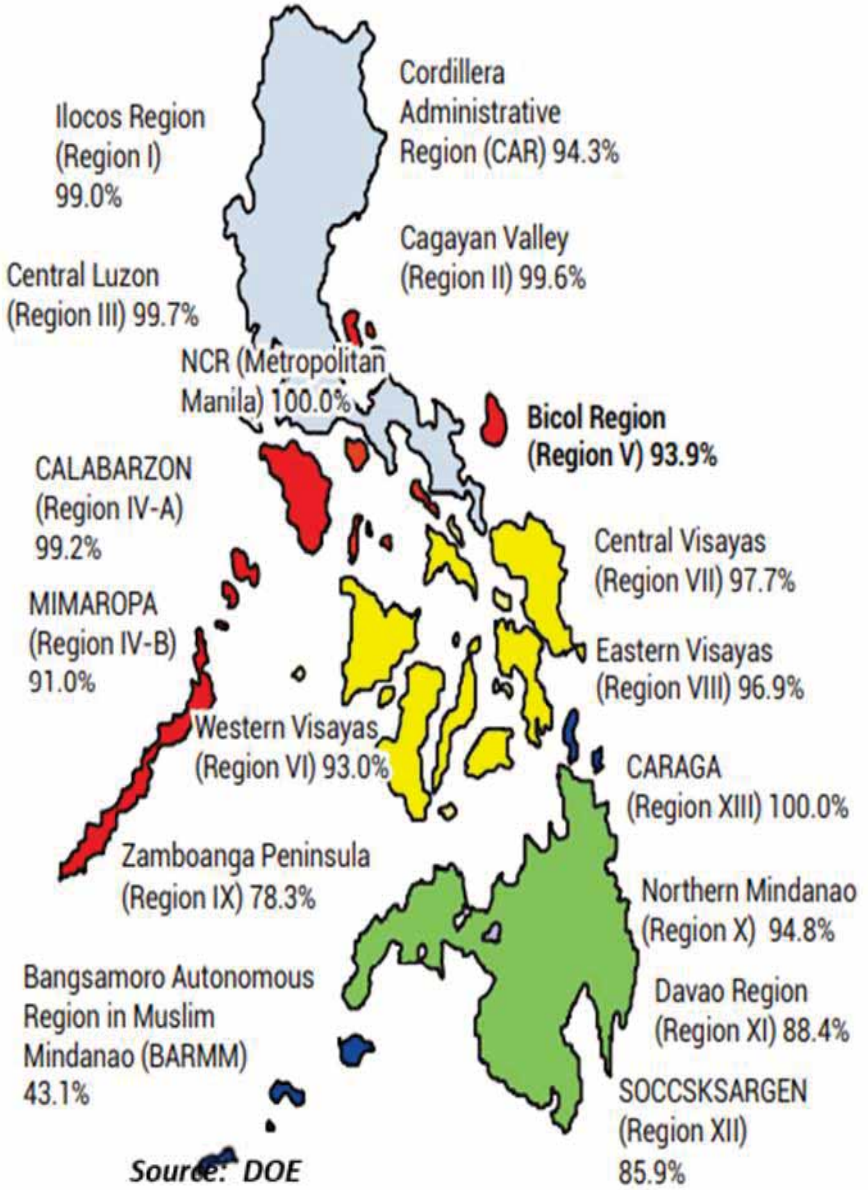
Source: DOE

Opportunities: Mindanao



Source: DOE

Regional Household Electrification Level*





The Solution: Hybrid Microgrids With Smart Grids

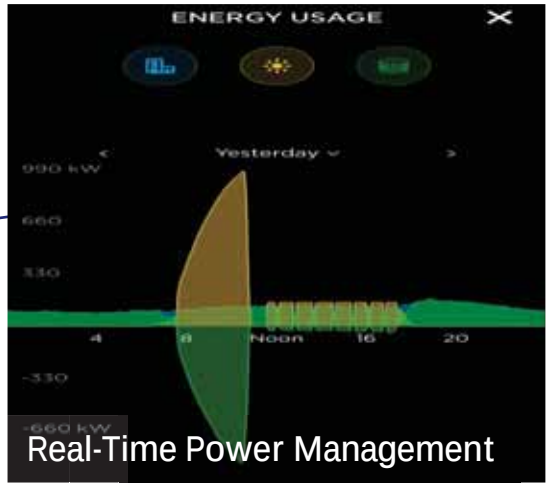
Sabang, Palawan Island, The Philippines

Build, Own, and Operate a hybrid microgrid comprising 1.4 MWp solar PV, 2.4 MWh Li-ion battery storage, and 1.2 MW diesel backup with 14 km of transmission grid. Total project cost USD 9.5M – 30% equity from shareholders, 70% debt finance by the Development Bank of Philippines (DBP)



Li-ion Battery for high solar PV share





Real-Time Power Management



Diesel Generators for 24/7 power


5,400 Solar Panels
18 Inverters

MICRO-GRID POWERED BY RE/DIESEL OR FULL RE

Decentralized, Replicable, Quick Power to Local Economy

Solar PV Plant



Diesel Plant



Power Generation

Control System



Battery



Power Management

Grid



Consumers

Power Distribution

Power Distribution Grid And Metering System

Remote Controlled Features













Sabang Renewable Energy Corporation

Microgrids for Palawan Island

Investing in rural electrification and empowering local communities









WEnergy Global through its subsidiary, Archipelago Renewables Corporation signed a Qualified Third Party Service contract with PALECO on 1st September 2022 to advance rural electrification in Palawan. We will invest USD 18.5 million to energize over 7,100 households and empower 30,000 residents and at least 300 small