WAVES OF CHANGE

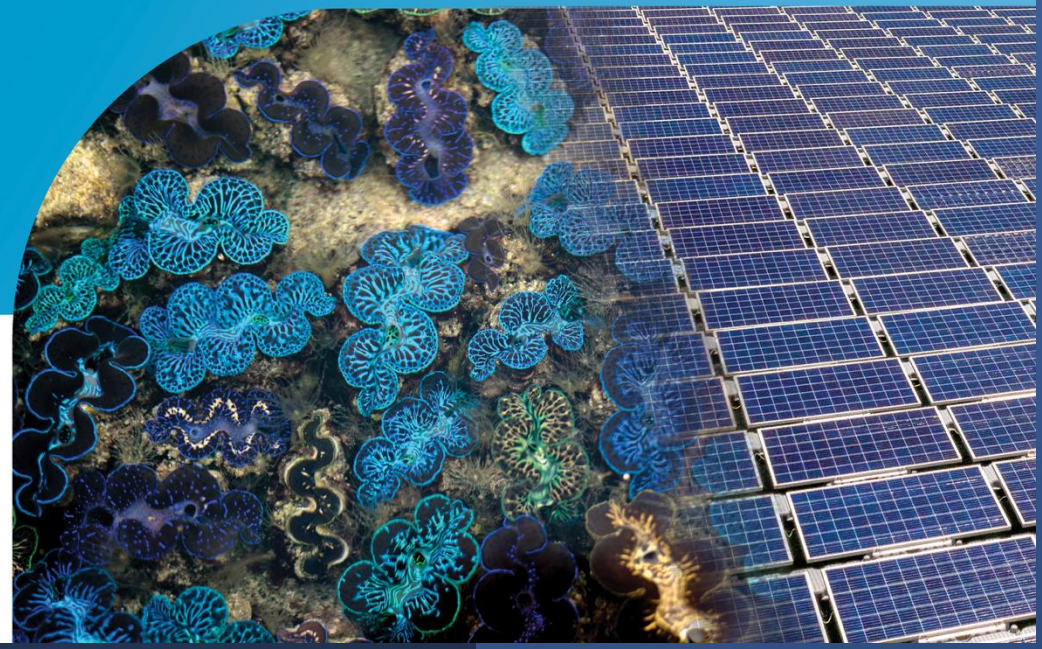
Harnessing Technology to Power the Sustainable Blue Economy

Workshop Two

25–28 May 2026 • Busan, Republic of Korea

ADB

Ministry of Oceans and Fisheries



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90%?

