



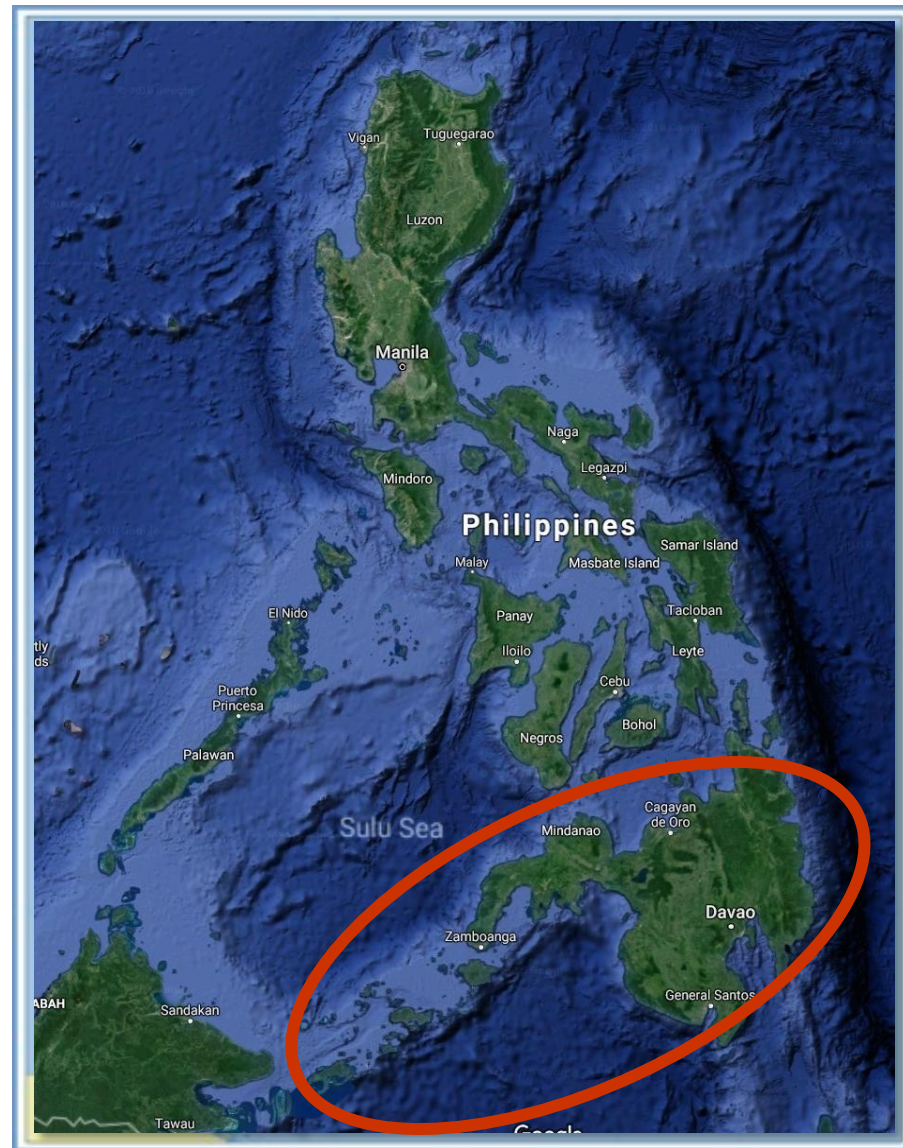
Enabling Blue Energy Development in the Philippines: Some Initiatives in Mindanao

Asia Clean Energy Forum 2023
An Ocean of Energy Deep Dive Workshop
June 16, 2023 ADB, Manila

Presented by
Asec. Romeo M. Montenegro
MinDA Deputy Executive Director

The Philippine Context

- Total coastline of **37,008 km**—longer than the coastlines of China (14,500 km), United States (19,924 km), and Japan (29,751 km).
- Total coastal population of the country is estimated at **60 million or 55 percent** of its total population, covering more than half of the municipalities and cities.
- Based on primary and available secondary data, the marine ecosystems (excluding the continental shelf) can contribute a conservative monetary value of **US\$ 966.6 billion** to the economy. (Azanza 2017)



Focus on Mindanao

THE TOP 5 REGIONS

IN FISHERIES PRODUCTION

January to March 2022 period (1st Quarter)

