# Sembcorp Industries Investor Day 2021

May 27, 2021

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# Sustainability is Our Business

May 27, 2021

Wong Kim Yin Group President & CEO



## **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\$3.8 billion** Market capitalisation (as at May 25, 2021)



Listed on Singapore Exchange Mainboard (SGX)



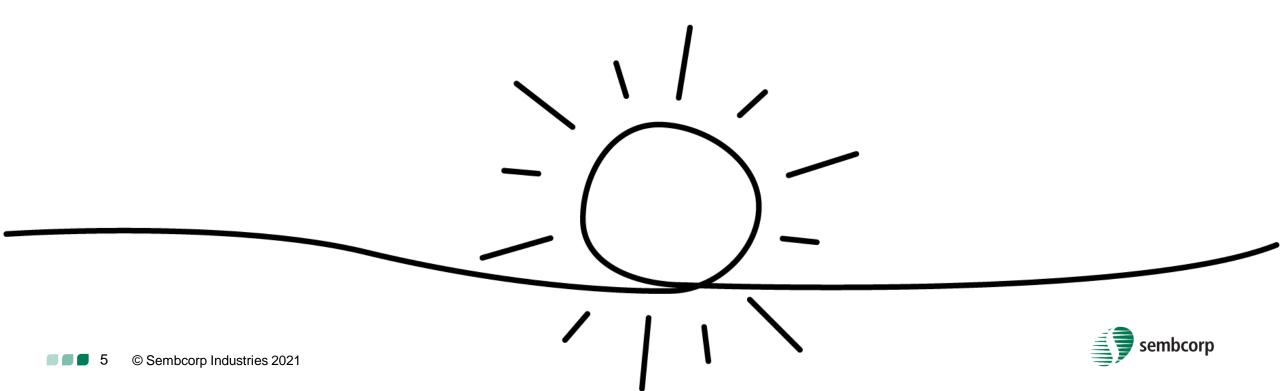
#### **Index Component**

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



## **A New Chapter for Sembcorp**

- Transformed into a focused energy and sustainable solutions provider following the demerger with Sembcorp Marine in September 2020
- Sharpened focus to capture growth opportunities that support energy transition and sustainable development



## **Supporting Sustainable Development**

#### Renewables



#### **Conventional Energy**



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

#### • 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 parksBusiness hubs
- Logistics warehouses
- Residential developments

#### WATER

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

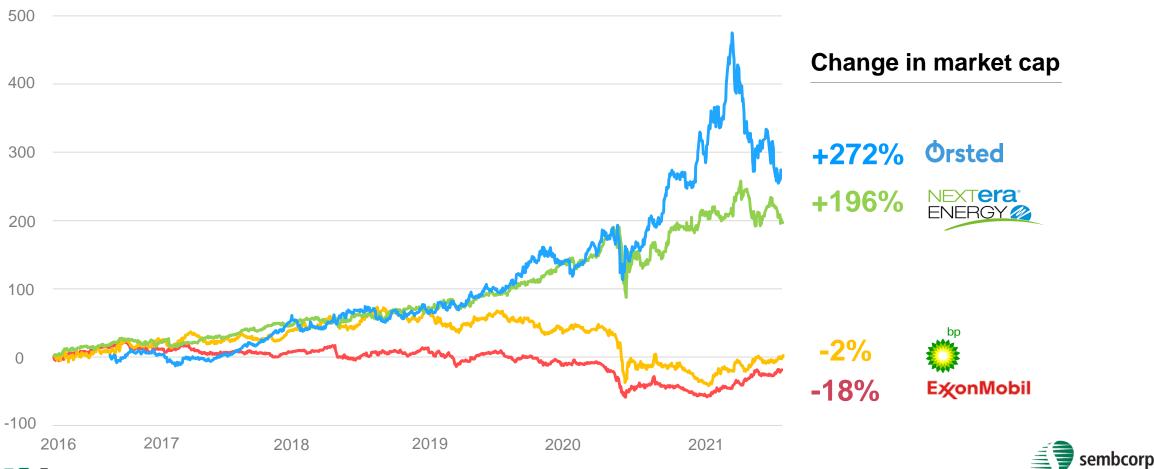
### WASTE and WASTE-TO-RESOURCE

- Waste management
- Recycling and waste-to-resource



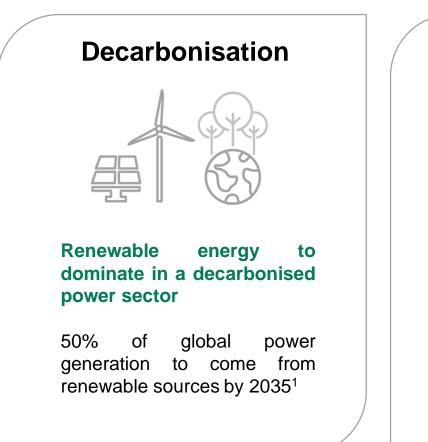
## **Change of Guards in the Energy Industry**

Market cap, US\$ billion (Rebased)



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## **Global Megatrends**



#### 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 industry<sup>1</sup>

#### 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 2050<sup>2</sup>

<sup>1</sup> McKinsey Global Energy Perspective 2019, 2021

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



# Asia: Multi-decade Sustainable Solutions Opportunity

Staggering investments in renewables required to get to Net-Zero by 2050<sup>1</sup>

#### Strong momentum by Governments on Sustainability

#### INDIA

National Electricity Plan 2018

• Targeting 175GW of renewable energy capacity by 2022, of which 100GW is solar and 60GW is wind

#### CHINA

14th Five Year Plan (2021-2025)

- 13.5% reduction in energy consumption per unit of GDP by 2025
- 18% reduction in CO<sub>2</sub> emissions per unit of GDP by 2025

#### VIETNAM

National Strategy on Green Growth 2021-2030

• Currently being developed by the Ministry of Planning and Investment and to be finalised in June 2021

#### SINGAPORE

Singapore Green Plan

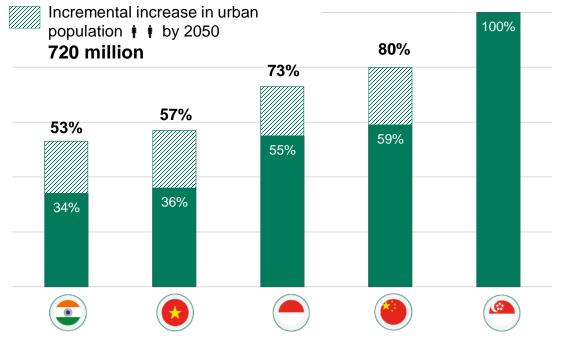
 Increase solar deployment to 1.5GWp by 2025, and at least 2GWp by 2030

#### Growing share of urban population

Percentage of total population (%) in 2018 and 2050

2018: 2050: + 🖾





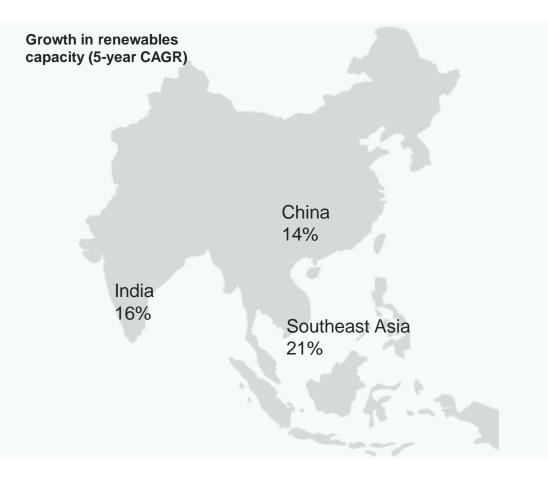
Source: UN Population Division, World Urbanization Prospects: The 2018 Revision



<sup>1</sup> The International Energy Agency (IEA) pathway calls for rapid scale up of solar and wind this decade -- 630 GW of solar per annum, 390 GW wind per annum every year to 2030. Source: Net Zero by 2050: A Roadmap for the Global Energy

# Asia: Multi-decade Sustainable Solutions Opportunity

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



### Southeast Asia, China and India

Forecasted Market Size for Renewables<sup>1</sup> 2020: 649GW → 2025: 1,295GW

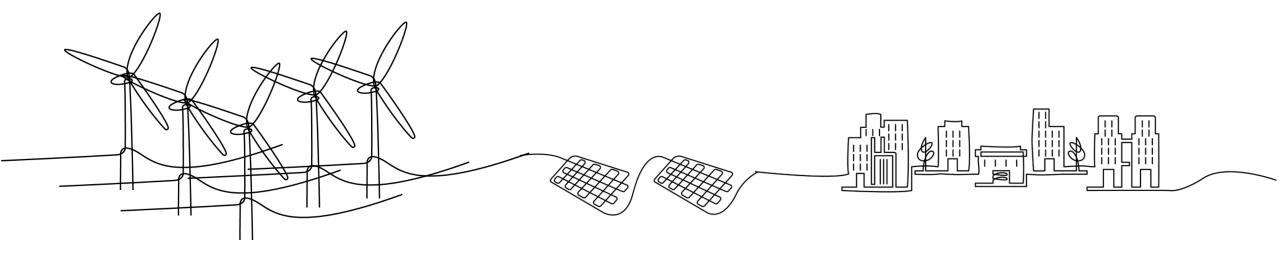
5-year CAGR (2020-2025) **15%** 

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



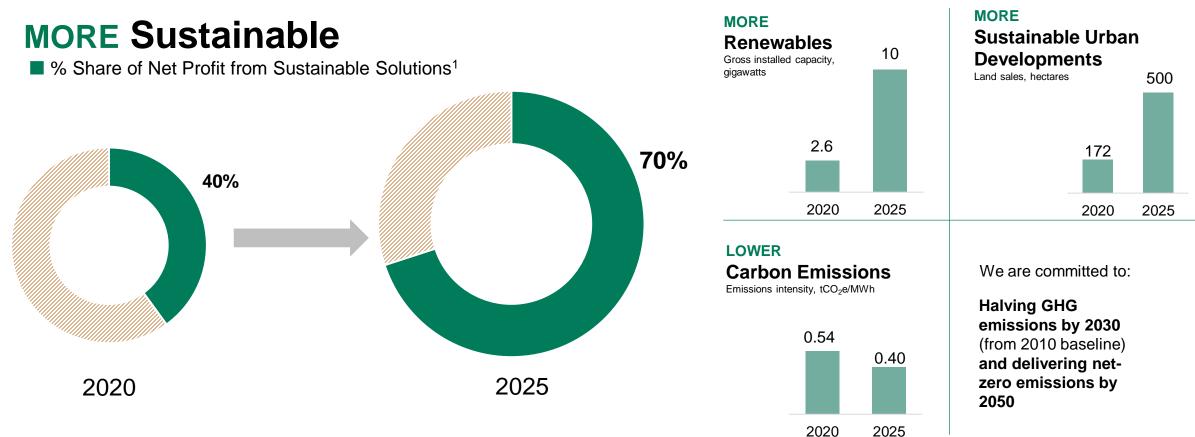
## **Sustainability is Our Business**

- To be a leading provider of sustainable solutions
- Transforming our portfolio from brown to green





## Transforming our Portfolio from Brown to Green



<sup>1</sup> Percentage based on Net Profit excluding corporate costs and exceptional items. Sustainable Solutions include Renewables (wind, solar and energy storage) and Integrated Urban Solutions (urban, water, waste and waste-to-resource).