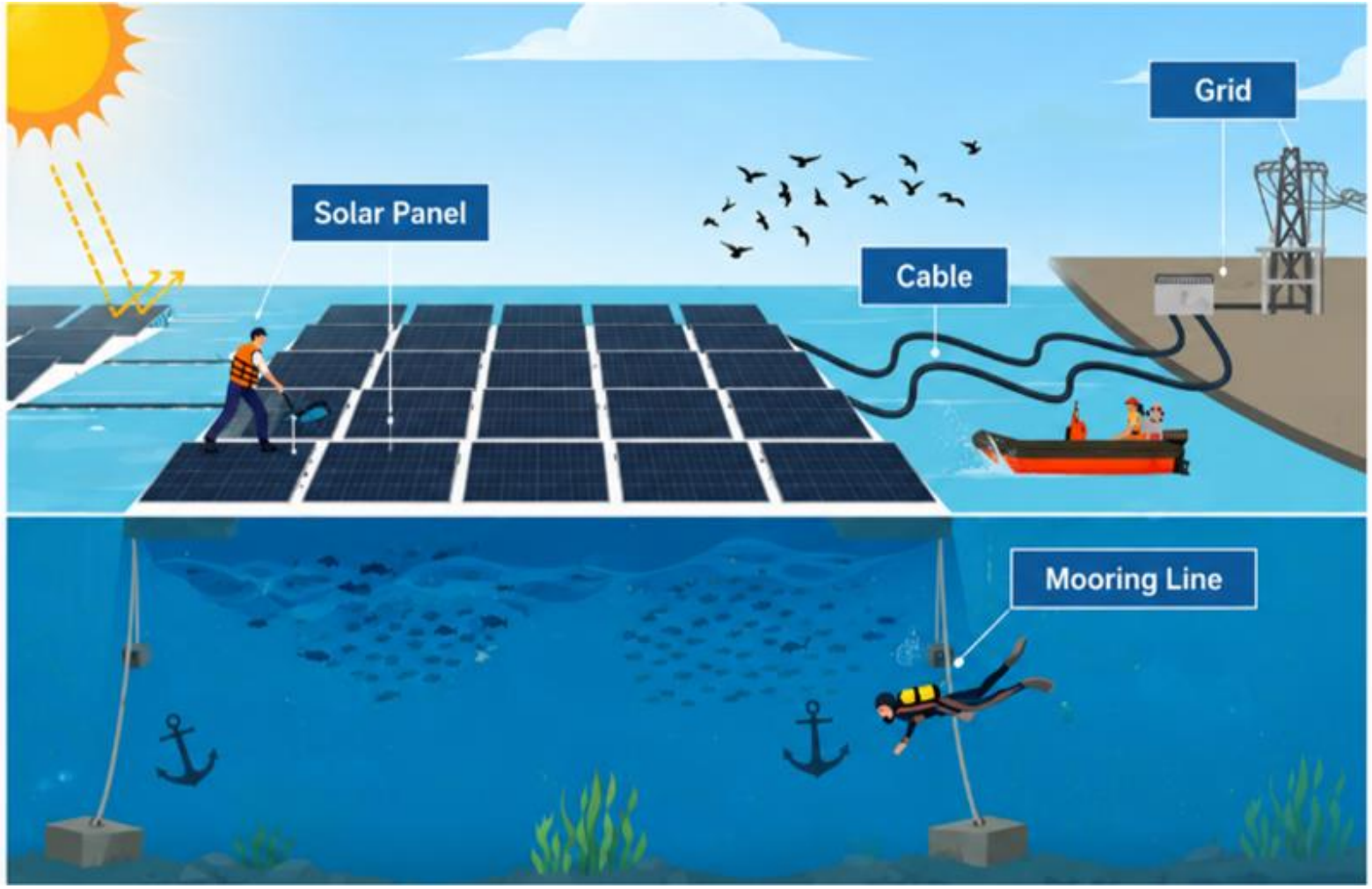
How did we get this number?

According to IEA research, renewable energy accounts for only 10% of total energy use in island states.

International Energy Agency (IEA), *Islands need resilient power systems more than ever. Clean energy can deliver* (2024)

01. Floating Solar

What is Floating Solar System?