3 **CENTRAL
LUZON**
97,440.19 MT

4 **WESTERN
VISAYAS**
73,772.01 MT

1

BARMM
327,621.61 MT

2

**ZAMBOANGA
PENINSULA**
121,472.53 MT

5

SOCCKSARGEN
67,178.25 MT



Mindanao *in the world!*

#World's **Top 3** Banana Exporter

#World's **Top 3** Seaweeds Exporter

#World's **Top 4** Pineapple Exporter

#World's **Top 7** Rubber Producer

#World's **Top 8** Tuna Producer

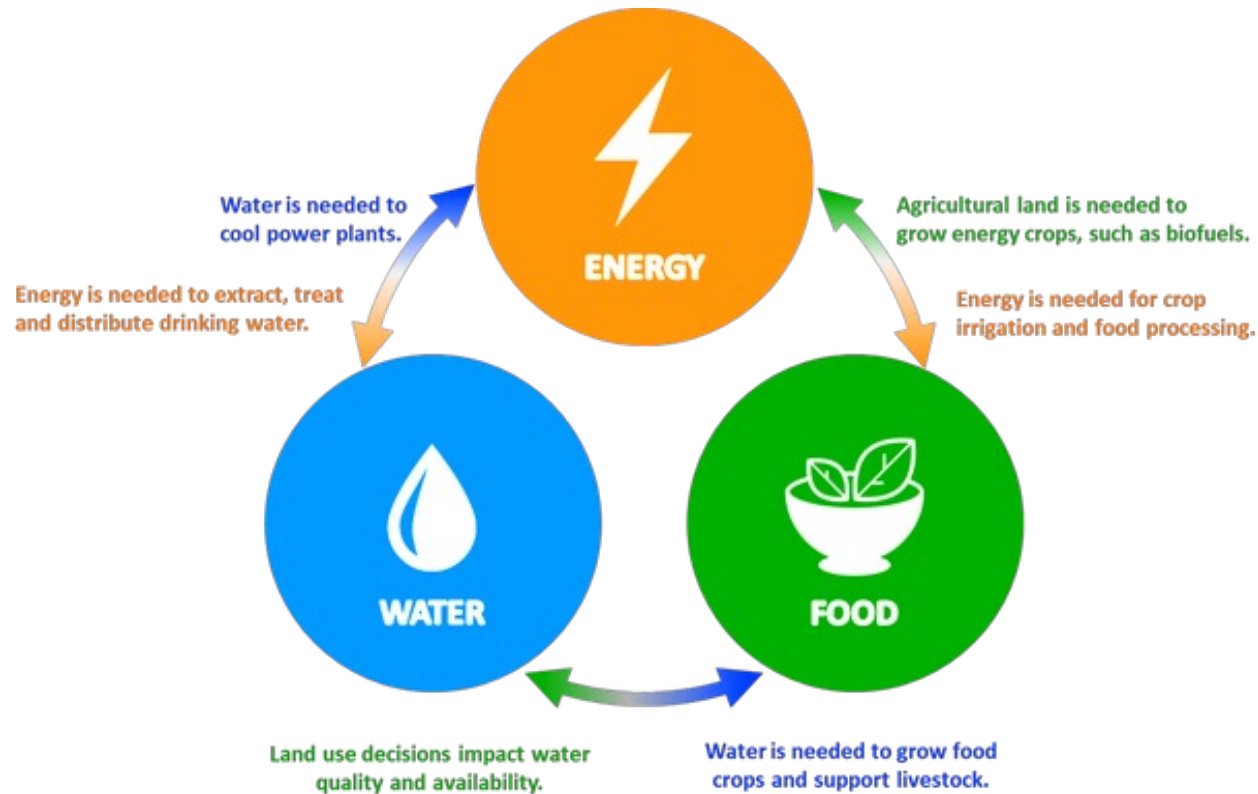


Blue Energy supports the path to Mindanao's Energy Transition



Integrated Approach: Water-Energy-Food Nexus

Paying equal attention to the interdependencies between water, energy, food and the climate.





“The use of renewable energy is at the top of our climate agenda. We will increase our use of renewable energy sources...”