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## Renewables

## A growing regional leader

Well-positioned in key growth markets with 3,300 MW gross capacity<sup>1</sup>

# Wind **2,419 MW**

Utility-scale

INDIA · CHINA

Highest wind capacity under self-O&M in India Solar 775 MW Utility-scale • Floating • Rooftop

INDIA · SINGAPORE · VIETNAM

A leading solar energy player in Singapore

Energy Storage System 120 MWh

UK

Operating one of the largest energy storage portfolios in the UK



## **Renewables is our Focus**

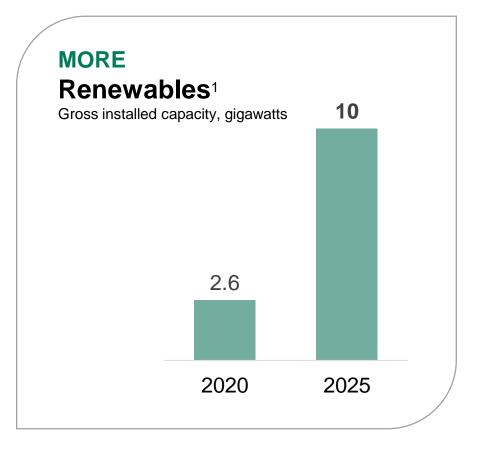
#### TARGET

2025: Quadruple gross installed capacity

# Leverage established footprint and capabilities to grow

#### Focus on

- Organic growth
- Selective M&A and partnerships
- Capital recycling





## Urban

## **Providing platforms for growth**

- 14 integrated urban development projects in Vietnam, China and Indonesia
- 12,588 hectares in gross project size

Vietnam **8,878 ha** 

gross project size

#### Vietnam Singapore Industrial Park (VSIP)

Ten VSIP projects strategically located in the southern, central and northern economic zones China **2,850 ha** gross project size

Sino-Singapore Nanjing Eco Hi-tech Island Wuxi-Singapore Industrial Park Singapore-Sichuan Hi-tech Innovation Park Indonesia 860 ha gross project size

**Kendal Industrial Park** 

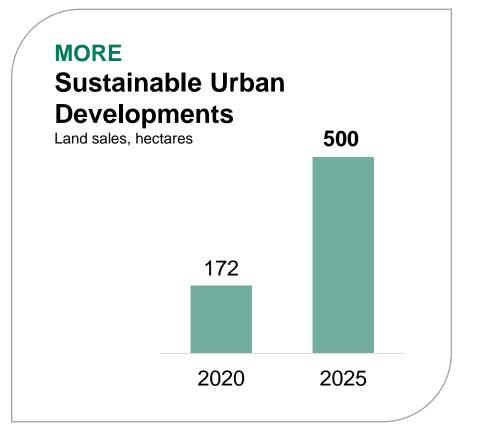


## **Growing Integrated Urban Solutions**

**TARGET** 2025: Triple land sales in the Urban business

Leverage partnerships, track record and land bank

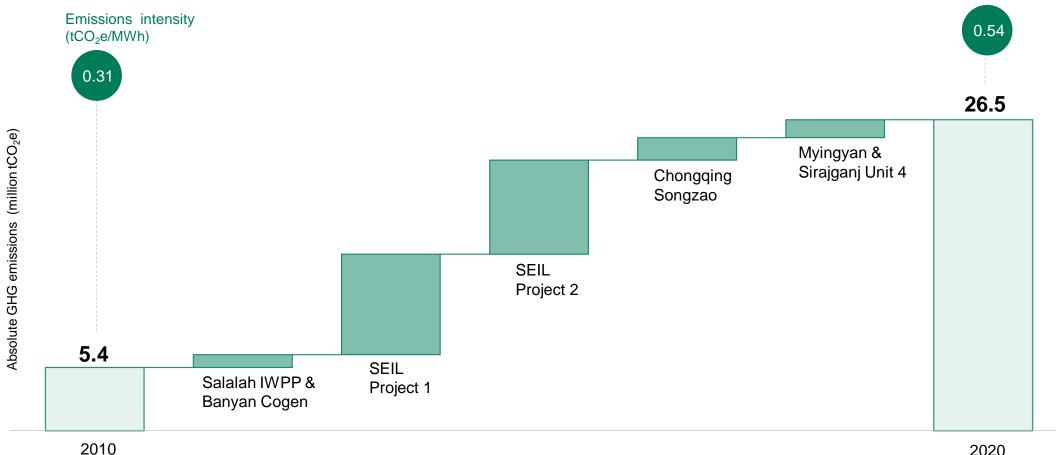
Synergistic platform to grow sustainable urban solutions





# **Group GHG Emissions**

Emissions have increased in tandem with thermal business growth



2020

Note: GHG emissions (absolute) include direct emissions (Scope 1) from our activities and indirect emissions (Scope 2) from our energy consumption. Figures for the GHG Emissions and GHG Emissions Intensity figures for years prior to 2020 based on estimates

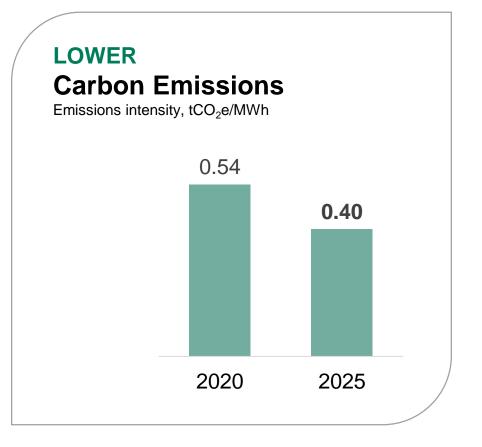
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## **Climate Action Commitment**

**TARGET** 2025: Reduce GHG emissions intensity by 25%

Committed to halve GHG emissions by 2030 (from 2010 baseline of 5.4 million  $tCO_2e^1$ ) and deliver net-zero emissions by 2050

No investments in new coal-fired energy assets





## **Climate Action Commitment**

#### **Delivering Net-Zero by 2050** GHG emissions<sup>1</sup> (million tCO<sub>2</sub>e) TARGET TARGET 26.5 Halve Deliver emissions net-zero from 2010 emissions baseline in by 2050 **↓ 90%** 2030 from 2020 to 2030 5.4 2.7 Net-zero 2010 2020 2030 2050 **Baseline**



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<sup>1</sup>GHG emissions (absolute) include direct emissions (Scope 1) from our activities and indirect emissions (Scope 2) from our energy consumption. GHG emissions data is measured using an equity share approach

