

Sustainability is our Business

Developing Smart Solutions for Environmental Sustainability



Jen Tan

Head of Integrated Solutions (Singapore & SEA),
Sembcorp Industries

16 December 2021

Disclaimer

This presentation contains certain statements that are not statements of historical fact, i.e. forward-looking statements. These forward-looking statements are based on current expectations, estimates, projections and assumptions about future events. Although Sembcorp Industries believes that these expectations, estimates, projections and assumptions are reasonable and realistic, they are prepared based on current known facts and subject to the risks (whether known or unknown), uncertainties and assumptions about Sembcorp Industries and its businesses and operations.

The factors and events that could cause the current expectations, estimates, projections and assumptions to differ includes but are not limited to the following:- the general economic and business conditions in Singapore, India, China, UK, the Asia-Pacific regions and elsewhere where Sembcorp Industries has its business or operations; governmental, statutory, regulatory or administrative initiatives, sanctions or actions that affect Sembcorp Industries businesses or operations; force majeure events or natural disasters or events not within the control of Sembcorp Industries; pandemic such as COVID-19; wars or political upheavals; changes in industry trends, severe drops in commodity prices like crude oil or gas; future levels and composition of our assets and liabilities; future profitability of our operations; competition; currency fluctuations between the Singapore dollar and other currencies; changes in Singapore tax or similar laws or regulations; changes in, or the failure to comply with, governmental regulations, including exchange control regulations, if any.

You are advised not to place undue reliance on these forward-looking statements as the forward-looking events referred to in this presentation may differ materially or not occur due to these risks, uncertainties and assumptions.

Neither Sembcorp, nor its directors, officers, employees or affiliates nor any other person accepts any liability (for negligence or otherwise) whatsoever for any loss howsoever arising (including without limitation for any claim, proceedings, actions, suits, losses, expenses, damages or costs) for any reliance on such forward looking statements or contents of this presentation or otherwise arising in connection therewith.

Investors should assume that the information in this presentation is accurate only as of the date it is issued. Sembcorp Industries has no obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise, except as required by law.

Sembcorp Industries at a Glance



Operates across
11 countries,
focused on Asia



Temasek Holdings **49.5%**
Public **50.5%**



More than **5,000**
employees



S\$3.6 billion
Market capitalisation
(as at August 13, 2021)



Listed on
Singapore Exchange
Mainboard (SGX)



Index Component

- Straits Times Index (STI)
- Sustainability indices including FTSE4Good Index and the iEdge SG ESG indices

Our Businesses

Renewables



- Utility-scale wind power generation
- Utility-scale ground-mounted and floating solar power generation
- Commercial & industrial rooftop solar power generation
- Energy storage systems

Conventional Energy



- Utility-scale power generation and cogeneration
- Steam generation
- Piped natural gas & liquefied natural gas (LNG) supply
- Distributed energy generation

Integrated Urban Solutions



URBAN

- Integrated townships
- Industrial parks
- High-tech parks
- Business hubs
- Logistics warehouses
- Residential developments

WATER

- Industrial wastewater and water treatment & supply
- Seawater desalination & water reclamation

WASTE and WASTE-TO-RESOURCE

- Waste management
- Recycling and waste-to-resource



Global Megatrends

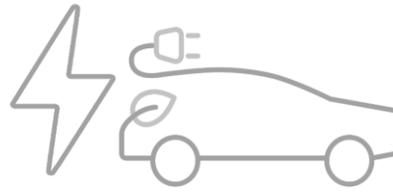
Decarbonisation



Renewable energy to dominate in a decarbonised power sector

50% of global power generation to come from renewable sources by 2035¹

Electrification



Growing electricity demand, driven by decarbonised road transport

Electricity demand will double by 2050, driven by the increase in demand for electric vehicles and electrification in buildings and industry¹

Urbanisation



Economic centre of gravity shifting to Asia

Asia's urban population is forecasted to increase from 50% of total population in 2018 to 66% in 2050²

¹ McKinsey Global Energy Perspective 2019, 2021

² United Nations, Department of Economic and Social Affairs, Population Division (2018). *World Urbanization Prospects: The 2018 Revision*

Asia: Multi-decade Sustainable Solutions Opportunity

Sembcorp is well-placed to contribute to the region's energy transition

Growth in renewables capacity (5-year CAGR)



