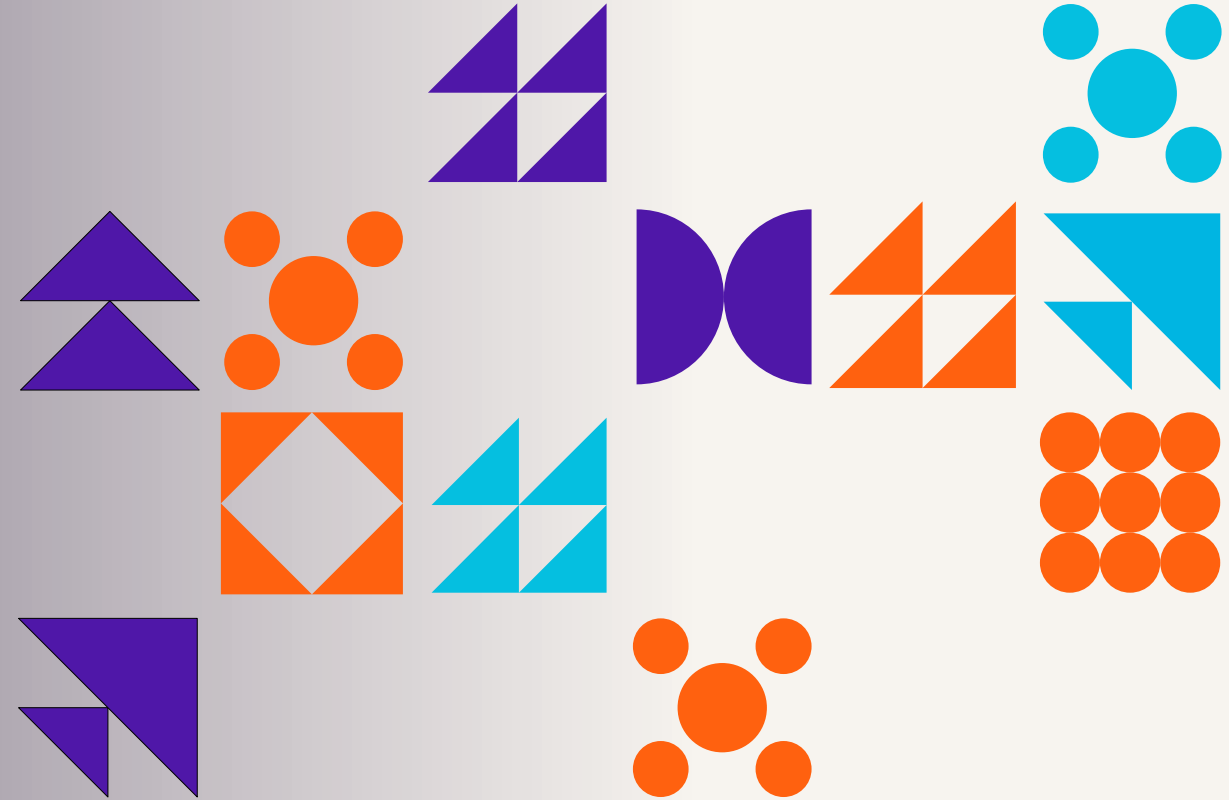


Project Management in Clean Energy Transition; Delivering the expectation in sustainability and new technology deployment

Ir Ts Dr Harris Abd Rahman Sabri
Chairman, Project Management Technical Division (PMTD)
The Institution of Engineers Malaysia (IEM)





Project#1: Zero Emission Unconventional Power Station

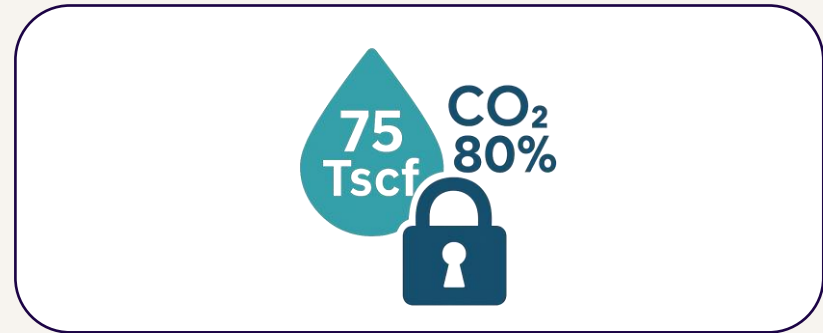
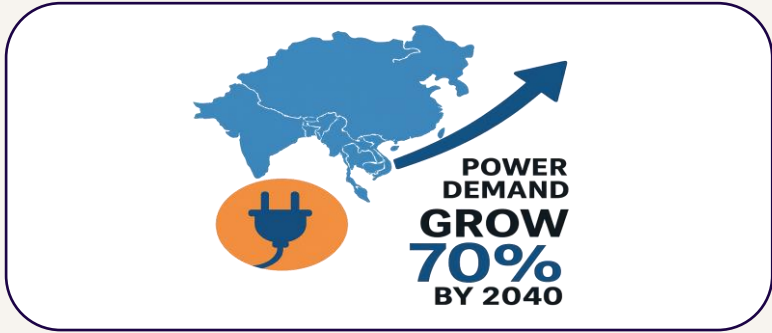
Source: Energy Asia 2025