## **ESG at Sembcorp**

#### **Priority SDGs**





#### Strong corporate governance

Amongst the Top Companies in Singapore for Corporate Governance

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



#### Accountability

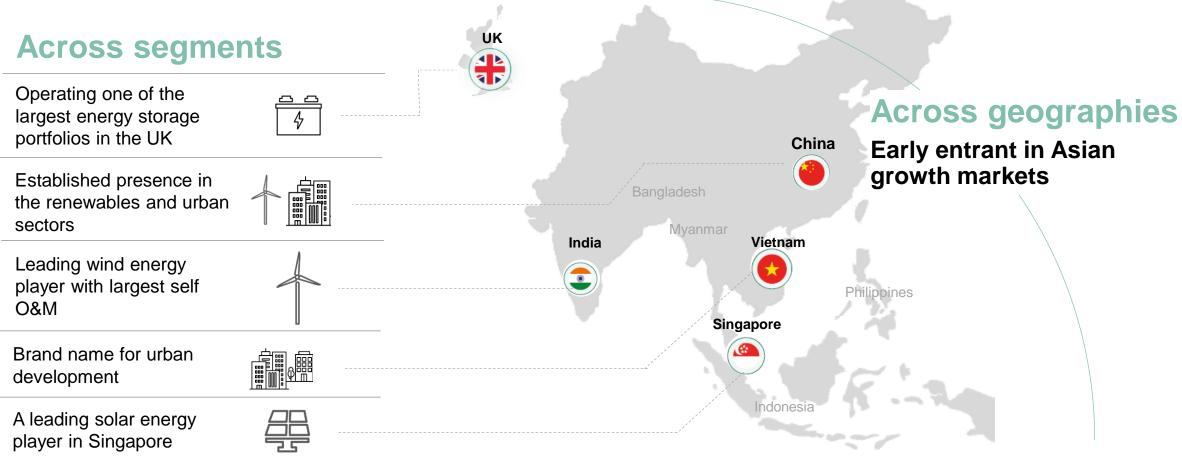






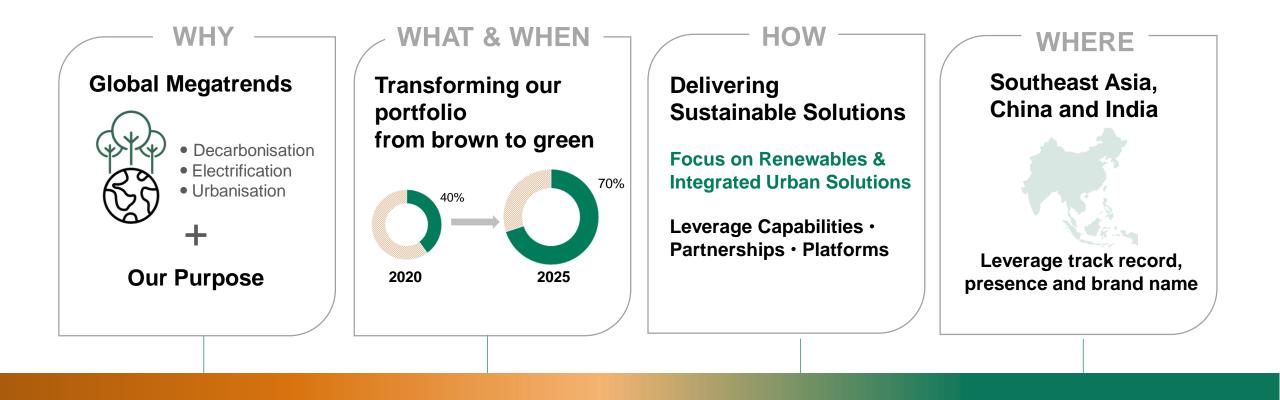


# Well-positioned to be a leading Pan-Asian provider of sustainable solutions





## **Sustainability is Our Business**





# Capital Allocation and Financials

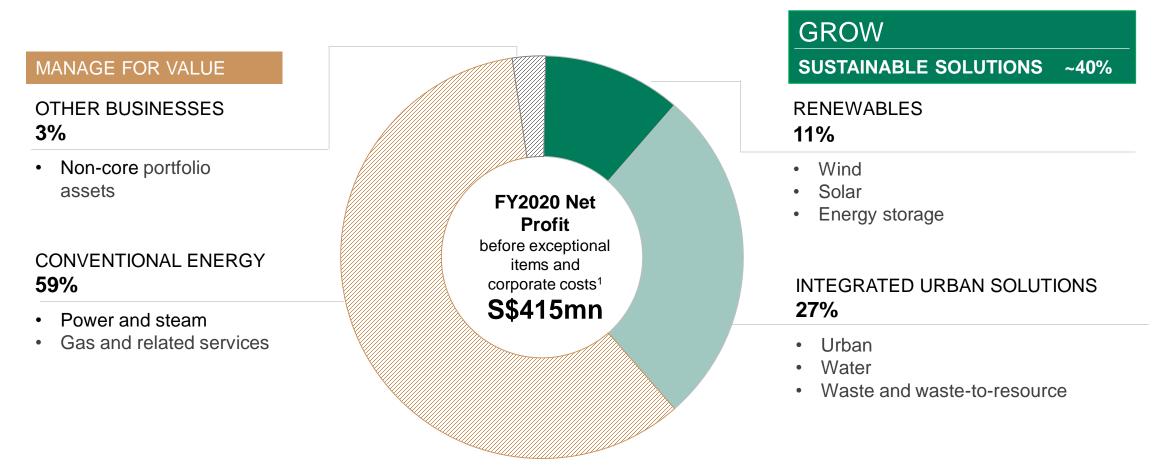
May 27, 2021

Eugene Cheng Group Chief Financial Officer



# **Repositioning for Transformation**

**Business Segments** 





# **Repositioning for Transformation**

Disciplined capital allocation to drive long-term value creation



Supporting the energy transition and sustainable development



Renewables



Integrated Urban Solutions

#### Optimising Existing Business

Managing for value, exploring optionalities



Conventional Energy

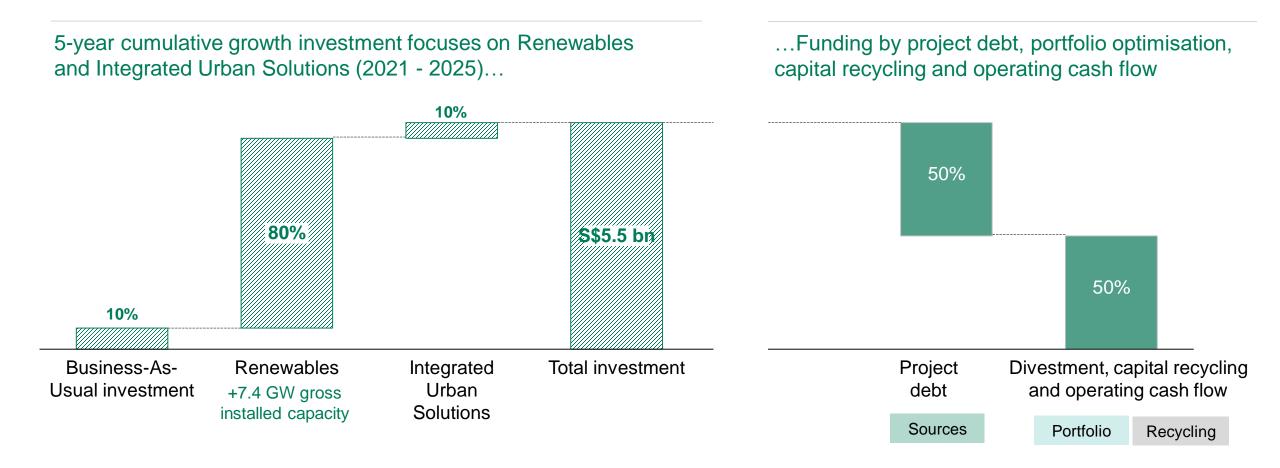
#### Capital Recycling

- New sources of capital
- Portfolio approach to transition from brown to green
- Capital recycling of stabilised assets to enhance returns



### **5-year Investment Programme**

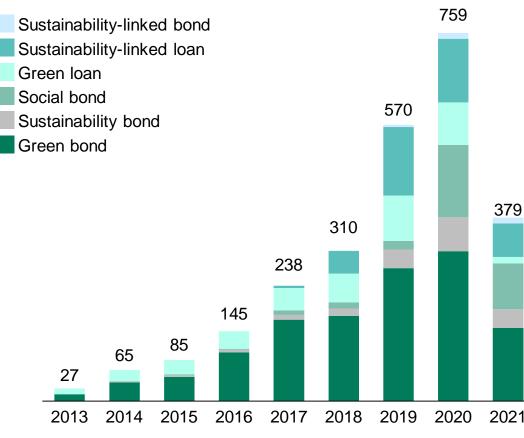
Funded by project debt, portfolio optimisation and operating cash flow





## **New sources of ESG capital**

#### Global sustainable debt issued by instrument types US\$ billion nominal



Source: Bloomberg New Energy Finance; 2021 data as at March 31, 2021

Green financing	New sources
<ul> <li>Growing ESG-driven interest has increased demand for green financial instruments</li> <li>Global green finance issuances have seen strong support</li> <li>Sembcorp Green Financing Framework is established, ready to tap green capital markets</li> </ul>	Sembcorp Green Financing Framework Climate Bonds
<ul> <li>Sustainability-linked finance</li> </ul>	ina — New sources —

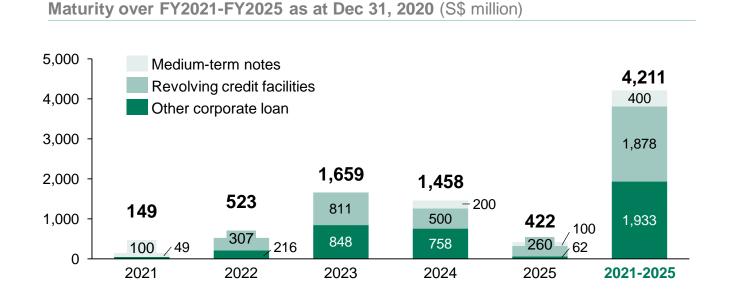
- Wider ESG investor pool can be accessed via sustainabilitylinked financing
- Sembcorp's strategic focus on sustainable solutions positions the company to tap sustainability-linked financing

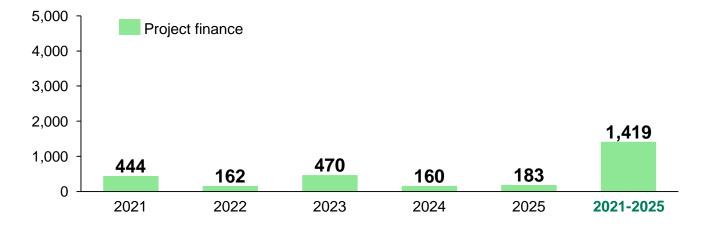
#### Project financing

- Limited / non-recourse project finance may be selectively used for projects with high inherent risk or in new markets
- Where applicable, project finance may also be structured as green finance



## Managing group debt maturity





#### Corporate debt refinancing

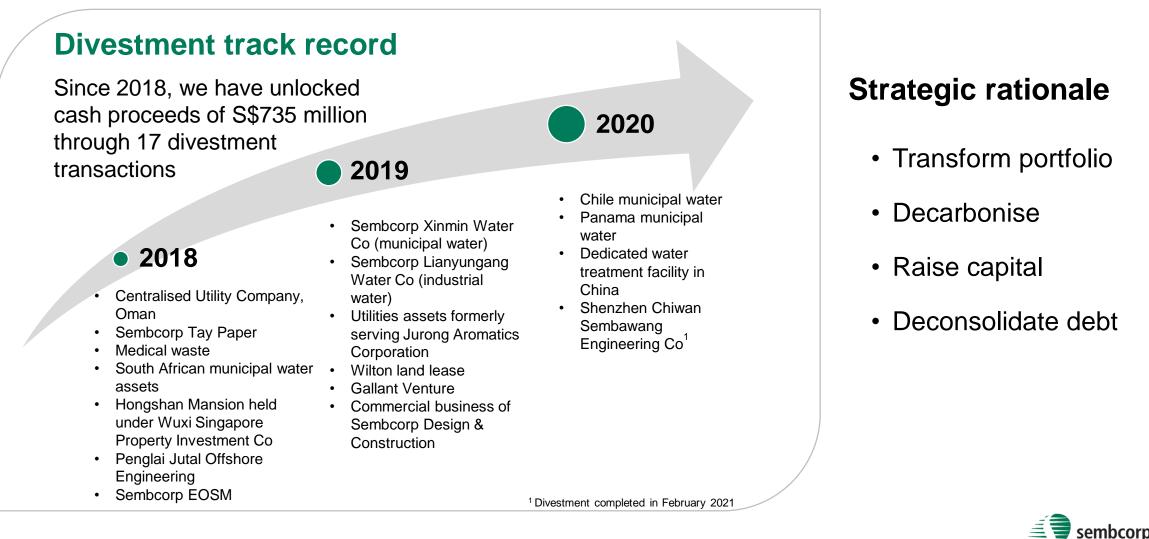
- Partially pay down with cash on balance sheet and operating cash flow
- Refinance with term instruments:
  - Sustainability-linked bonds
  - Traditional medium-term notes
- SCI has ~S\$5.0bn of unutilised borrowing facilities as of Dec 31, 2020 to address any refinancing needs
- Target to maintain at least S\$1.5bn of committed RCF capacity to provide interim bridge liquidity

#### Project finance debt repayment / refinancing plan

- Debt amortisation serviced primarily by project cash flow
- Refinancing of project debt with green loan/ bond may be explored



# Continuing divestments will transform and decarbonise the portfolio



## Systematic capital recycling

Funding the growth pipeline and providing returns uplift

#### **Precedent capital recycling examples**

#### **PUBLIC LISTING**

# Sembcorp Salalah Power and Water Company

- In October 2013, Sembcorp sold 20% equity interest in Sembcorp Salalah via an initial public offering (IPO) in Oman
- Total gain of S\$117 million recognised, comprising:
  - S\$37 million gain on disposal of 20% equity interest
  - S\$80 million fair value gain on the re-measurement of remaining 40% stake

#### INTRODUCING MINORITY AND JV PARTNERS Sino-Singapore (Chengdu)

### Innovation Park (SSCIP)

- In July 2020, Singapore-Sichuan Investment Holdings (SSIH), a Sembcorp Development JV, sold 30% equity interest in SSCIP worth RMB 691.3 million (S\$138.8 million) to Chengdu High-Tech Investment Group
- Sembcorp Development gained S\$11.5 million from the transaction while maintaining a 10% effective equity interest in SSCIP



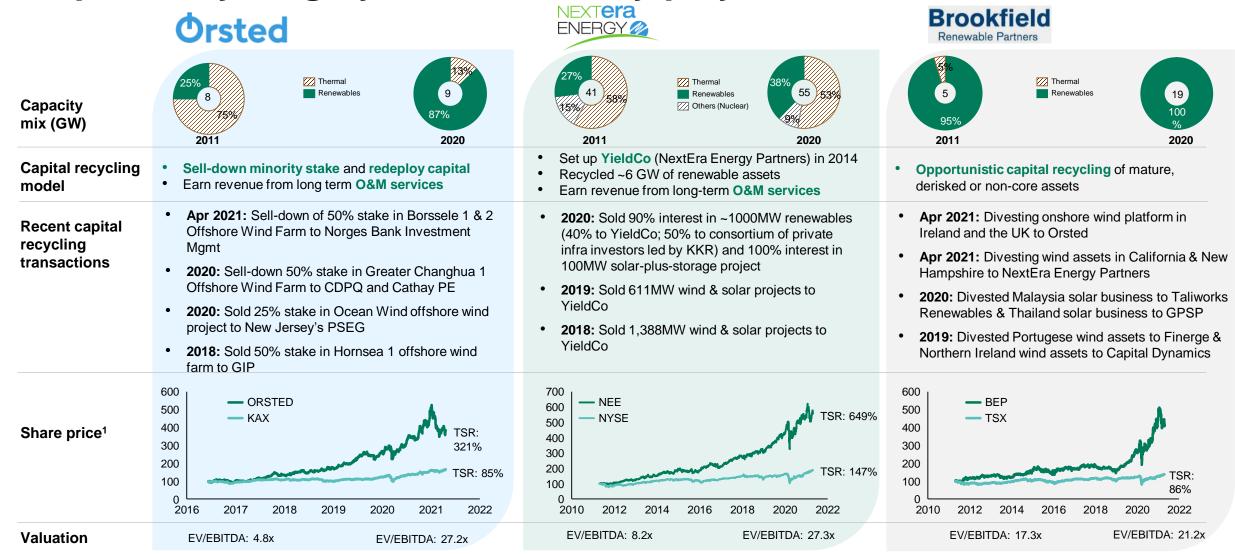
Rationale

- Recycle capital
- Fund growth pipeline
- Returns uplift



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### **Capital recycling by select industry players**



<sup>1</sup>From Apr 2011 to Apr 2021, TSR with dividend reinvested. Stock price is indexed to Apr 2011 for Brookfield Renewable Partners and Nextera Energy while Apr 2016 for Orsted. Source: Company press releases, annual reports and quarterly presentations

# Well-positioned to explore capital recycling platforms in the medium-term

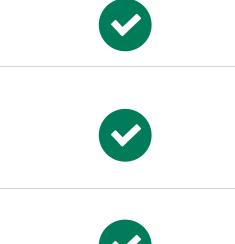
Key factors for successful capital recycling platforms