What

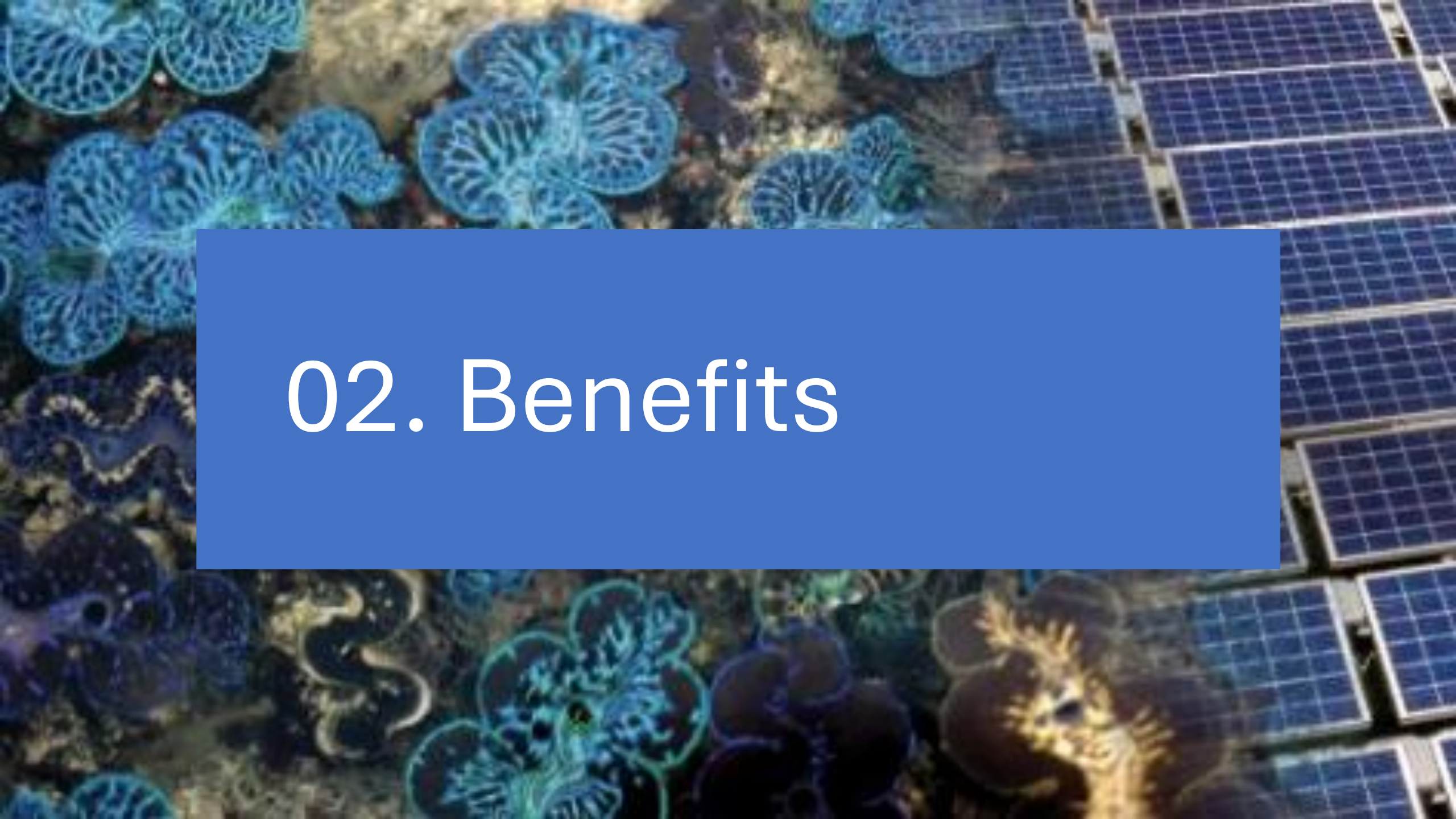
Solar panels are mounted on floating platforms.

Where

Reservoirs, lakes, treatment basins, and seas.

How

Electricity is sent to shore through cables, similar to ground-mounted solar.