#PRISM2025 | 28th July – 29th July 2025



Energy transition is no longer a debate — it's a deadline?

WHY



HOW

By converting high-CO₂ natural gas to generate **blue electricity**, transforming it from a mere transition fuel into a long-term, **sustainable clean energy source** for the future

POTENTIAL MARKET



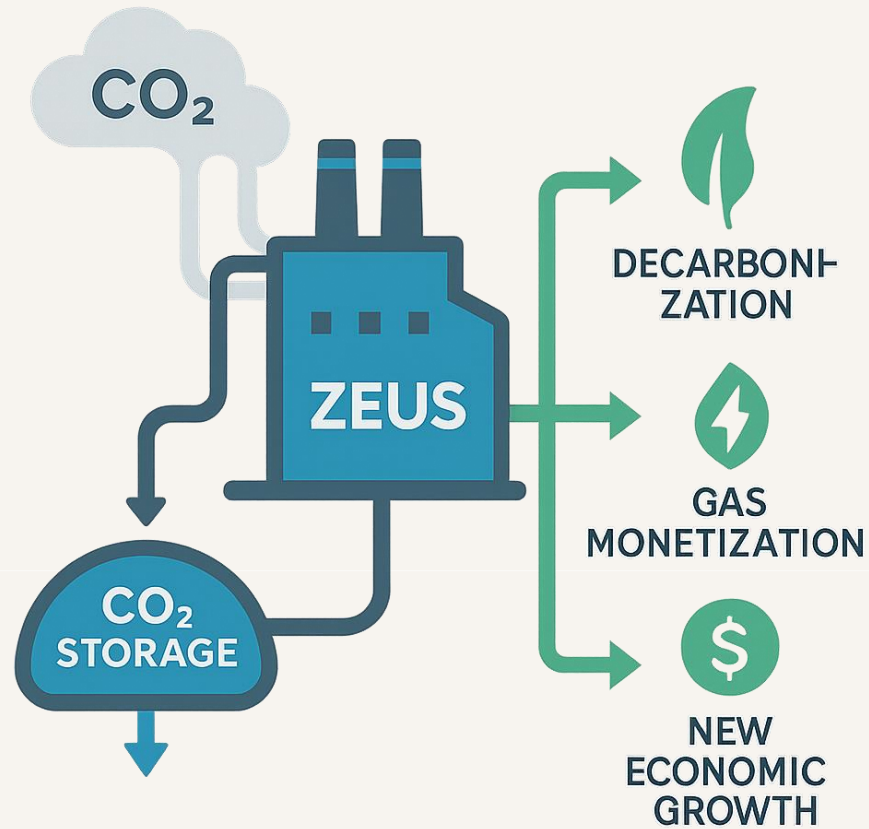
Securing sufficient energy for the region through **BLUE ELECTRICITY** generated from abundant high-CO₂ natural gas



References
 1. Arthur D. Little – Unlocking High CO₂ Gas Fields: Contributing to the Carbon Economy
 2. S&P Global – Energy Portal: EDIN Module. Global application in exploring full depth of International E&P, Basins and Midstream

Turning CO₂ into Valuable Resources with ZEUS

How might we unlock the potential of high-CO₂ gas fields, transforming a challenging resource into a strategic advantage by repurposing the CO₂ to generate unparalleled value and opportunities?