Strong in-house O&M operating expertise

Demonstrated strong capabilities and track record in project execution

Well-positioned in renewables growth markets with strong project pipeline

Critical scale of well-performing assets with long-term contracts

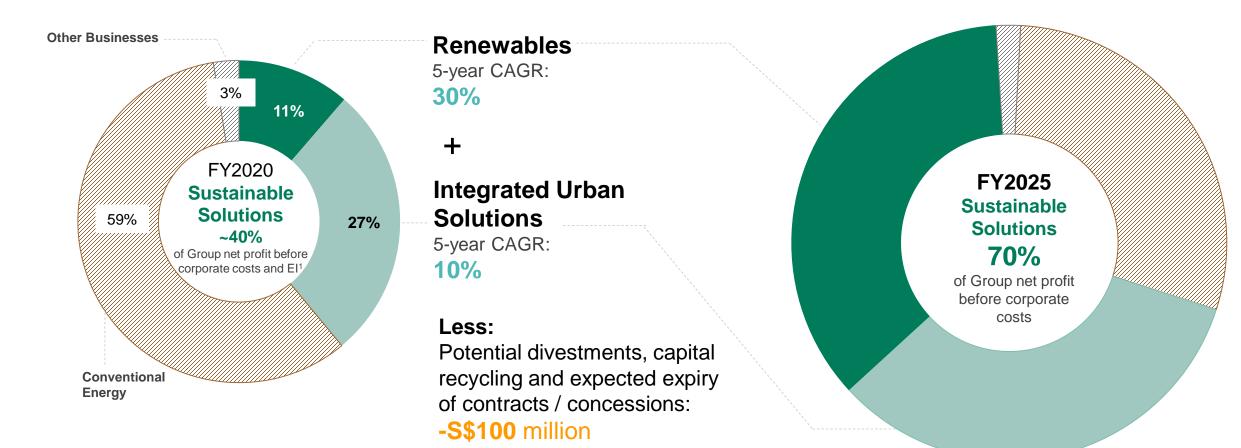


In development



# **Repositioning for Transformation**

Growing our Sustainable Solutions Portfolio



Note: The above aspirations are management's strategic plans for the next five years based on potential investments, divestments, expiry of contracts / concessions as well as the efforts to secure new projects and contracts. There is no assurance that any of such actions may materialise, nor as to the terms and mode of such actions.



© Sembcorp Industries 2021 All percentages are expressed as a percentage of net profit before exceptional items and corporate costs <sup>1</sup> FY2020 net profit before corporate costs and exceptional items was S\$415 million. FY2020 corporate costs was S\$114 million

## FY2020 net profit breakdown by new business segments

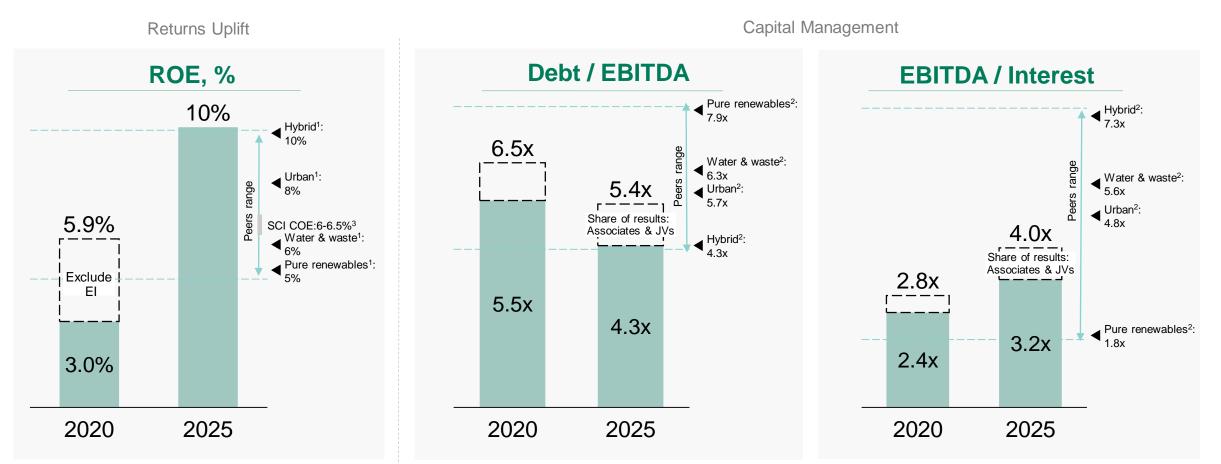
S\$ million	2020	% before corporate costs
Renewables	46	11%
Integrated Urban Solutions	113	27%
Sustainable Solutions	159	38%
Conventional Energy	245	59%
Other Businesses	11	3%
Corporate <sup>1</sup>	(114)	
Net Profit before Exceptional Items	301	
Exceptional Items	(144)	
Net Profit after Exceptional Items	157	

<sup>1</sup> Corporate includes Group and Energy corporate, as well as costs which were previously classified under Other Businesses



## **2025 Strategic Estimates**

Targeting double-digit ROE & significantly improve capital management by 2025



Source: internal analysis, Bloomberg and Capital IQ

1 Median of peers' ROE (based on Net Profit from continuing operations excluding NCI and exceptional item) as of FY2020

2 Median of peers' Debt / adjusted EBITDA and adjusted EBITDA / Interest expense as of FY2020. Adjusted EBITDA = reported EBITDA + share of result from associates and JVs, net of tax

3 Bloomberg calculated cost of equity assuming market risk premium ~5% over risk free rate

Note: The above aspirations are management's strategic plans for the next five years based on potential investments, divestments, expiry of contracts / concessions as well as the efforts to secure new projects and contracts. There is no assurance that any of such actions may materialise, nor as to the terms and mode of such actions.



## **Our Transformation Journey**

## **Brown to Green Transformation**

S\$5.5 billion investment pivoted towards Sustainable Solutions

#### Sources

Tap on ESG-focused funds & committed facilities

#### Portfolio

Portfolio transition to green, optimising existing businesses

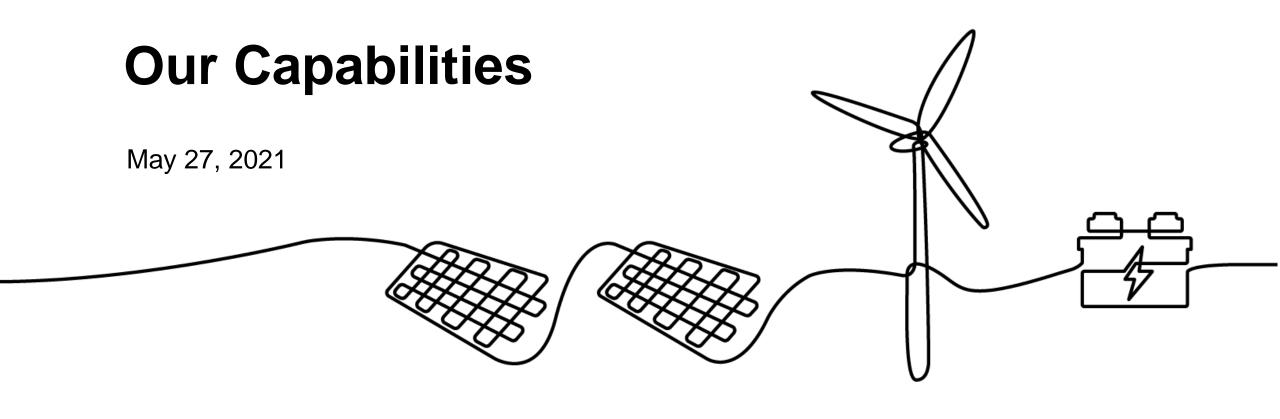
#### Recycling

Capital recycling of stabilised assets to enhance returns

## 2025

- Transformed portfolio with 70% net profit before corporate cost contribution from Sustainable Solutions
- ROE ~10%
- Improved leverage







### Capabilities

### Wind

### Vipul Tuli







### **Our Wind Energy Portfolio**

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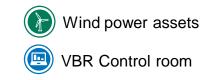
#### 34 SITES, 7 STATES

- 1,700MW in operation
- First player to complete all SECI wind projects
- Largest IPP wind fleet under self-O&M

China

9 WINDFARMS, 2 PROVINCES

- 725MW in operation
- First renewables beachhead in 2012
- Joint venture with Guohua





INDIA

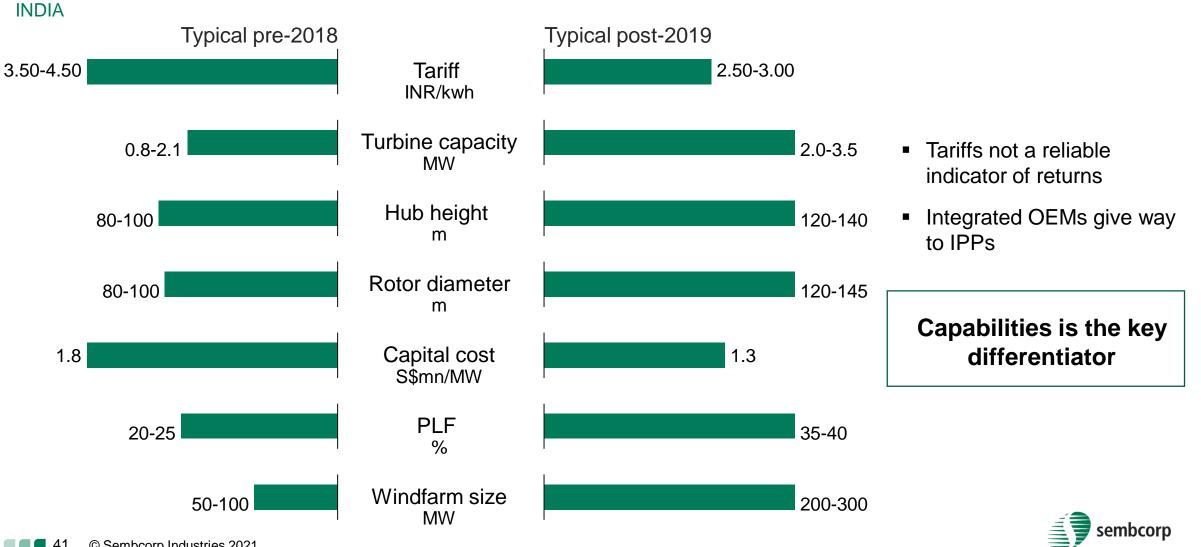
### Strong track record of growth and capability-building

Wind capacity MW 800 379 516 Acquired Developed Developed 2015 2015-2017 2018-2020

2015-2017	2018-2020	2021 onwards State specific bids and hybrids		
Cost plus FIT	Central competitive bidding			
<ul> <li>State-wise FITs</li> <li>OEMs develop and operate projects that IPPs finance</li> </ul>	<ul> <li>Free transmission</li> <li>SECI auctions</li> <li>Wind OEMs compete for share</li> <li>Cheaper Chinese modules</li> <li>PEs enter at scale</li> </ul>	<ul> <li>Free transmission may end</li> <li>SECI state specific auctions</li> <li>Wind OEMs falter</li> <li>Shift to local modules</li> <li>Strategics, pension funds create large IPPs</li> </ul>		
Capabilities built				
<ul> <li>Competitive financing</li> <li>Resource assessment</li> <li>Credit risk management</li> </ul>	•	<ul> <li>Pipeline development</li> <li>Sourcing &amp; procurement</li> </ul>		



### Industry deploys the latest tech and scale



### **Capabilities deep dive**

#### 1. Project Development

Deliver projects on time and cost

#### 2. Digital Asset Management

Maximise generation at minimum cost

3. Life-Cycle Engineering

Bid optimisation, execution quality, asset health



### **Project Development**

### First player to complete all SECI wind projects in India

Bidder	SECI-I	SECI-II	SECI-III	SECI-IV	SECI-V	SECI-VI	SECI-VII	SECI-VIII	Commission	ed Total
Sembcorp	250	250	300						800	800
Peer 1	250	214 36	200 200	265		300	50		664	1,515
Peer 2	50	50	250	300	300	150 100	130		250	1,330
Peer 3	250			300					250	550
6 others	200 50	200 250	188 862	94 791	415		300	250	682	3,600
Total wind capacity	1,050	1,000	2,000	1,750	715	550	480	250		7,795
capacity	<ul> <li>Active EBC contractor management</li> </ul>							Comr	nissioned	Not commissioned