Southeast Asia, China and India

Forecasted Market Size for Renewables¹
2020: **649GW** → 2025: **1,295GW**

5-year CAGR (2020-2025)
15%

Total addressable market opportunity of
> 600GW between 2020 to 2025

Sustainability is Our Business

WHY

Global Megatrends



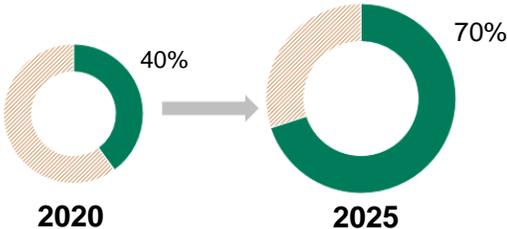
- Decarbonisation
- Electrification
- Urbanisation



Our Purpose

WHAT & WHEN

Transforming our portfolio from brown to green



HOW

Delivering Sustainable Solutions

Focus on Renewables & Integrated Urban Solutions

Leverage Capabilities • Partnerships • Platforms

WHERE

Southeast Asia, China and India



Leverage track record, presence and brand name

Environmental, Social and Governance at Sembcorp

Priority SDGs



Clean Energy



Climate Action

Strong corporate governance

Amongst the Top Companies in Singapore for Corporate Governance

Ranked 8th out of 577 Singapore-listed companies in the Singapore Governance and Transparency Index (SGTI) 2020