– President Ferdinand Marcos, Jr. at his 1st State of the Nation Address in 2022



Linking Renewable Energy to Mindanao's Agri-Fisheries Value Chain



TAWI-TAWI: Philippines' Gateway to the Brunei-Indonesia-Malaysia-Philippines East Asian Growth Area (BIMP-EAGA)



- Leads BARMM in producing the country's seaweeds output**
- Ten of the eleven municipalities of Tawi-Tawi produce seaweeds that comprise $\frac{1}{4}$ of the country's production



Renewable Energy Technology to Increase the Value-added of Seaweeds in Tawi-tawi (RETS Project) - A Business Case for other Offgrid Islands



600 Kilowatt (Kw) Solar PV + Battery Energy Storage System for the Island Municipality of Sibuto



1 Megawatt (MW) Solar PV + Battery Storage System + High Speed Diesel Generator for the Island Municipality of Sitangkai



Action funded by the European Union





I-PURE MINDANAO

Integration of Productive Uses of Renewable Energy for Inclusive and Sustainable Energization in Mindanao



Action funded by the European Union



PURE TAWI-TAWI
Sitangkai and Sibutu, Tawi-Tawi
Solar Powered Seaweeds Dryer



TAWELCO Barangay Line Extension Project
2184 Households
Sibutu and Sitangkai, Tawi-Tawi



PURE KALAMANSIG
Kalamansig, Sultan Kudarat
Solar Powered Coffee Dryer and Miller



PURE LEBAK
Lebak, Sultan Kudarat
Solar Powered Water Pump

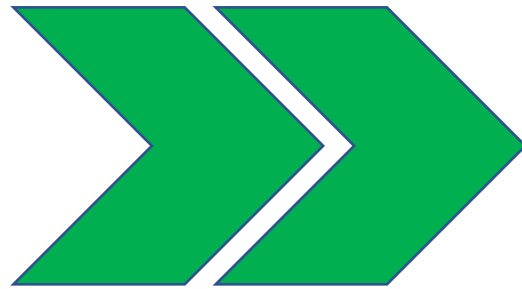


COTELCO PVM
1500 Households
Locations TBD

PURE NINYO AQUINO
Ninoy Aquino, Sultan Kudarat
Solar-Powered Water Pump

PURE II PVM
1500 Households
Ninoy Aquino Province





The Way Forward



BLUE ECONOMY

Blue Economy refers to the sustainable use of ocean resources for economic growth, improve livelihoods, and ocean system health.

It encompasses many activities.



RENEWABLE ENERGY

Sustainable marine energy can play a vital role in social and economic development.



FISHERIES

Marine fisheries contribute more than **US\$ 270 billion** annually to global GDP. More sustainable fisheries can generate more revenue, more fish and help restore fish stocks.



MARITIME TRANSPORT

Over 80% of international goods traded are transported by sea and volume of seaborne trade is expected to double by 2030 and quadruple by 2050.



TOURISM

Ocean and coastal tourism can bring jobs and economic growth. Coastal least developed country and small island developing states receive more than **41 million visitors per year**



CLIMATE CHANGE

The impact of climate change on oceans—rising sea levels, coastal erosions, changing ocean current patterns, and acidification are staggering. At the same time, oceans are an important carbon sink and help mitigate climate change.



WASTE MANAGEMENT

80% of the litter in the ocean comes from land-based sources. Better waste management on land can help oceans recover.



Source:
The World Bank Group



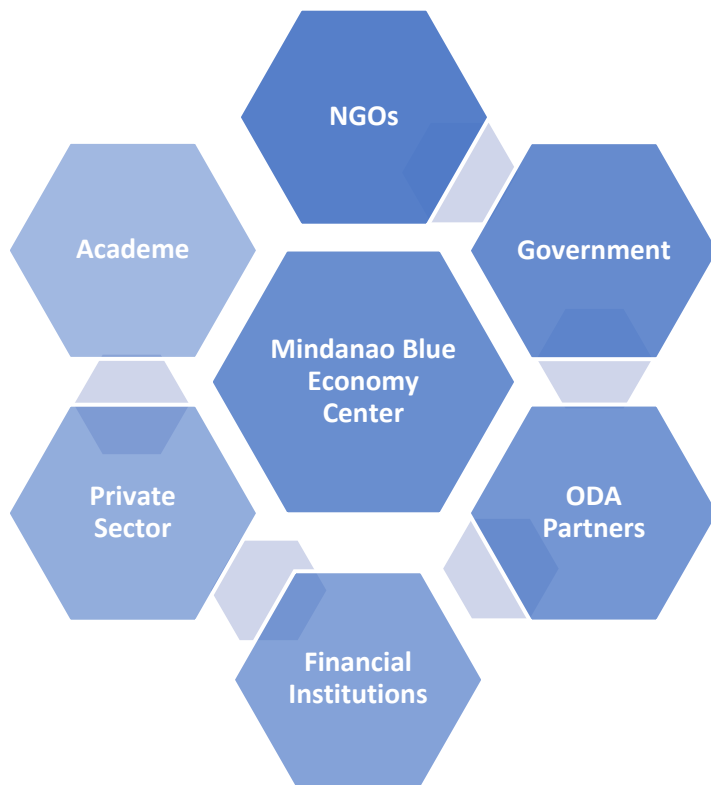


Goal

- To ultimately mainstream and establish **Mindanao Blue Economy Hub** as a vehicle for sustainable development, energy transition and access, and improve overall human well-being in Mindanao.