- Active EPC contractor management
- Strong regulatory and community engagement
- Judicious contract risk sharing
- Now building self-EPC capabilities



### **Digital Asset Management – maximising asset productivity**

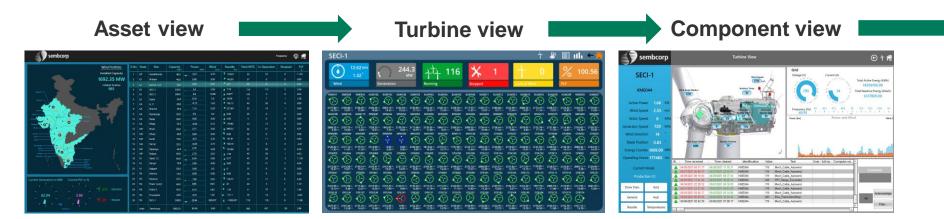
Proprietary digital platform integrated with frontline O&M practices

- Peer support groups **Peer competition** Rewards & among sites recognition Diaitised standard operating procedures **Digital platform "Virtual Brain Renewables**" Scada integration Analytics support Assurance Geotagging all frontline activities Performance Verification integrated management into SOPs
- O&M site teams
- VBR fleet managers
- ETS technical leads
- HSSE team
- Liasoning team
- Supply chain team
- Performance scores
  - 1. Energy Based Availability
  - 2. Preventive Maintenance adherence
  - 3. Equipment Health
  - 4. Power Curve performance
  - 5. HSSE score
  - 6. Predictive Asset Management
- Focused interventions for resolution
- ML based wind forecasting



### Delivering digital expertise to the frontline

Meticulous, real time visibility, inputs and verification



#### Comprehensive, centralised 24x7 monitoring and guidance





#### **Component analytics**

- Predictive maintenance
- Power curve efficiency
- MTBF, MTTR
- Equipment health
- AI based forecasting
- Others...

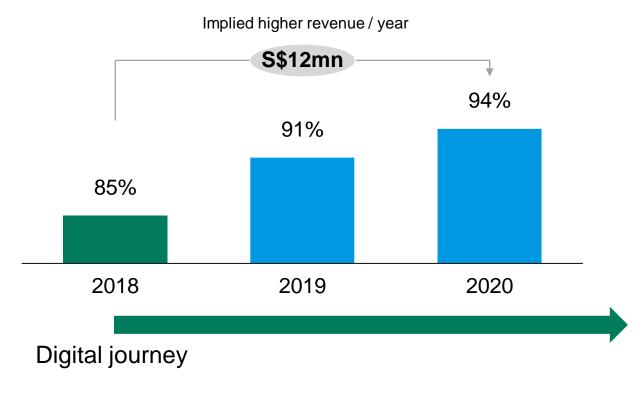
#### **Geotagging verification**

Order Type : Breakdown Maintenance Turbine : TG09 / Vestas/V-82 / TELAGI Category : Nacelle Sub Category : CONVERTER CABINET SYSTEM Equipment : Activity : Slipring body cleaned Picture Taken On: 19-January-2021 1:3 PM Status : Reviewed Found OK Turbine Geo-Tagged.



### **Digital Asset Management impact: superior asset productivity**

Continuous improvement in Energy Based Availability





### Life-Cycle Engineering

Over 200-man years of in-house engineering experience, wind & solar

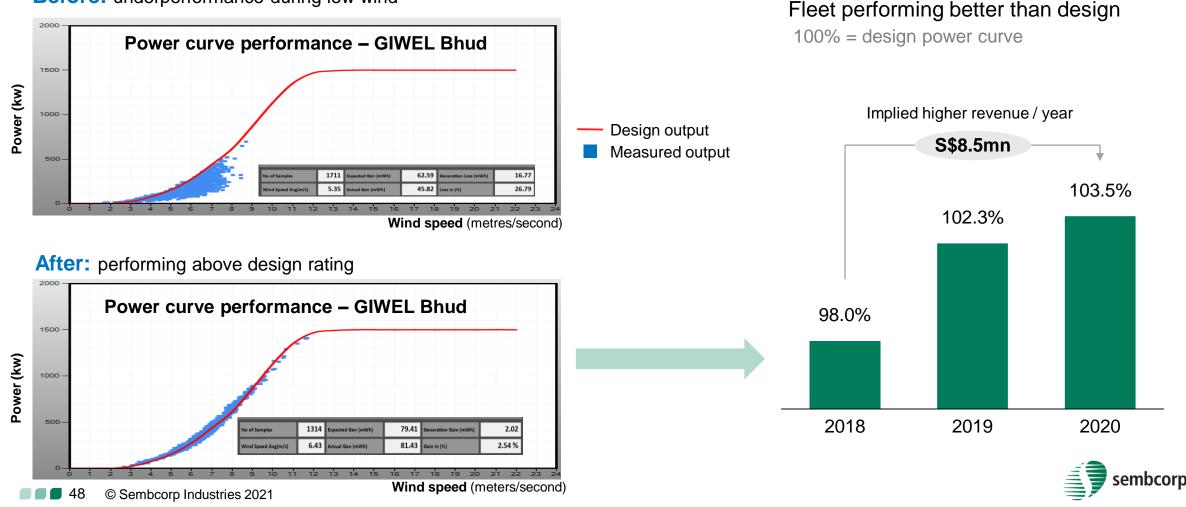
Business Development	Project Development	Asset Management
<ul> <li>Wind resource assessment</li> <li>WTG assessment</li> <li>Solar project design</li> </ul>	<ul> <li>Design and execution QC</li> <li>Solar construction industrialisation</li> </ul>	<ul> <li>Asset health assurance</li> <li>Predictive asset management</li> <li>Power curve efficiency</li> <li>Repair and upgrade innovation</li> </ul>
Bid to win	Build to last	Boost lifetime efficiency



### Life-Cycle Engineering

#### Case study: Power Curve Performance

Before: underperformance during low wind



### Life-Cycle Engineering

Case study: Blade repairs and upgrades

Need for innovation

- Serial defect identified
- Loose connection between blade and hub due to oil leakage potential for catastrophic failure
- OEM solution: high cost, long downtime blade replacement
- Innovative repair procedure developed and tested in-house
  - Vacuum assisted resin infusion moulding (VARIM)
  - On-site application
  - Rigorous inspection regime

Impact

- Cost saving of > S\$200k / blade (96% reduction)
- Reduced downtime from 95 days to 15 days
- Overcame OEM dependency and monopolistic pricing

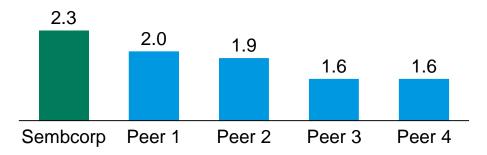




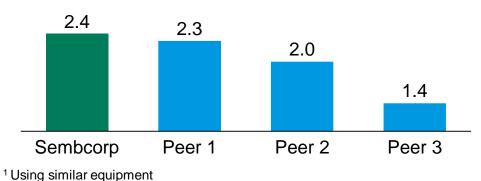
### Impact of Strong Capabilities – Higher revenue, Lower costs

Higher generation vs peers<sup>1</sup>

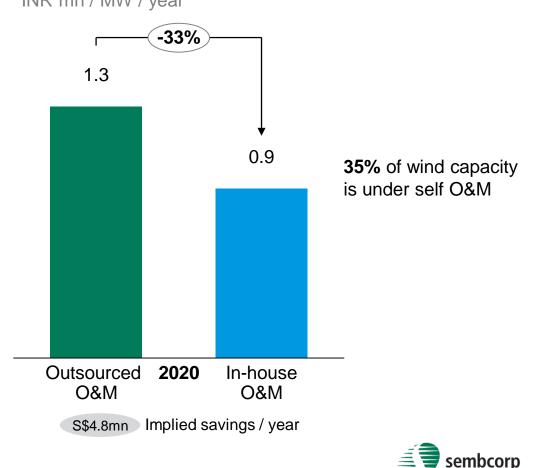
Rojmal area example – 30% higher generation (MWh / MW)



### Sadla area example – 25% higher generation (MWh / MW)



Lower costs due to in-house O&M INR mn / MW / year



### Capabilities

### Solar

### Koh Chiap Khiong





SEMBCORP TRACK RECORD

### **Our Solar Energy Portfolio**

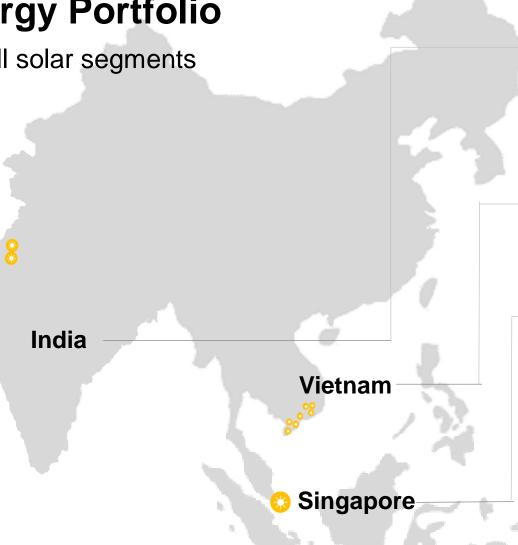
Capabilities across all solar segments ROOFTOP

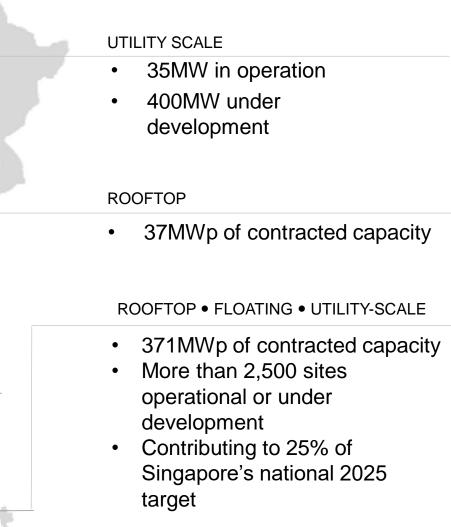


FLOATING











### **A Fully Integrated Solar Developer**

#### **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** 





### **Winning Contracts**

Growth rate outpacing Singapore's solar national target. Trusted by government agencies, MNCs for providing an end-to-end solar solution





### **Increasing Yield**

Maximising topline through value engineering and technology

#### **OPTIMISING SOLAR FLOATERS**



3 solar arrays : 1 walkway vs 2 solar arrays : 1 walkway



# Engineering



"BUILD-TO-EDGE"