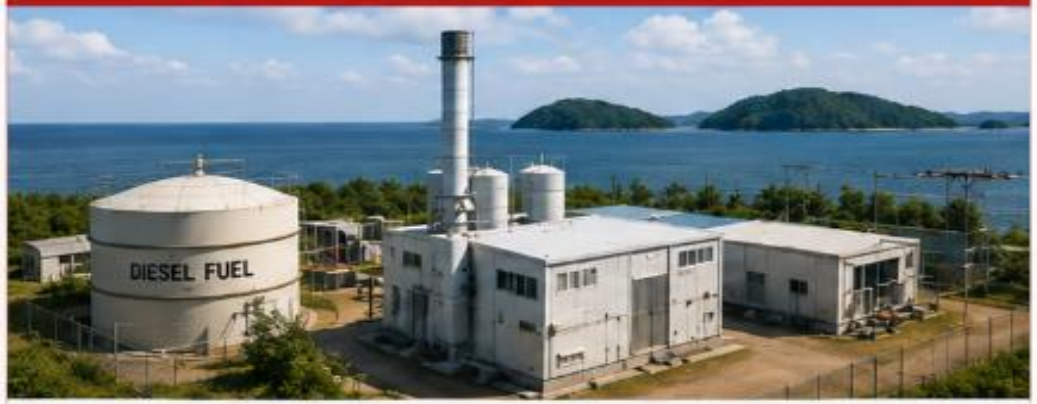
02. Benefits

Decarbonization through Energy Transition

High energy efficiency compared to fossil fuels when applied to island nations

Significant Cost Reduction up to 70~80%

Diesel Power Generation



Fuel cost (including transport) per kWh

0.25~0.50

USD/kWh

- High fuel price volatility
- Increased logistics costs for remote islands

Conversion

LCOE Reduction

Floating Solar (Floating Solar PV)

Cost of electricity generation per kWh

0.05~0.12

USD/kWh

- Additional improvement in cooling efficiency by floating structure: approx. **5~15%** increase

Decarbonization through Energy Transition

Replacing Diesel Generation Is Equivalent to 21 million Trees to Absorb Trees

Floating Solar (100MW)

175 GWh/year

Annual Power Generation

Clean Energy Transition

- Clean Electricity
- Lower Emissions
- Sustainable Future

CO_2 Reduction

Diesel Replacement Effect

140,000 tCO_2/year

Annual CO_2 Reduction

21 Million Trees

Equivalent Annual Carbon Absorption

Diesel Emission Factor: 0.7 – 0.9 tCO_2/MWh

Stabilization of Marine Ecosystems

Contributing to Ecosystem Conservation By Providing Artificial Reefs and Habitats

1. Artificial Reef Effect & Creation of Marine Resources

- Provides spawning grounds for marine species
- Offers shelter and habitat for juvenile fish
- Installation of anti-scour structures and artificial reefs can increase the population of major fish species by approximately **1~3 times**.

2. Artificial Platform for Marine Life

- Functions as an artificial shelter for marine organisms
- Can serve as a resting area for marine mammals

Stabilization of Marine Ecosystems

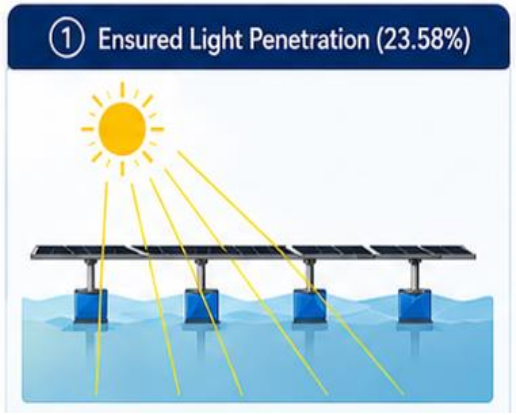
Improving Water Quality by Suppressing Algal Blooms

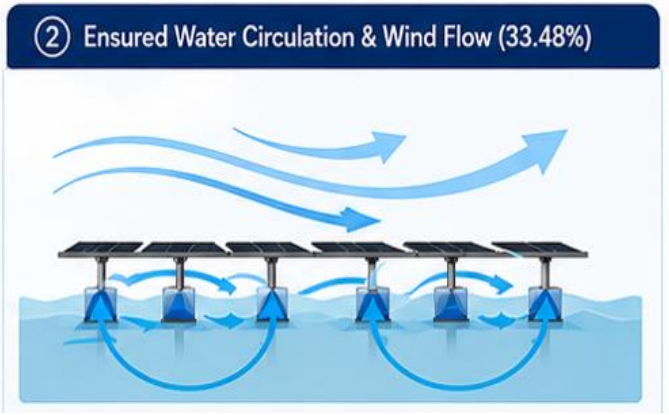
Main causes of algae growth:
Rising water temperature and blocked sunlight.