businesses through 16 microgrids, spread over 14 barangays in 7 municipalities. We will install a total of 3,800 kWp of solar PV, 4,200 kWh of battery storage and 2,000 kW of diesel backup with 175 km of transmission and distribution grid. Online monitoring of the power plants and wireless payments through smart meters will make this a digital smart grid. The entire project is expected to be completed in mid 2023.

New Microgrids Under the RA 11646 or the Microgrids Systems Act

8 Additional MGSPs under the MGSP Act



Photo Grabbed from the Department of Energy Philippines

- **2+6 additional off-grid microgrids** awarded the Maharlika Consortium in 2024
- MGSPs to be developed in Cebu, Quezon, and Palawan with an Operational period of 15-20 years

New Hybrid Powered Smart Micro Grids
in Cebu, Quezon, and Palawan

8 Microgrids	**2.8 MW** Solar PV	**1.4 MW** Diesel	**3.4 MWh** Battery
4,400 Households	**22,000** Residents	**200+** Local SME	

Sabang Renewable Energy Corporation

UNSERVED AND UNDERSERVED AREAS FOR 3RD ROUND OF MGSP-CS



DISTRIBUTION UTILITY	NUMBER OF LOTS	NUMBER OF AREAS	NUMBER OF HOUSEHOLDS
Unserved Areas			
CANORECO	4	15	1,038
NOCECO	10	42	2,589
PALECO	17	17	4,760
QUEZELCO II	1	1	295
Underserved Areas			
MASELCO	4	4	1,334
NPC/SAMELCO I	1	2	234
NPC/ZAMCELCO	3	3	1,751
PALECO	1	1	393
Grand Total	**41**	**85**	**12,394**

To reach the 100% total electrification, the DOE offers initial 85 unserved and underserved areas to interested and qualified bidders.