Accountability

ESG targets incorporated in Company Balanced Scorecard



Solar Portfolio Overview



Our Solar Energy Portfolio

Capabilities across all solar segments

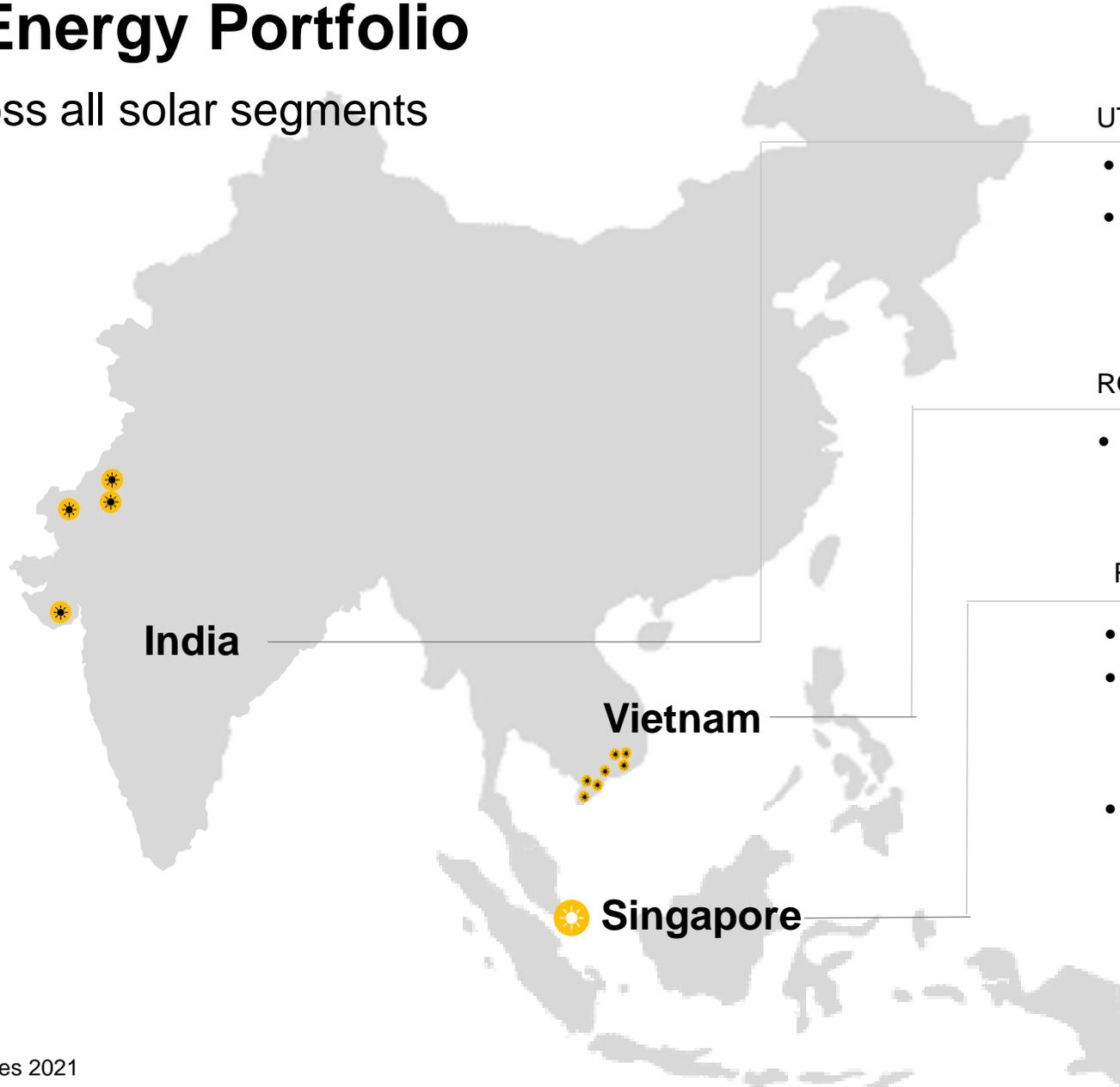
ROOFTOP



FLOATING



UTILITY SCALE



UTILITY SCALE

- 35MW in operation
- 400MW under development

ROOFTOP

- 46MWp of contracted capacity

ROOFTOP • FLOATING • UTILITY-SCALE

- 383MWp of contracted capacity
- More than 2,500 sites operational or under development
- Contributing to 25% of Singapore's national 2025 target

Our Solar Energy Portfolio

Capabilities

1. Business Development

Strong pre-sales technical know-how and ability to access customers

2. Project Development

Technical / Engineering skillsets overlaid by value engineering and a strong emphasis on safety and quality

3. Asset Management

A long-term partner to customers – extensive track record in energy and utilities sector

4. Digital & Analytics

Detailed, actionable insights for better control and enhanced productivity

Winning Contracts

Optimising Costs

Increasing Yield



Solar Monitoring Dashboard

Data acquisition
Visualisation
Optimisation



Key Features:

Map Navigation

Users with multiple assets can navigate and browse through all of them on a world map interface, viewing each system's individual characteristics with a single click.

Global Asset View

Global management of all project status. Each project can be viewed whether it is healthy, has minor or major faults. The operator can identify sites with faults at a glance.

Aggregation of Alarms

All alarms are classified into minor, major or critical, with each alarm tracked on the work done to rectify it. This ensures all faults are properly rectified and accounted for.

Sustainability Statistics

The platform projects the amount of carbon emission reductions and equivalent measures of environment benefits that the asset has completed based on the energy generated.

Supporting the Long-Term Growth of Solar Energy in Singapore

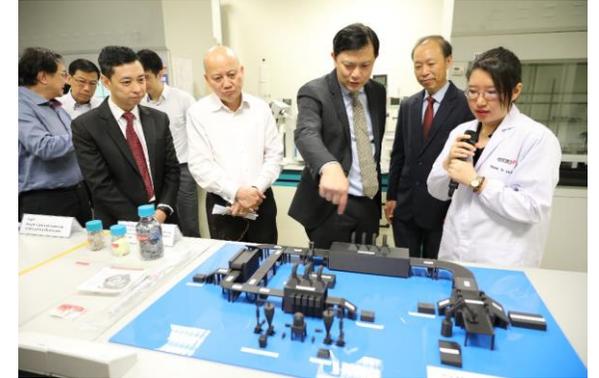
Collaboration with Institutes of Higher Learning for R&D projects and skills training

2019: Partnership with Singapore Polytechnic

- Aims to commercialise solar panel recycling through a partnership with SP researchers; a pilot prototype recycling plant is underway
- Jointly developed course curriculum, internships as well as continuing education programmes for managers, engineers and technicians in the solar industry

2021: Launch of ITE-Sembcorp Centre for Sustainable Solutions

- Set up at ITE College East, it is the first-of-its kind integrated sustainable solutions training centre for students, with an emphasis on solar photovoltaic systems
- The partnership includes the joint development of staff capability and training programmes to expand the solar industry's talent pool



The Sembcorp Tengeh Floating Solar Farm



Sembcorp Tengeh Floating Solar Farm in Singapore

One of the world's largest inland floating solar PV systems

Total Installed Capacity



Sembcorp Tengeh Floating Solar Farm **60MWp**

Key Statistics



Size of **45 Football Fields**



Powering **16,000** 4-Room HDB Households



Occupying **one-third** of Tengeh Reservoir (45 hectares)



Offsets **32 kilotonnes** of carbon emissions annually, equivalent to taking **7,000 cars** off the roads.