SCOTRA minimizes algae growth risk
through an optimized design that secures adequate spacing and maintains natural water circulation.

Unit Coverage Area	Water Surface Coverage Ratio
4.20 m²	10.60%

Light Penetration Rate	Wind Flow Rate
23.58%	33.48%

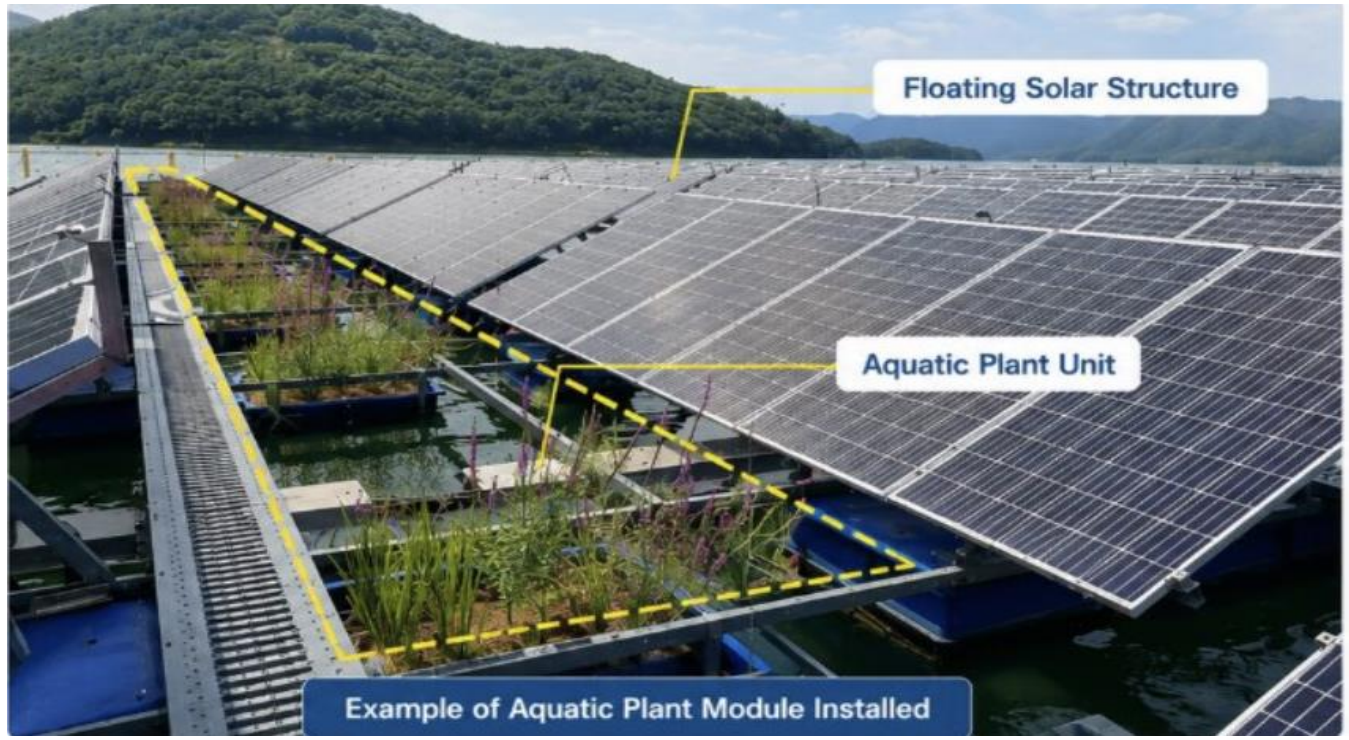




Stabilization of Marine Ecosystems

Case Study: Enhancing Aquatic Biodiversity with Integrated Artificial Reef Systems