Summary of Findings

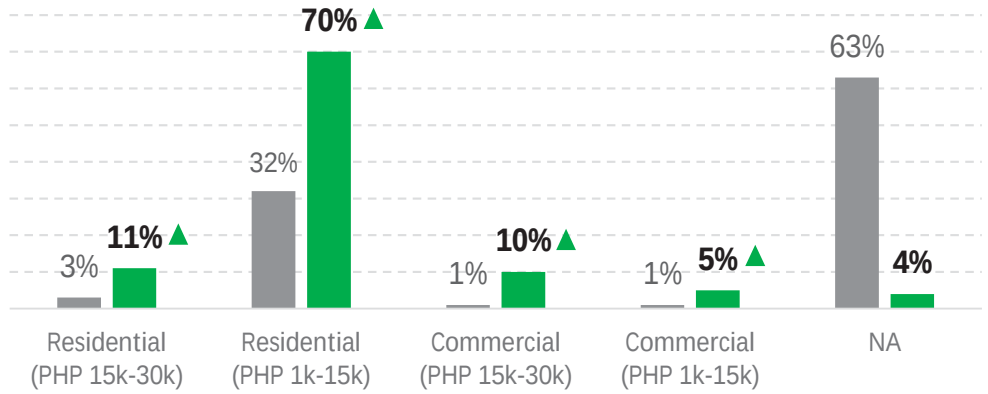
Before SREC
After SREC

Electricity Usage

Before SREC **0-8 hours**
Of daily electricity use

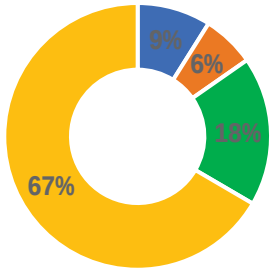
After SREC **8-24 hours**
Of daily electricity use

Income Growth

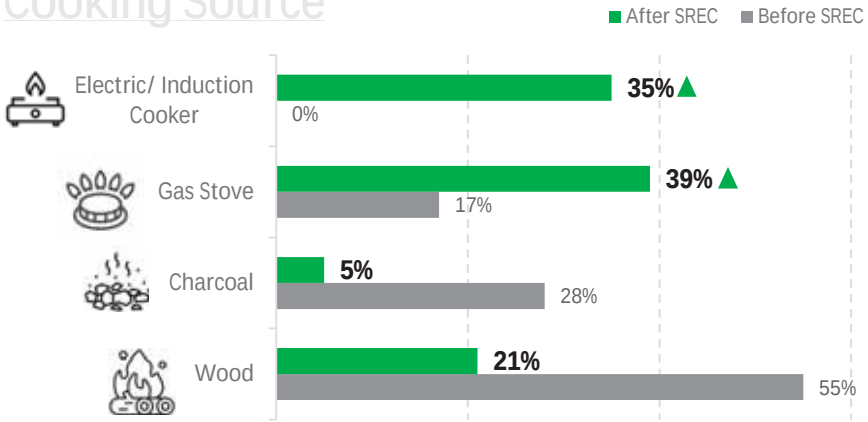


Social Impact (After SREC)

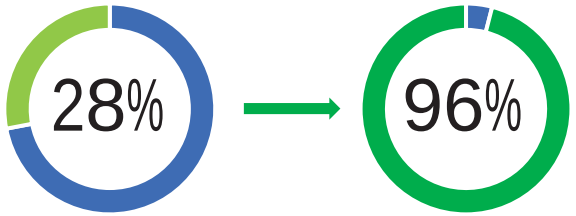
- Increase of Income and decrease in Bry. Crime Rate
- Bring new business opportunities
- Helps the whole community (esp. schools and students)
- All of the above