>800

Sinkers

>122,000

Solar Panels

>250,000

Floats

10

Floating Solar Panel Islands

16

Power Conditioning Systems

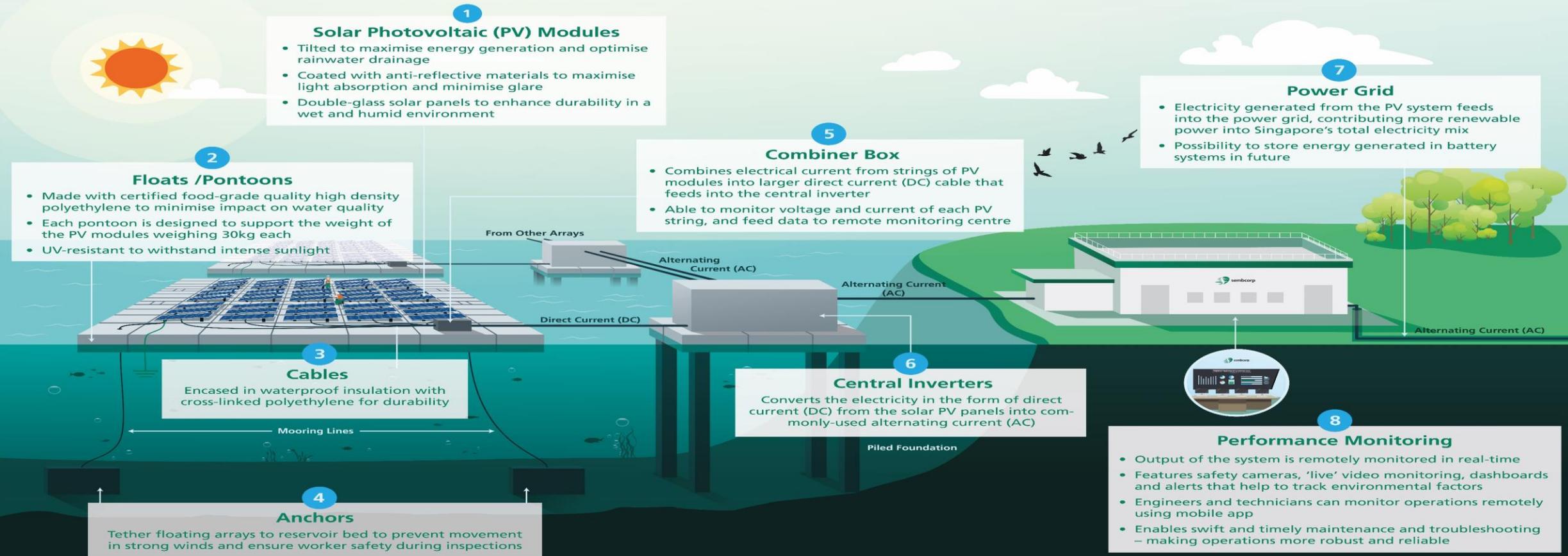
Singapore's Solar Target

Singapore is aiming to deploy at least **2 gigawatt-peak (GWp)** i.e. **2,000 MWp** of solar capacity by 2030, supplying about 3% of Singapore's total electricity demand.