Purpose: Installation of aquatic plant module to identify water purification and fish spawning functions
Period: 2023 – 2025
Site: Chungju Dam (Chungcheongbuk-do, Chungju-si)



Hybrid Offshore Solar Applications

Stable Power Supply Model Based on Offshore Solar Energy

Hybrid Floating Solar System

Offshore Floating Solar Installation
Utilization of idle marine spaces such as islands, ports, fish farms, and coastal waters

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Direct Power Supply to Nearby Demand Sources
Stable electricity supply to seawater desalination plants and aquaculture facilities

↓

Output Stabilization through ESS Integration
Daytime power generation → Energy storage → Response to nighttime peak electricity demand

↓

Improved Energy Self-Sufficiency & Reduced Operational Risks

Installation Reference

Country	Hybrid Type	Key Achievements & Features
China	FPV + Fishery	World's largest floating solar-aquaculture hybrid complex
Taiwan	FPV + Clam Farming	Increased productivity through water temperature regulation
Canada	FPV + Cold-Water Fish Farming	Optimization for winter water surface anti-freezing technology
Maldives	FPV + Desalination + Tourism	Island-based energy and drinking water self-sufficient resort

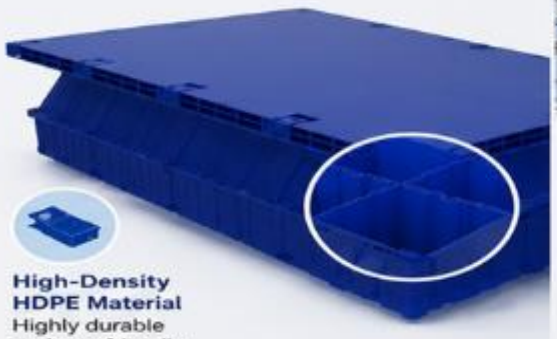
03. SCOTRA

About SCOTRA

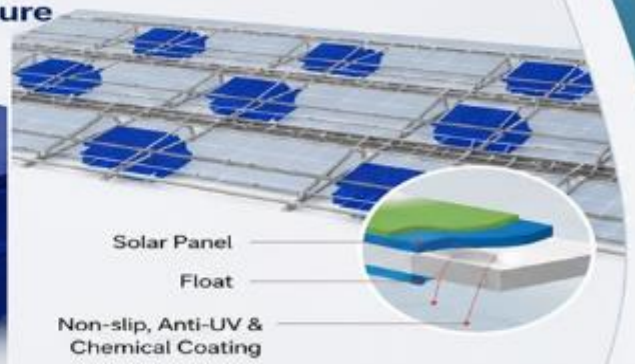
Floating Solar Power Expert,
Total Solution Provider

- **50 +** Completed Floating Solar Projects
- **350MW+** | Cumulative Installed Capacity
- **536,700 tons** (94,000 cars/year) Carbon Emission Reduction
- **2,000+** | Floating Structures Built (Marinas, Pontoons, etc.)