Cooking Source



Internet Penetration



% of population with access to internet

Digital Literacy

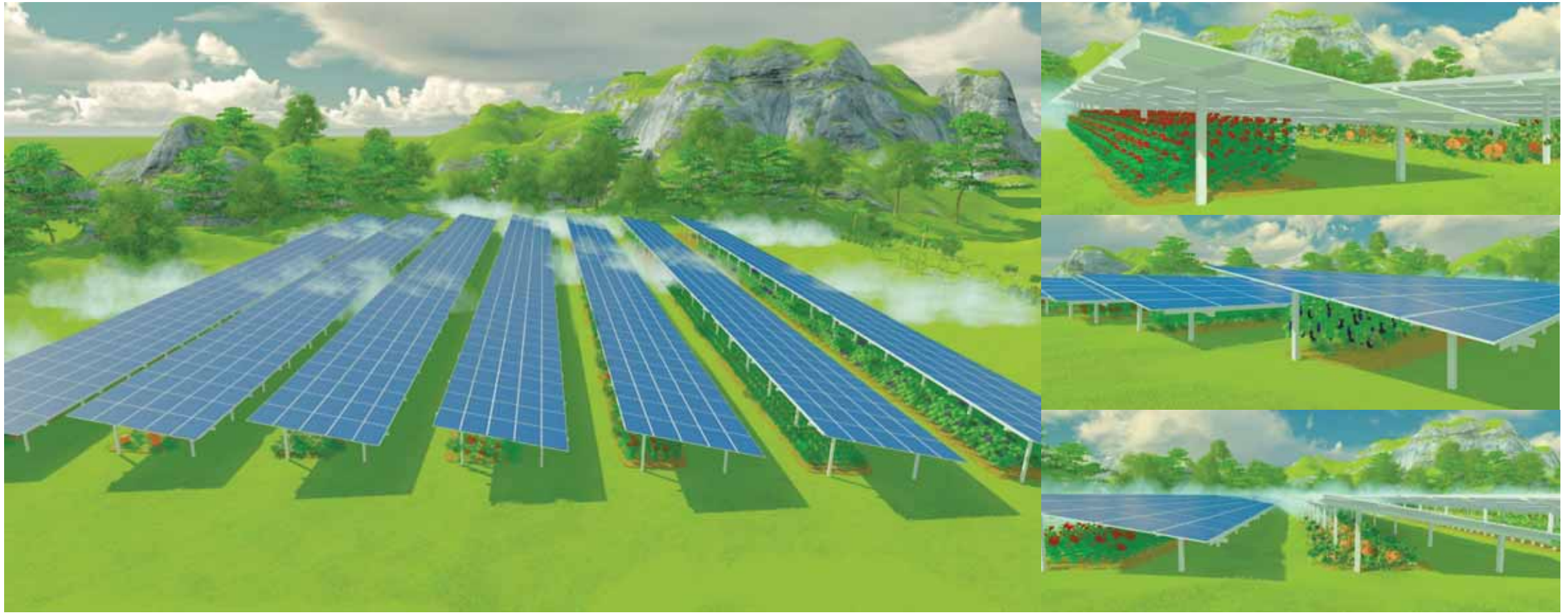
When asked for preferred way of paying for their electricity bill:

Physical Payment	85%
Mobile Payment	14%
Online Banking	1%

Sabang Renewable Energy Corporation

Agriculture and Energy Go Together!

Converting existing non- productive land to produce clean electricity and food



Our Operating Environment and Partnerships

Set Up for Excellence in Renewable Energy Solutions and Power Grids

Affiliated Companies

- Sabang Renewable Energy Corporation
- WEnergy Power Pilipinas Inc
- Indonesia Sakti Sahwahita

Technology Partners

- WEnergy Global Powering Change
- TEPCO Power Grid
- Tuck at Dartmouth
- TU Delft – Delft University of Technology

Investment Partners

- CleanGrid Partners
- Maharlika Clean Power Holdings Corporation
- WEnergy Global Powering Change

Banking / Financing

- DBP
- RCBC
- UOB
- BDO
- Silta
- bettervest – nachhaltig · effizient · rentabel

Legal / Management

- PJS Law – Puyat Jacinto & Santos
- P&A Grant Thornton
- Infinitus Corporation
- Umbra Strategic Legal Solutions
- YOG Infra
- ICMG

Branding & Marketing

- Ogilvy
- innoboost



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