Maximising remaining installable area around rooftop site



#### **DATA-DRIVEN ENGINEERING**



Analytics

Utilising wind data to maximise airflow which reduces system temperature





### **Optimising Costs**

Proactive project cost management and driving O&M efficiency through automation

#### SHIFTING FROM TURNKEY TO EPCM





Technical Skillsets



**CLEANING AUTOMATION** 

#### DRONE TECHNOLOGY



Digital & Analytics



Stripping down to bill of quantities (BOQ) level for project costs optimisation



Reducing the need for manual labour



For remote inspection





### **Sembcorp Tengeh Floating Solar Farm**

Case Study: Singapore



Currently under construction

One of the world's largest reservoir floating solar farms 122,000 solar panels over 45 hectares *covering about 45 football fields* Carbon reduction of over 32 ktCO<sub>2</sub>e / year

equivalent to removing over 7,000 cars off Singapore's roads

Coming online in 2H 2021



### Sembcorp Tengeh Floating Solar Farm

Case Study: Singapore



Currently under construction

#### **Business Development**

• Winning hallmark tender at a competitive price

#### **Increasing Yield**

- Optimising array: Walkway ratio
- Drone thermography: maximising efficiency

#### **Cost Reduction**

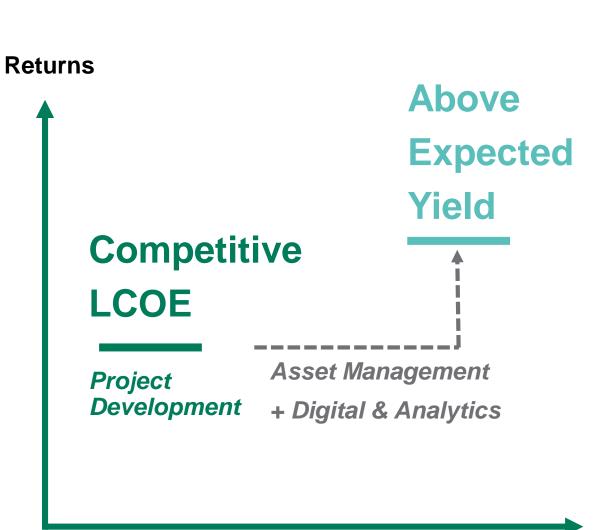
• Through O&M automation



### **Delivering Performance**



Strong engineering and asset management skillsets will underpin returns





### Capabilities

### **Energy Storage**

### Andy Koss

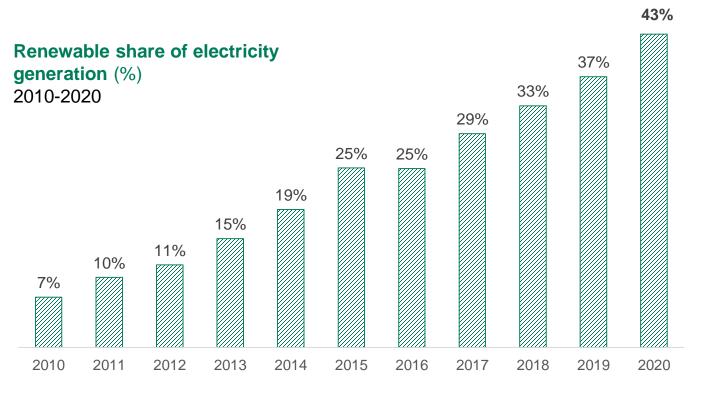




### UK is at the forefront of the energy transition

#### The UK has made significant progress to decarbonise its power sector in the last 10 years

- Grew renewable share of electricity generation from 7% to 43%
- Leads the world in offshore wind installed capacity at 10GW
- Reduced carbon emissions by more than any similarly developed country



#### However, high renewables penetration comes with electricity system challenges

- Intermittency of renewables
- Fewer system services providers
- Lack of flexibility

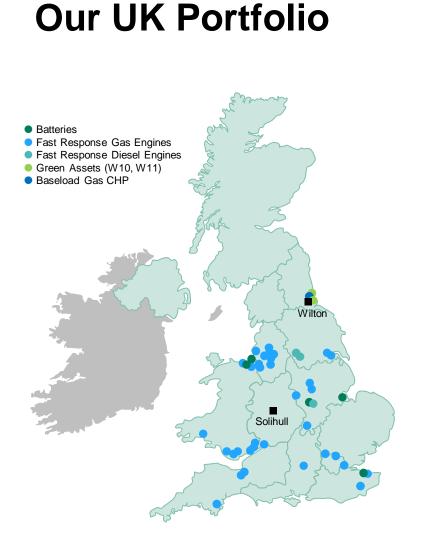
#### ...leading to demand for

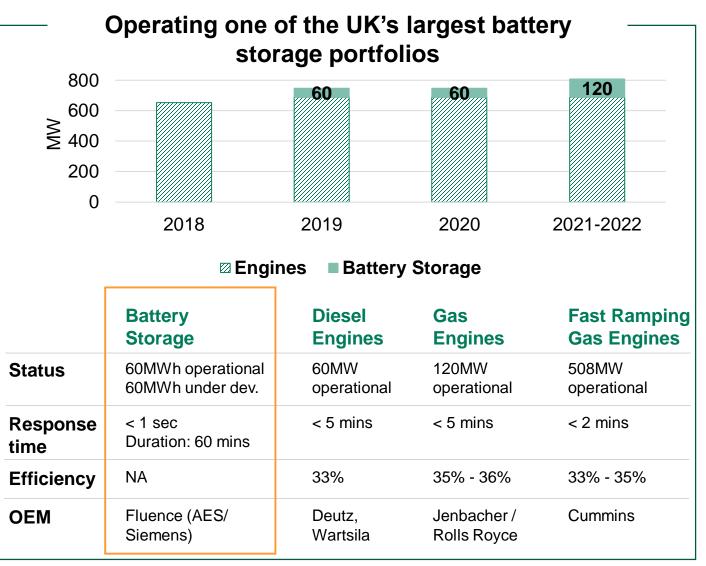
- Energy storage
- Flexible, low carbon generation
- Greater system integration and use of system services providers



Source: UK Department of Business, Energy and Industrial Strategy

#### SEMBCORP TRACK RECORD







### Well-positioned Portfolio with Energy Storage

#### Flex Revenue Streams in the UK Market



Government mechanism that pays market participants a fixed income on a £/kW basis in exchange for remaining available throughout the year to guarantee security of supply

Balancing Services Providing balancing services to the system

#### Firm Frequency Response (FFR)

Based on response (in milliseconds), rewarded on a fixed capacity basis

#### Fast Reserve (FR)

Delivery must start in < 2 mins with minimum ramp rate of 25MW/min, to be sustained for minimum 15 mins



Primary markets for electricity trading with trades executed bilaterally or on power exchanges. Energy trading typically takes place in the day-ahead and within-day markets as well as in the balancing mechanism after gate closure, 1 hour before dispatch



#### Dynamic Containment (DC)

Introduced in Oct 2020. Extremely fast service requiring delivery in <1 second if the frequency moves outside the range 49.8Hz to 50.2Hz

# The portfolio is well positioned to take advantage of more volatile, uncertain markets with the rise of intermittent renewables



### Well-positioned Portfolio with Energy Storage

Ongoing evolution in the power sector

#### **UK Renewable Energy Market Products**

	Capacity	Wholesale	Balancing Services			
	Market		Firm Frequency Response	Fast Reserve	Dynamic Containment	
Renewable Energy Wind	<pre>(&lt;10% derate factor)</pre>	X	X	X	X	
Renewable Energy Solar	<pre> (&lt;2%   derate factor)</pre>	X	X	X	X	
Battery Storage	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	
Gas Engines	$\checkmark$	$\checkmark$	X	$\checkmark$	X	
Conventional Technologies	$\checkmark$	$\checkmark$	$\checkmark$	X	X	

#### **New Products**

#### Launch March 2022:

#### **Dynamic Moderation**

- Rapid response to sudden frequency imbalances in intermittent generation (such as gusting winds)
- Corrects frequency when at the edge of operational parameters
- Ideally suited to batteries

#### **Dynamic Regulation**

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- Pre-fault service designed to slowly correct continuous but small deviations in frequency
- Maintains frequency at 50Hz
- Ideally suited to batteries



### Well-positioned Portfolio with Energy Storage

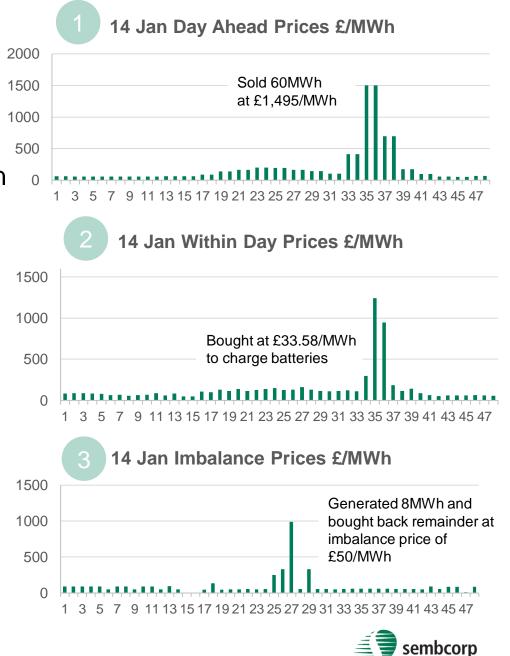
Case Study: Creating Value with Trading and Optimisation

# Utilising range of in-house capabilities to maximise value across multiple revenue streams

Significant value created from removing assets from Dynamic Containment market (value £24k/day) to take advantage of scarcity pricing (selling into day ahead market) and then buying back at lower prices (within day / imbalance) – net profit on the day c.£90k

#### **In-house and Integrated**





#### LOOKING AHEAD

### Building track record for a net-zero economy

### Well-positioned portfolio with energy storage Potential for growth

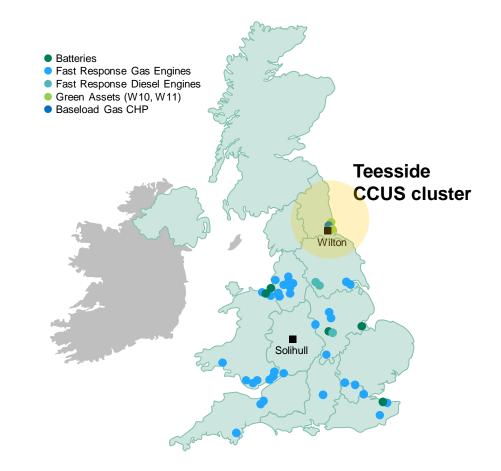
• Options at Wilton and Flex sites for new batteries

# Teesside – Leading site for first decarbonised industrial cluster

- Teesside a principal location for CCUS, and the largest producer and consumer of hydrogen in the UK
- Power, industrial decarbonisation, hydrogen opportunities



Sembcorp owns Wilton International in Teesside

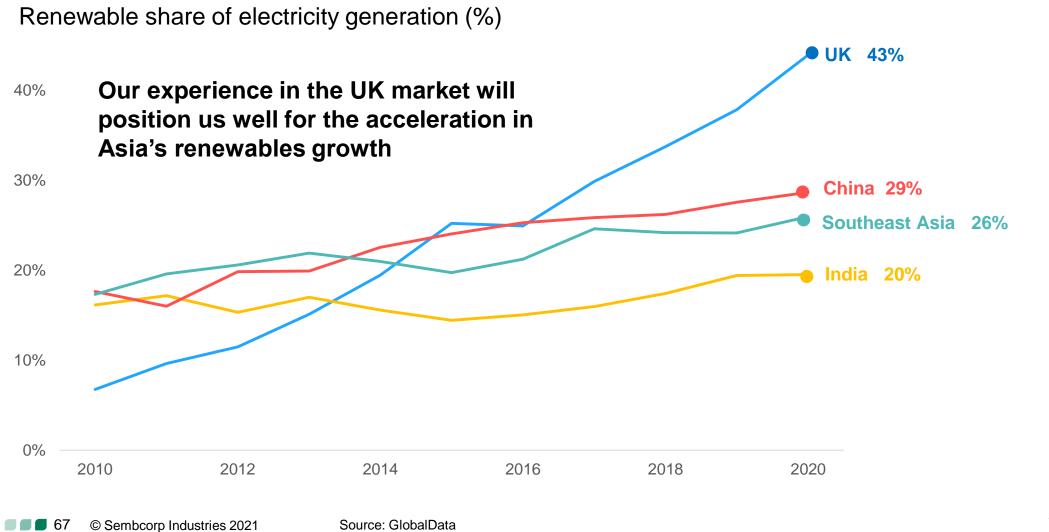




LOOKING AHEAD

67

### Building track record for our global portfolio





# Group Centre of Excellence

### Hong Howe Yong

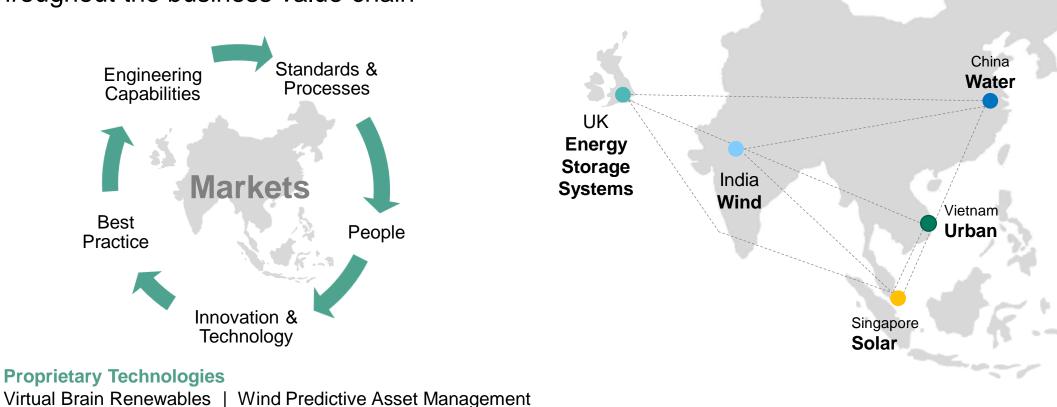




### **Sembcorp Centres of Excellence**

Leveraging Group-wide innovation and capabilities throughout the business value chain