Embedding Sustainability in the Design of the Floating PV System

TOWARDS A GREENER FUTURE

EMBEDDING SUSTAINABILITY IN THE DESIGN OF THE FLOATING PV SYSTEM



Sembcorp's Floating Solar Expertise



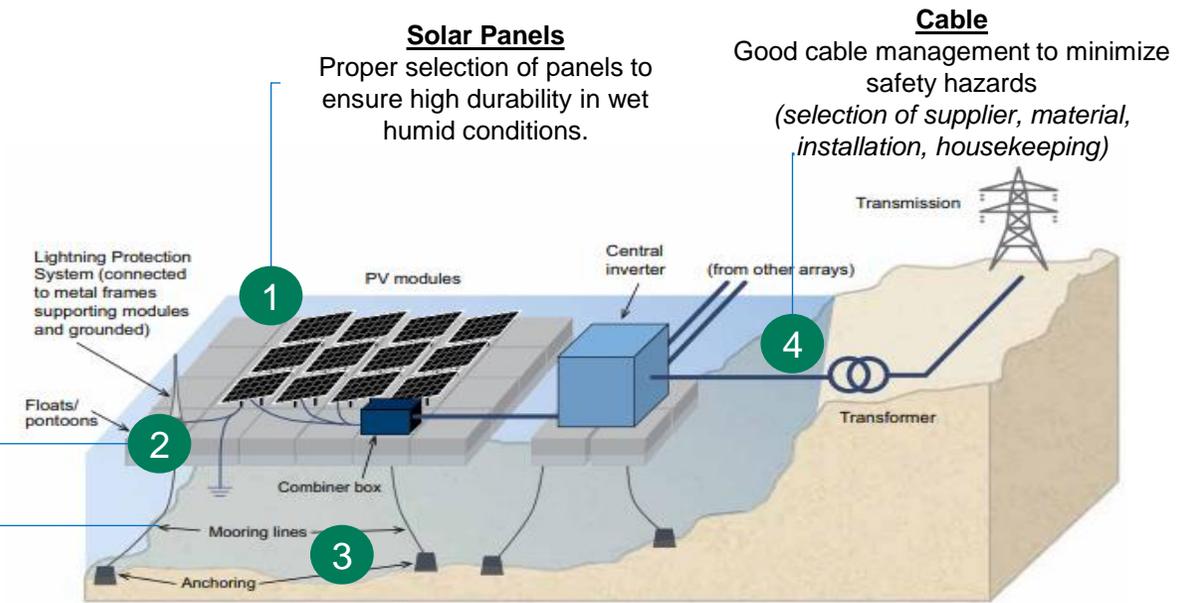
Source: ST

How floating solar compares to rooftop solar

Benefits	<ul style="list-style-type: none"> • Optimizes land use (limited roof/land space) • Higher performance than rooftop solar • Generally less shading
Challenges	<ul style="list-style-type: none"> • Good cable management is essential • Anchoring and mooring design becomes critical • O&M is more challenging than roof/land-based • Mitigate against environmental impacts

Floats
Need to be sustainable (UV-resistant, hazard-free) and modular (fast deployment)

Anchoring/ Mooring
Customized and designed for environmental conditions with buffer



Source: Solar Energy Research Institute of Singapore (SERIS) at the National University of Singapore (NUS).

Driving Operational Excellence through Innovative Solutions

- A **custom-built jig** designed to increase the rate of solar panel assembly by up to 50%
- **First in the world to deploy advanced drone electroluminescence imaging technology** on a utility-scale photovoltaic system
- **Drones** are also used for regular operation and maintenance checks, which helps to shave manual inspection costs by about 30%
- **Sembcorp's digital monitoring platform** helps its engineers monitor the renewable energy generation in real time



Best Practices on Innovative FPV Business Models

Key Factors for Consideration

LAND OWNERSHIP (WATER BODY)

- It is important to **have access and the right** to use the water body for FPV
- This provides **project and cost certainty** (e.g. rental fees)

OFF-TAKER – WHO? HOW? HOW MUCH?

- Having a **trusted off-taker** helps improve project bankability
- How will the solar energy be consumed? **On-site or off-site?**
- Will **all solar energy be consumed?** Or is there excess?

OTHER STAKEHOLDERS

- Unlike rooftop / land-based solar PV which are generally within the owner's premise, FPV may involve **more stakeholders**.
- This includes **other users of the water body**
E.g. water authorities, recreational activity users, fisheries
- There may be a need to consider the **environmental impact**
E.g. biodiversity, water quality

Sustainability is Our Business



Learn more about our Sustainable Solutions @ www.sembcorpenergy.com.sg

 Write to hello@sembcorp.com