MINDANAO BLUE ECONOMY DEVELOPMENT HUB



The Hub aims to address the challenges in mitigating oceans pollution and adapting to climate change impacts by:

- A. accelerating the development of a ***pipeline*** of 'blue' projects that improve the sustainability and conservation of the region's oceans, water bodies and marine ecosystems
- B. catalyzing a large ***flow of capital*** from both public and private sources into well designed blue projects

Integrating **MINDANAO**



Tapping The Green Force



Forging Partnerships



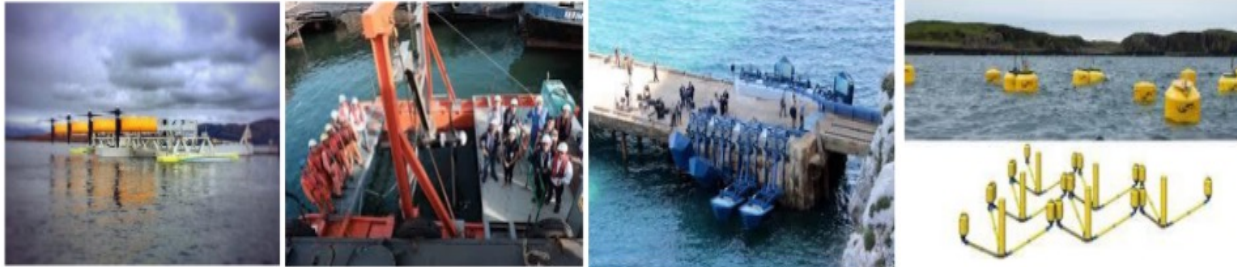
Marine Renewable Energy in the Philippines: Sustainable Energy from Ocean Spaces and Resources

A Stocktake and Options Report for the Philippines' Department of Energy

1 February 2023



Potential Pilot Projects



Ocean/Marine Renewable Energy: Marine Solar, Offshore Wind, Tidal In-Stream, Wave

Systems and Eco-Systems' Integration



Energy Storage



Testbedding
Other Innovations
Technologies
Business Models
"Learn by Doing"

OceanPixel

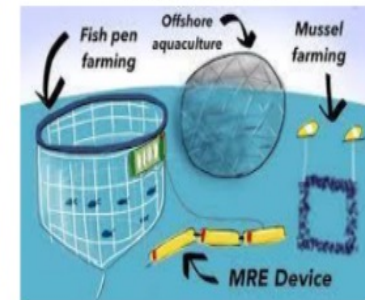
Transportation



Ice



Aquaculture



Ports/Marinas/Bays



Water Production



Reef Restoration,
Marine Area Monitoring



Sustainable Integrated Development for Islands & Coasts



Aquaculture & Fisheries



Green Transport – Sea and Land



Green Maritime Ecosystem – Ports, Vessels, Aquaculture, Desalination, Water, Ice/Cooling ++



Renewable Energy + Green Transport
 + Aquaculture + Water Production
 + Freezing/Cooling + Local Content
 + Other Sustainable Initiatives

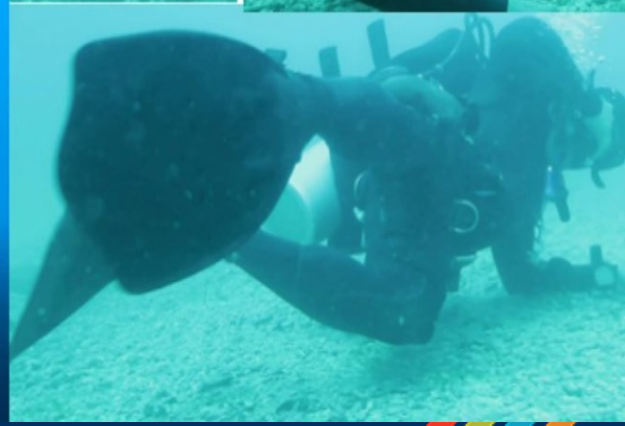
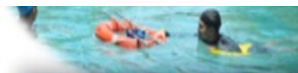