Solar-Water Solution | Solar Analytics | Energy Forecasting





### **Sembcorp Centres of Excellence**

Leveraging Group-wide innovation and capabilities throughout the business value chain



#### **Proprietary Technologies**

Virtual Brain Renewables | Wind Predictive Asset Management Solar-Water Solution | Solar Analytics | Energy Forecasting

### WIND Utility-scale

- One of the leading wind energy players in India
- Highest proportion of wind asset fleet under self-O&M
- First player to complete all SECI wind projects



Utility-scale · Floating · Rooftop

• A leading solar energy player in Singapore

SOLAR

- Developing one of the world's largest inland floating PV systems
- Highest market share for rooftop commercial & industrial (C&I) customers



- Operating one of the largest energy storage portfolios in the UK with 120MWh capacity
- 688MW fleet of flexible
   response fast-ramping
   power generation assets



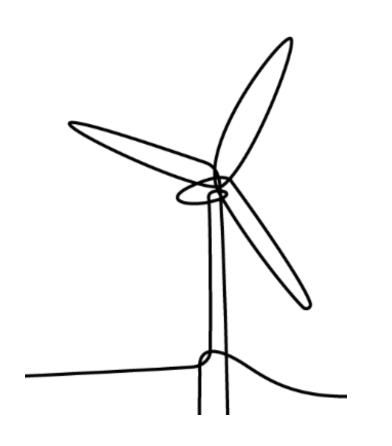


Integrated townships and industrial parks • Business hubs• Residential development

- A leading Asian developer with a strong track record in transforming raw land into sustainable urban developments
- 14 integrated urban projects in Vietnam, China & Indonesia



### Wind Asset Standards



### **Technical Health of Wind Turbine**

### Safety

- Human & Machine Interface
- Unsafe Conditions
- Unsafe Acts / Near Miss Reporting

### Performance

- EBA (Energy Based Availability)
- Power Curve Analysis
- Curtailment Monitoring
- YAW Optimisation

### Reliability

- Parameter Settings
- Error Free Operations
- Alarm Analysis
- PAM (Predictive Asset Management)
- Health Tracker

### **Availability**

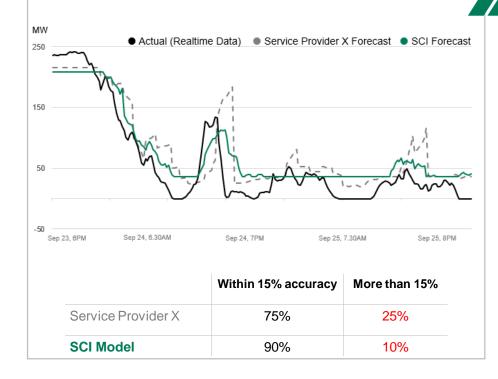
- Minimal Downtime
- MTTR & MTBF



### Example: Energy Forecasting

# Developed in-house energy forecasting capabilities for Wind

 Improvement of S\$90k in annual revenue for a 250MW wind farm

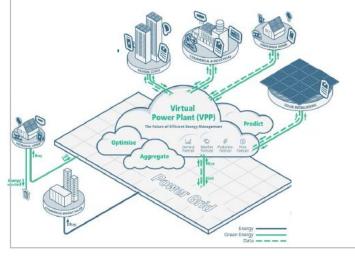


#### Ability to apply to Solar forecasting

- 60MWp floating PV project in Singapore
- Additional 400MW in India within a year

#### Optimising Hybrid Solar / Wind / Battery Storage

- Reduce battery capacity by 5-10%
- Additional revenue from energy storage through wholesale market.
   e.g. frequency / voltage support





# **Technology Roadmap**

# Today RENEWABLES

- Resource assessment
- Resource forecast
- Data analytical based
   performance improvements
- Grid support services curtailment solutions

Mid-term

- Integrated renewable generation and energy storage systems solutions
- Grid services virtual power plant

Long-term

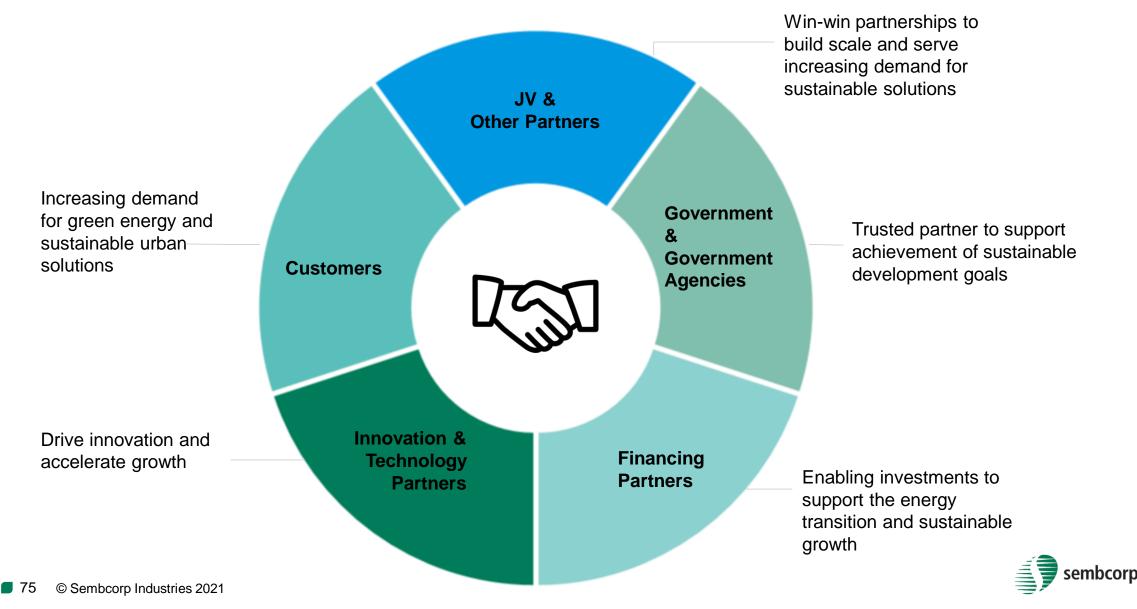


- Green H<sub>2</sub>
- Blue H<sub>2</sub>
- H<sub>2</sub> applications
- Carbon capture, utilisation and storage



# **Partnerships** May 27, 2021 Alex Tan





Case Study: A Valued Partner in the Urban Business

Supporting Governments in sustainable industrialisation and development

#### Vietnam

Be among the top ASEAN economies in terms of industrial competitiveness

# National strategies and our response:

- Balanced growth in regions
   10 VSIPs across all economic corridors
- Special zones to stimulate industrialisation
  - VSIP export processing and special economic zones

#### China

Aspires to be a growth centre for innovative and high-tech industries

#### National strategies and our response:

- Yangtze River Economic Belt Sino-Singapore Nanjing Eco Hi-tech Island (2009)
- "Go West" Singapore-Sichuan Hi-tech Innovation Park (2011)
- Coastal-cities development Wuxi-Singapore Industrial Park (1995)

#### Indonesia

Production-driven economy and improve competitiveness in the global market

# National strategies and our response:

- Balanced growth in regions Investment in Central Java to balance East and West Java
- First special economic zone for industry on Java Island Kendal Industrial Park (2012)



Case Study: A Valued Partner in the Urban Business

## Vietnam Singapore Industrial Park, Vietnam

- Partner with Becamex IDC Corporation since 1996
- FDI of US\$15 billion and 875 customers
- Extended partnership to sustainable solutions in 2019 <sup>6</sup>

## **Wuxi-Singapore Industrial Park, China**

- Established with the Wuxi New District Economic Development Group Corporation in 1993
- Total direct investments of US\$9.6 billion and 80 tenants

## Kendal Industrial Park, Indonesia

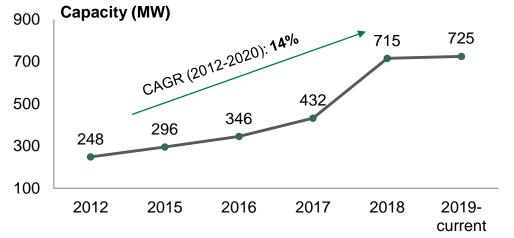
- Joint venture with subsidiary of Kawasan Industri Jababeka
- · Located in the centre of Java economic centre



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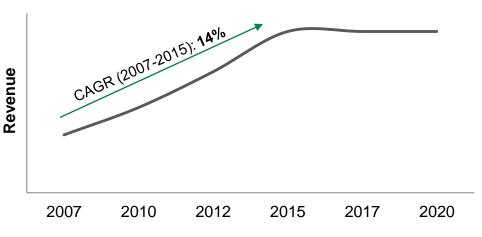
Case Study: A Valued Partner in the Energy Business

Guohua Sembcorp Wind Power JV Companies, China



- 725MW of wind assets in Hebei and Inner Mongolia
- JV partner with Guohua Energy Investment since 2012
- Owned by China Energy Investment Corporation (CEIC)
- CEIC total installed renewable energy capacity: >36GW<sup>1</sup>
- 2021-2025 targets: 70-80GW renewable energy capacity

Shanghai Caojing Cogeneration Co Ltd, China



- 658MW cogeneration plant in Shanghai
- JV partner with Shanghai Electric Power since 2004
- Owned by State Power Investment Corporation (SPIC)
- SPIC total installed renewable energy capacity: 98GW<sup>1</sup>
- 2021-2025 targets: 40GW renewable energy capacity, 210GW by 2030



China Renewable Market Strategy

## The Opportunity

- Renewables growth momentum continues. Committed to more than 1,200GW of installed wind and solar capacity by 2030
- State-owned enterprises (SOEs) dominate wind / solar capacity with 60-65% share of the industry
- Further opening of the energy sector to foreign investment

## **Our Strategy**

- Pursue renewables growth with existing partners such as Shanghai Electric Power and Guohua Energy
- Leverage international presence and Singapore brand to build new partnerships and grow with existing partners
- Leverage customer base of more than 600 existing customers and Urban platforms



# **Platforms**

May 27, 2021



Kelvin Teo



#### ABOUT URBAN

## **Urban Platforms to Deliver Sustainable Solutions**

- Transform raw land into sustainable urban developments to meet the needs of customers
- Comprising industrial parks, business, commercial, residential spaces with residential development undertaken selectively