Potential Value Creations

1

Advancing Decarbonization

Emission reduction from
Combustion Power Generation

2

Boost Gas Monetization from high CO₂ gas fields

Unlocking Potentials of
Stranded High CO₂ Gas Fields
Southeast Asia

Opportunity to utilize exhaust
CO₂ for insitu injection as
Enhanced Oil Recovery

3

Expanding into New Growth Areas

Potential New Revenue Stream
from Blue Electricity
*Addressable Market:
Malaysia & Southeast Asia*

Spur the growth of
*Carbon Capture & Storage
Business*

This is more than a Technology – it's a Movement. A Movement that will Energise a Sustainable Future and Redefine How we Power The World



Environment



Energy Security

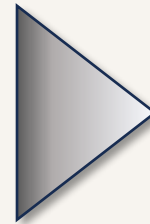


Profit

So, the question is – Are You Ready for the Transformation?



*Stranded
gas*



*Scalable
power*

Technology

Team

Traction

Project Challenges, Risk and Mitigation

Technology
Maturity

Governance
/ Regulation

Capability /
Expertise

Business
Model

Risk
Management

Project Cost /
Economics

Sustainability

Site
Reference

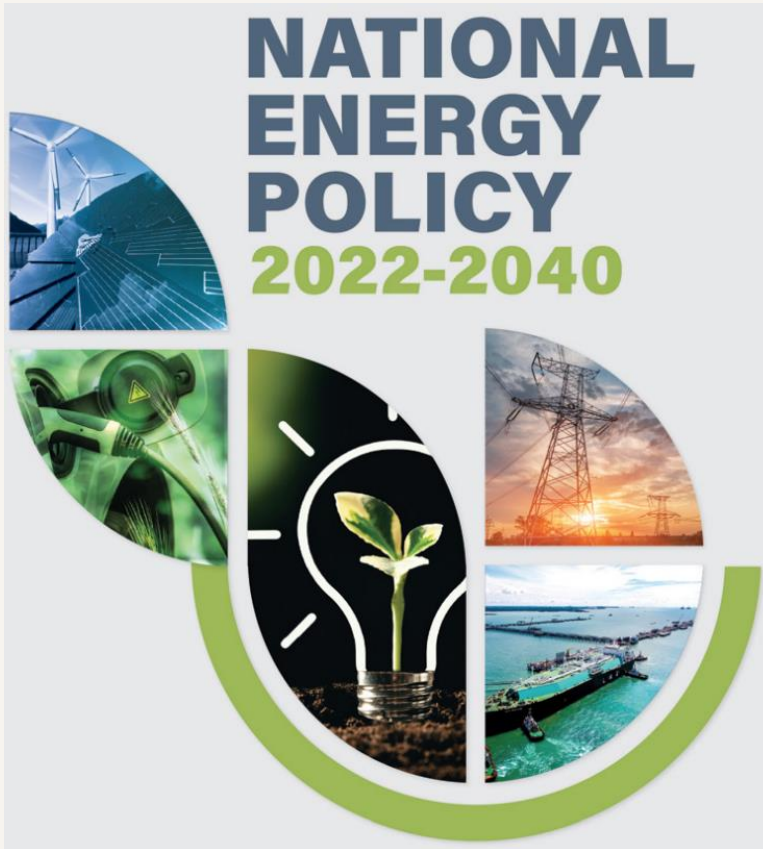


Project#2: Ocean Thermal Energy Conversion (OTEC)

Source: CAFEO 2023

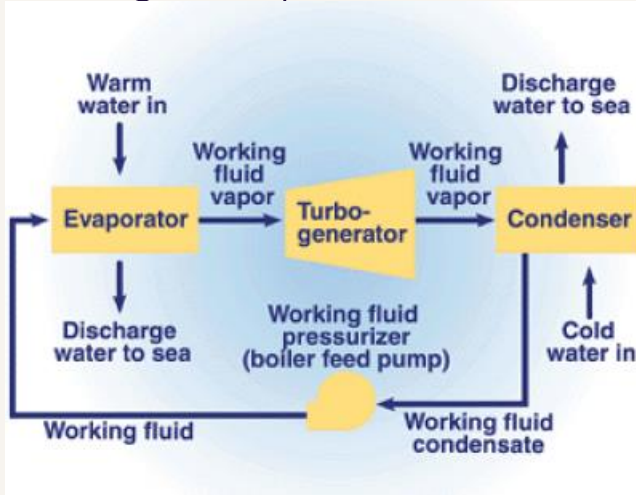
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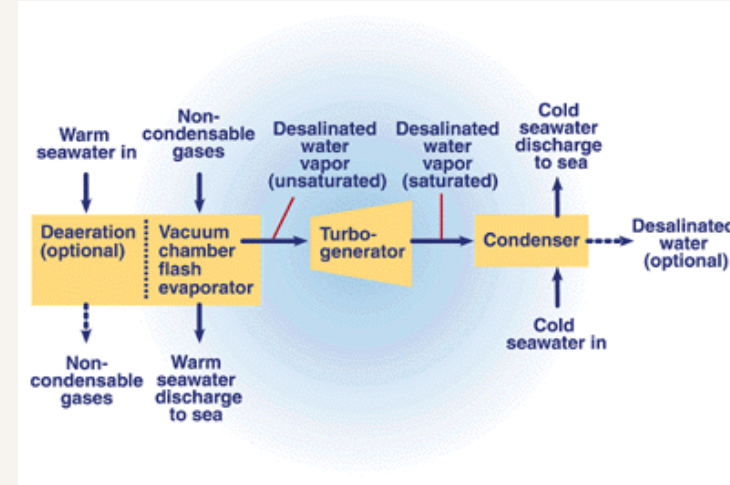