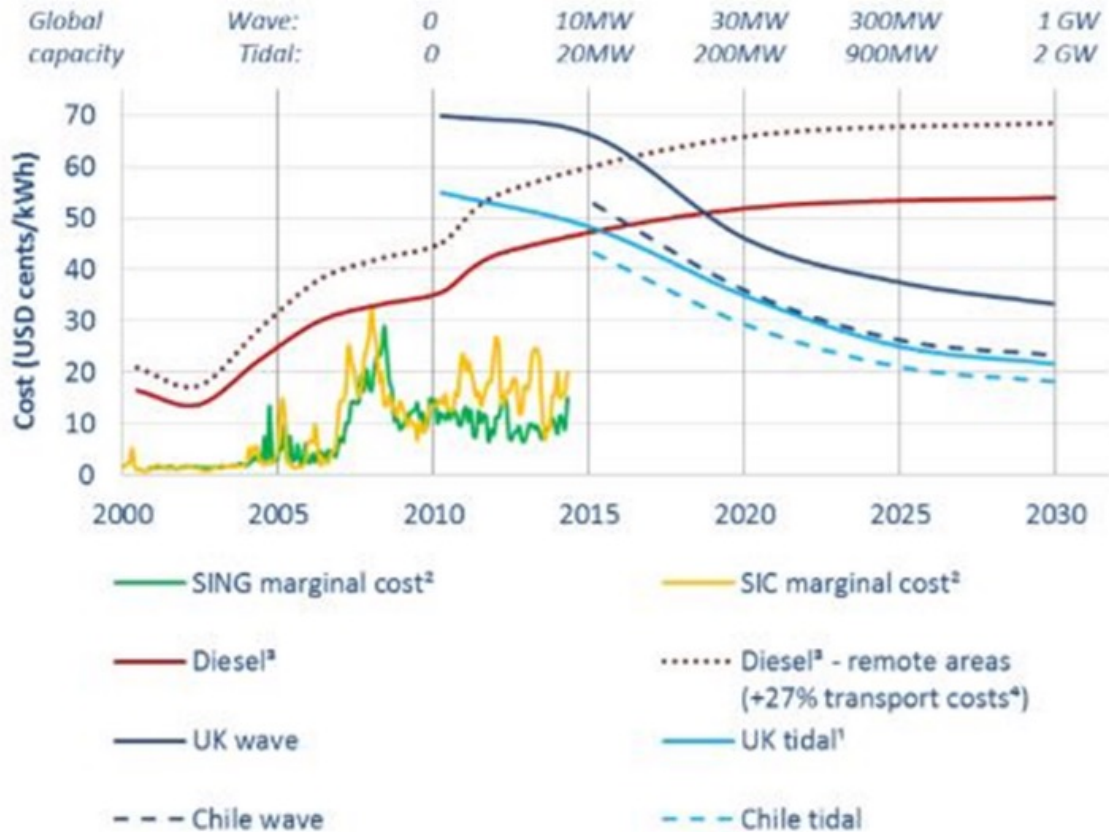
Resource assessment



Design and Performance Evaluation of an Ocean Renewable Energy System



Wave and tidal



Sources: ¹Carbon Trust; ²CNE; ³World Bank/Bloomberg; ⁴Chilean Ministry of Energy

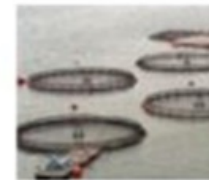
Marine energy markets:



LONG TERM
Grid electricity



MEDIUM TERM
Diesel replacement;
water pumping
and desalination



SHORT TERM
Remote diesel
replacement

Key Takeaways

1. **Harnessing the ocean energy potential**
2. **Upscaling the early stages of development**
3. **Addressing technology challenges**
4. **Breaking the barrier: high initial capital costs**
5. **Adhering to regulatory environment**
6. **Pursuing active local community engagement**
7. **Integrating capacity building and development**
8. **Leveraging on regional cooperation**





*Achieving energy transition is going to be a challenging task, but possible when we work **TOGETHER** as a **One**.*



CONNECT, FOLLOW AND HAVE A CONVERSATION WITH US!

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SHUKRAN

Daghang Salamat

MARAMING SALAMAT



Mindanao Development Authority

Coordinates | Harmonizes | Integrates

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