SCOTRA Floating Solar Structure



High-Density HDPE Material
Highly durable and eco-friendly



04. Reference

Efforts for Commercialization

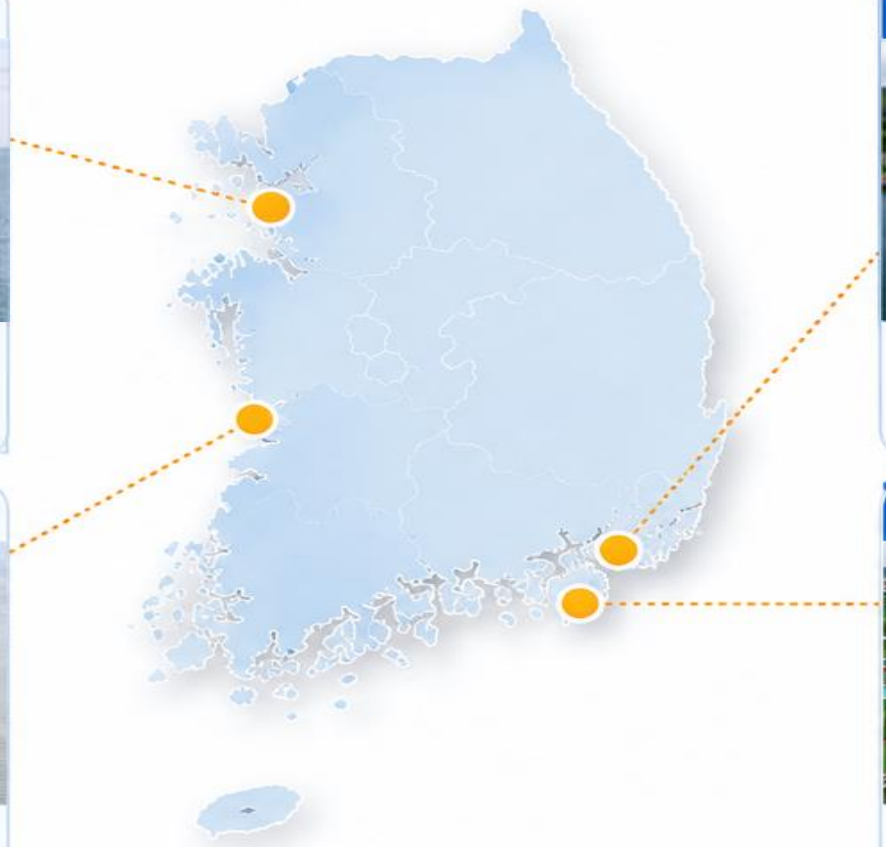
SCOTRA Offshore Floating Solar Projects in Korea

2020 Siwha Lake 100kW

Location	Water Type	Capacity
Ansan, Gyeonggi-do	Inland Water (Lake)	100kW

2021 Saemangeum 100kW

Location	Water Type	Capacity
Gunsan, Jeollabuk-do	Inland Water (Inner Sea)	100kW



2022 Busan 100kW

Location	Water Type	Capacity
Busan, Busan	Coastal Water (Sea)	100kW

2022 Geoje 500kW

Location	Water Type	Capacity
Geoje, Gyeongsangnam-do	Coastal Water (Sea)	500kW

Efforts for Commercialization

Saemangeum (Inland Sea) 100kW Offshore Solar Demonstration Facility

Efforts for Commercialization

Geoje-si (Nearshore) 500kW Offshore Solar Demonstration Facility

Location : Geoje-si, Gyeongsangnam-do, Korea

Efforts for Commercialization

Sihwaho (Inland Sea) 100kW Offshore Solar Demonstration Facility

Location: Ansan-si, South Korea

Efforts for Commercialization

100kW Offshore Solar Demonstration Facility

Location: Oryukdo Island, Busan

Weather Condition
2022 Typhoon Hin Namno
- Max wind speed : 37.4m/sec, max
- Instantaneous wind speed: 43.7m/sec

Efforts for Commercialization

The Philippines Camotes Island Floating Solar ODA Project (Capacity: 600Kw, completed in 2024)

PROJECT LOCATION

Camotes Island, Philippines

Supporting energy access and sustainability in off-grid island communities through floating solar power.