A9 Explore high potential nascent new energy sources	
<p>KEY OBJECTIVES</p> <ul style="list-style-type: none"> Enhance renewable energy penetration to increase fuel source diversification, enhance domestic energy self-sufficiency and environmental sustainability. Enhance commercial viability and competitiveness of alternative energy sources to achieve technical and commercial viability, as foundation for scale-up. Build competitive position and unlock value pools with early-mover technology advantage in high potential nascent alternative energy sources. <p>DESCRIPTION OF INITIATIVES</p> <ul style="list-style-type: none"> Conduct targeted feasibility studies to identify the potential of alternative energy supply sources in Malaysia, focusing on high potential energy sources such as waste-to-energy, third-generation bioenergy, solar thermal, and ocean thermal energy conversion (OTEC). Support private sector investments with matching government grants particularly in early proof-of-concepts as well as deployment and scale-up phase for high potential alternative energy supply sources. Conduct highly selective study of geothermal and wind energy potential in specific high potential targeted regions. 	<p>Stakeholders</p> <p>Lead Entity: EPU</p> <p>Core Stakeholders: MOSTI, KeTSA, MPIC, MAFI, KPKT, ST, SEDA, SB, Ministry of Utility and Telecommunication (Sarawak), UTM-OTEC</p> <p>Supporting Stakeholders: MOHE, MGTC, research and academic institutions, SEC, SESB, SEB</p>
Implementation Timeline	Initiative Type
2022-2040	New

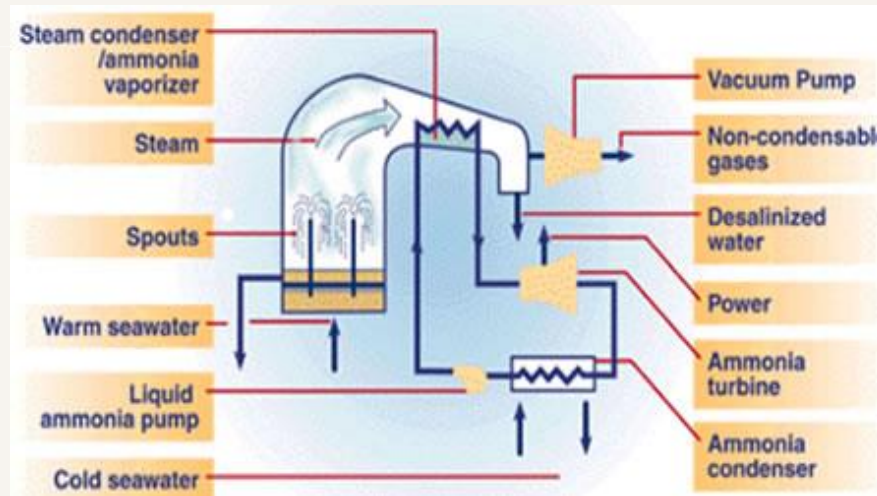
OTEC technologies are differentiated by the working fluids that can be used. Open Cycle OTEC uses seawater as the working fluid, Closed Cycle OTEC uses mostly ammonia. A variation of a Closed Cycle OTEC, called the Kalina Cycle, uses a mixture of water and ammonia. The use of ammonia as a working fluid reduces the size of the turbines and heat exchangers required.



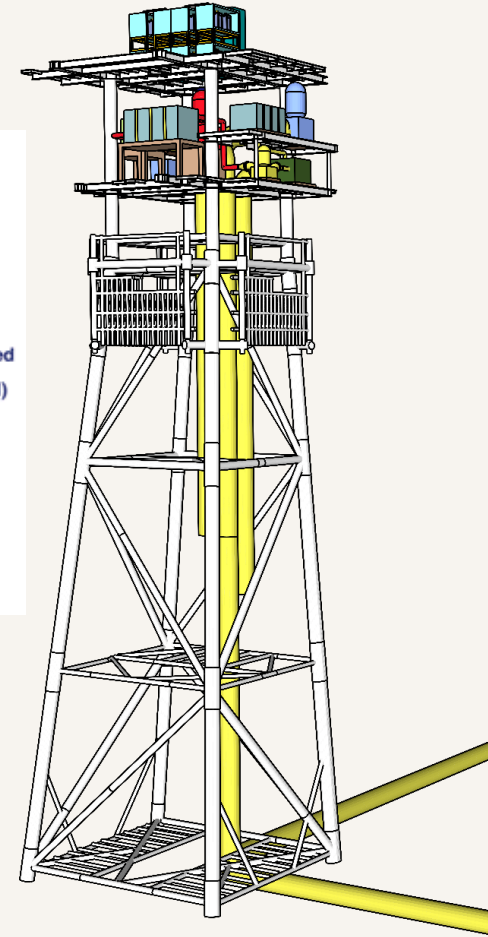
Closed Cycle OTEC



Open Cycle OTEC

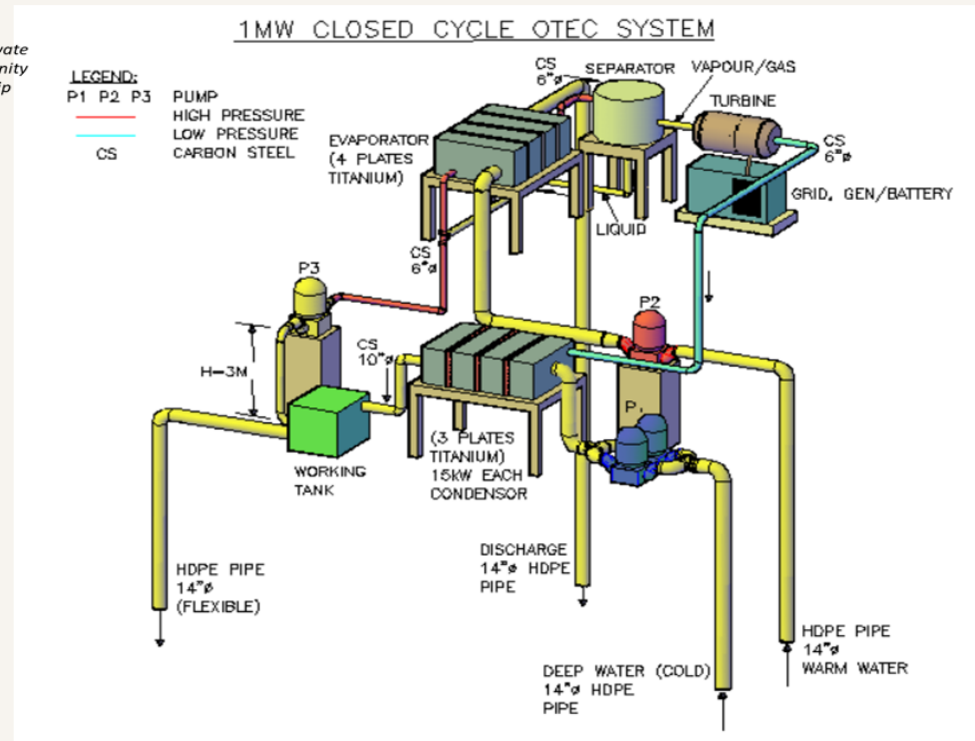


Hybrid Cycle OTEC



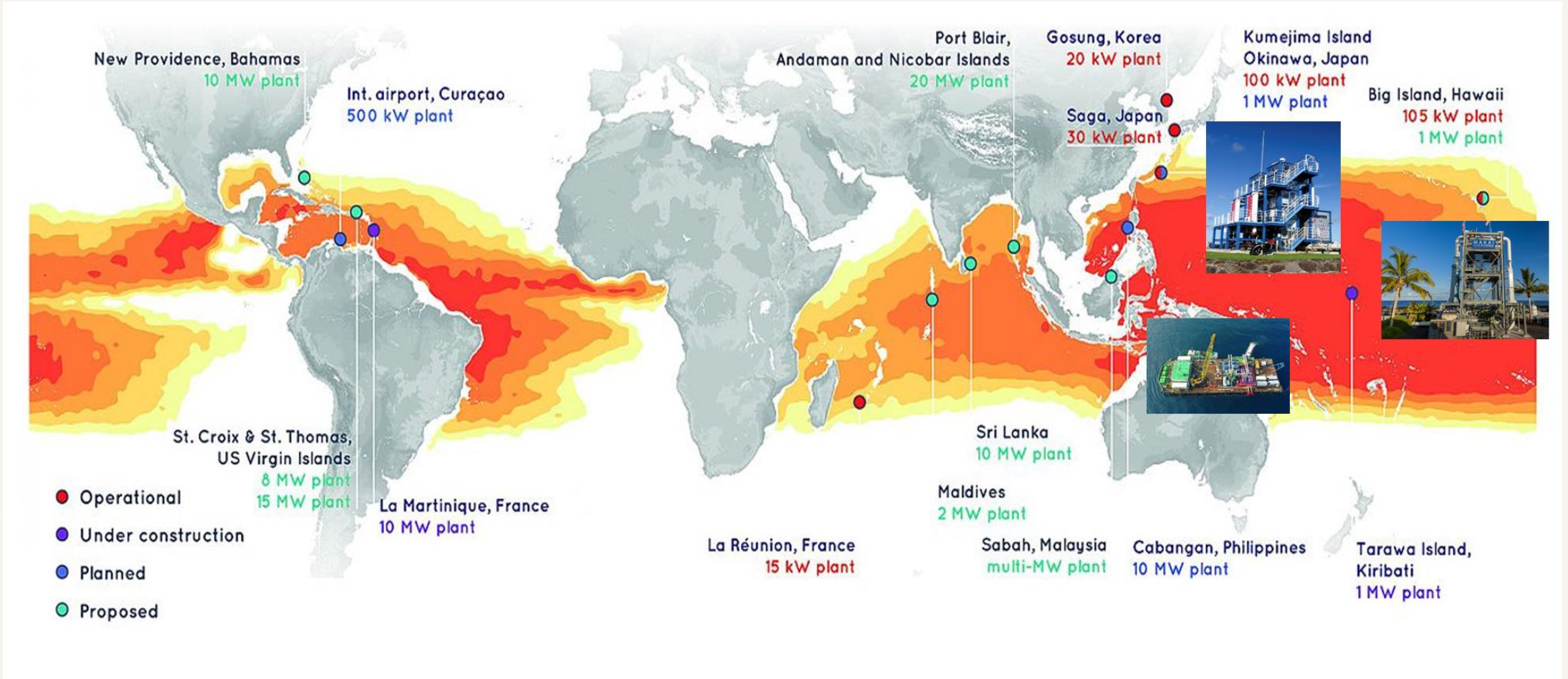
OTEC and UN SDG elements

	<p>Income up to RM15,000 per capita for 1000 people</p>		<p>Enough Clean Water for 1000 people</p>		<p>"Kumejima" & Kona, HI</p>		<p>"... as an important contribution to the maintenance of peace, justice and progress for all peoples of the world."</p>
	<p>Aquaculture: Seaweed, Seafood etc.</p>		<p>5000 barrels of oil equivalent</p>		<p>"Highly Sustainable"</p>		<p>Greater Public-Private & Community Partnership</p>
	<p>Health Drinks reduce Obesity, BP, Cholesterol.</p>		<p>High Quality Growth in Untapped Sectors</p>		<p>8,000 tons CO₂ offset</p>		
	<p>"The Ocean of Discovery"</p>		<p>New, Impactful</p>		<p>"Takuma" Capture Fishery</p>		
	<p>Improved Balance</p>		<p>Improved Income Distribution</p>		<p>OTEC Industrial Parks</p>		



- OTEC is unique among alternative energy choices in energy generation process as it produces a large variety of potentially valuable by-products (Martin et al., 2016; Barberis et al., 2019)
- OTEC is amongst the 21 most impactful and emerging technologies that fulfil all the 17 SDGs by the United Nations (Academy of Sciences Malaysia, 2017)

OTEC Installation Around the world



**"OLD WAYS
WON'T
OPEN NEW
DOORS"**



THANK YOU

Questions?