CAPACITY
600kW

TECHNOLOGY
Floating Solar PV (FPV)

PROJECT TYPE
ODA (Official Development Assistance)

FLOATING SOLAR POWER PLANT (FPV)

Clean Energy
Generate renewable electricity with zero emissions

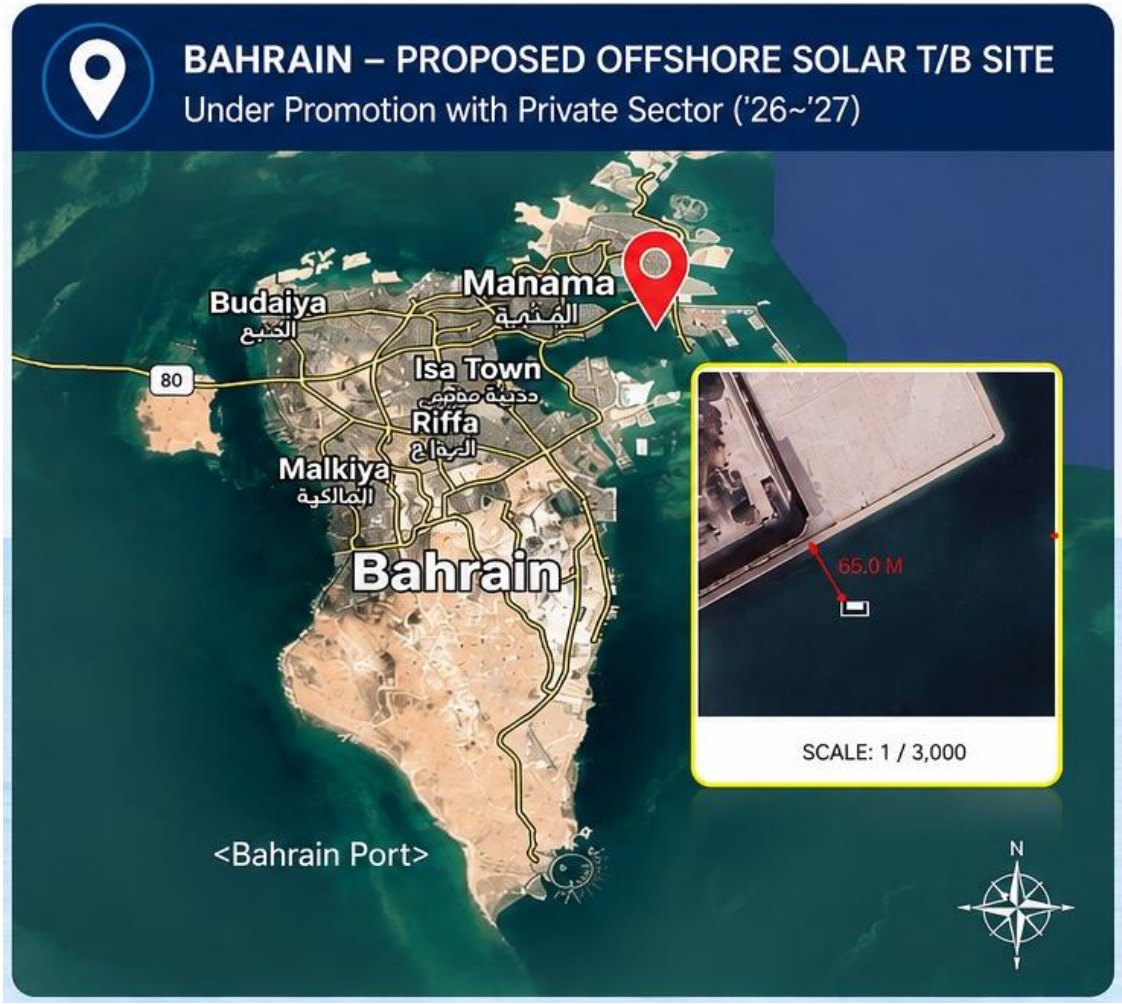
Sustainable Solution
Contribute to climate resilience and environmental protection

Community Impact
Improve energy access and support local development

International Cooperation
Strengthen partnership between Philippines and Korea

Efforts for Commercialization

Overseas Test Bed Implementation Plan (Expected in 2027- 2029)



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Thank you!