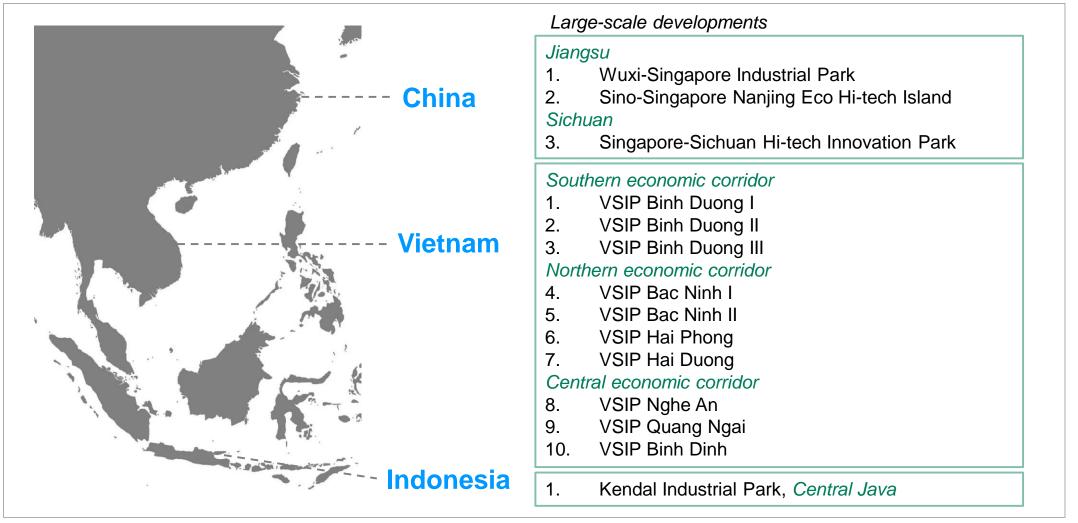






#### ABOUT URBAN

## **Growth Platforms are Focused on Asia**





# **Strong Customer Base**

- Focused on industry positioning and investment promotion to match locations with tenants
- Control quality of investments and serve customers with the right infrastructure, amenities and services

## Our reach

### Scale

12,588 hectares (about a sixth of Singapore) across 14 locations

#### **Geographic coverage**

Serving key customers from Southeast and East Asia, US, Europe

#### **Valuable customers**

Largely brand owners, prominent original equipment manufacturers, R&D and high-tech cluster

#### **Diverse industry mix**

Including electronics & electricals, precision engineering, fast-moving consumer goods, artificial intelligence (AI), modern services (infocomm and technology services)

## **Our customers**

1,090 light industry customers

Invested US\$40.1 billion

## Employ 342,000 workers

As at December 31, 2020



# **Growing Demand for Sustainable Urban Solutions**

Case study from Wuxi-Singapore Industrial Park, China



## Meet customers' needs while reducing grid congestion

- One of the first industrial parks in China to have its own micro-grid, battery storage facilities and solar panels
- Flexibility of deploying 20MW generated from rooftop solar and 20MWh battery storage
- WSIP's manufacturing customers continue to thrive with increased reliability and resilience



# **Growing Demand for Sustainable Urban Solutions**

Case study Vietnam Singapore Industrial Park, Vietnam

## Meet needs of customers that serve brand owners with own ESG goals

## **Apple Inc.'s Supplier Commitments**

109 suppliers have committed globally to producing Apple products with 100% clean energy

Apple's Supplier Clean Energy Programme is integral to Apple's goal of reaching carbon neutrality by 2030

Low-carbon design	Renewable electricity	Supply chain clean energy progress  Operational  Committed  FY16  FY17	100%
Design products and	Use of 100% renewable electricity		supply chain
manufacturing processes to be	for own facilities and transition		clean energy
less carbon-intensive	entire supply chain to the same		by 2030
Energy efficiency Increase energy efficiency at own facilities and supply chain	Direct emissions abatement Avoid direct greenhouse gas emissions in own facilities and in supply chain	FY18 FY19 FY20 0 1 2 3	Toward our 2030 goal 4 5 6 7 8 9 Gigawatts (GW)



# **Growing Demand for Sustainable Urban Solutions**

Case Study: Vietnam

## **Growing Rooftop Photovoltaic Presence**

## Sembcorp's Competitive Strengths

- Able to scale up quickly by securing rooftop solar capacity in 10 VSIPs + 5 Becamex industrial parks
- VSIP rooftops potentially allow 3GW<sup>1</sup> of solar installations
- Leverage on the strong technical know-how, HSE standards & operational track record supported by the Centre of Excellence in Singapore
- Able to access competitive international financing options which further differentiates Sembcorp from the local developers



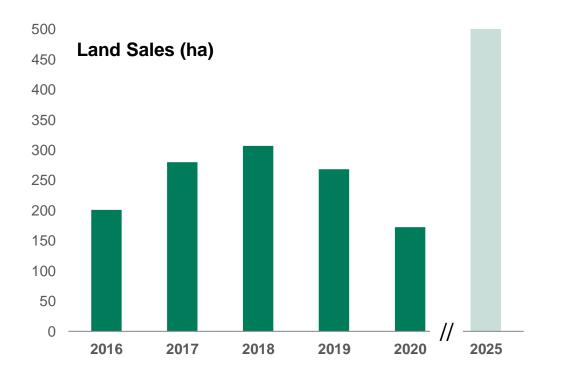
#### LOOKING AHEAD

# **Expanding our Platforms for Sustainable Urban Solutions**

Able to secure significant land bank



Targeting 500 hectares of land sales by 2025



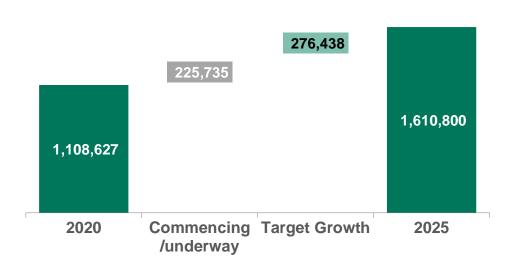


Gross Land Bank (ha)

#### LOOKING AHEAD

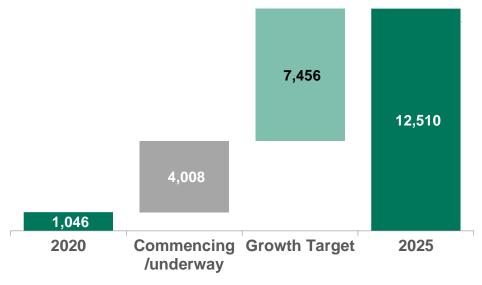
## **Additional Platforms in the Built Environment**

- Competitive position from our own land bank
- Provide more opportunities to install sustainable urban solutions
- Increases recurring income



Industrial and Business Spaces for Lease (GFA m<sup>2</sup>)

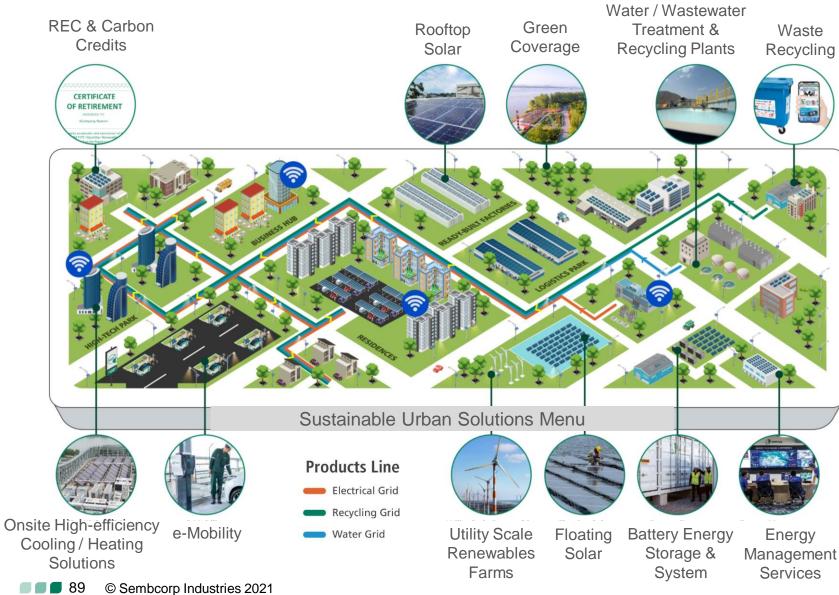
#### Cumulative Residential Units\* for Sale



\*Self-developed through joint venture or subsidiary



# **Providing Platforms for Growth**



## A full suite of sustainable urban solutions to meet customer needs

- Deploy on Urban's platforms
- Create and multiply those platforms



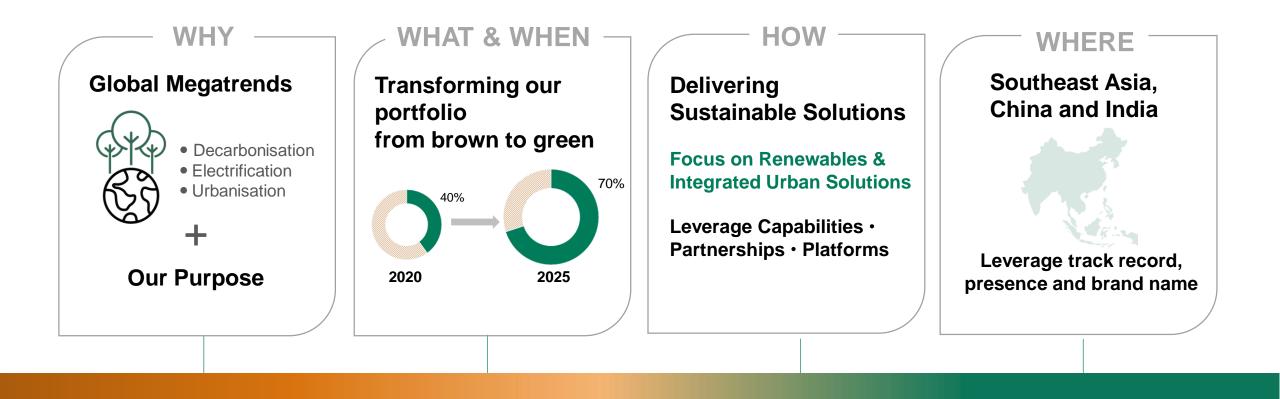
# **Closing Remarks**

May 27, 2021

Wong Kim Yin Group President & CEO

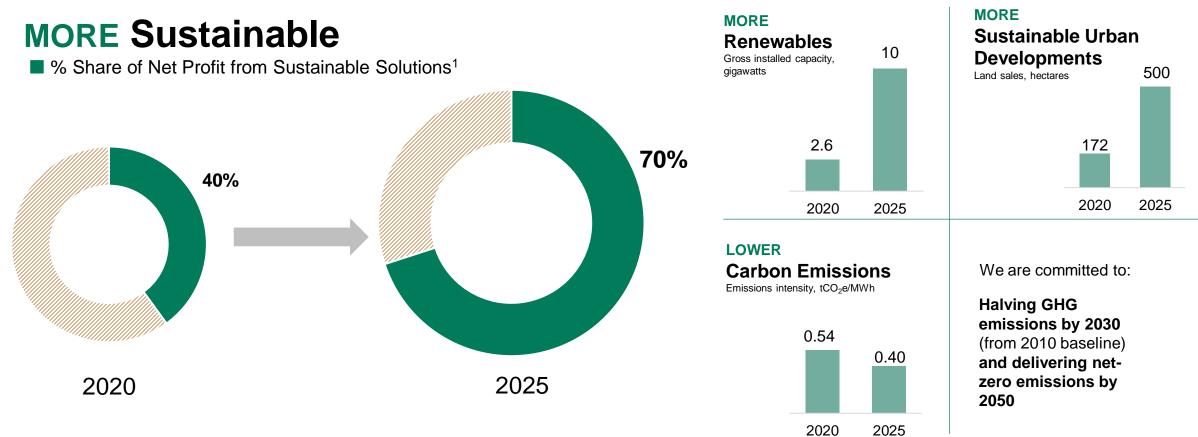


# **Sustainability is Our Business**





# Transforming our Portfolio from Brown to Green



<sup>1</sup> Percentage based on Net Profit excluding corporate costs and exceptional items. Sustainable Solutions include Renewables (wind, solar and energy storage) and Integrated Urban Solutions (urban, water, waste and waste-to-resource).

sembcorp



# **Sustainability is Our Business**

## **Right Industry**

Growing renewables and urban solutions sectors

## **Right Time**

Momentum and urgency of climate action and sustainable development

## **Right Place**

Multi-decade sustainable solutions opportunity in Asia

## Right People The Right Team





One Sembcorp Team Institution-first · Collaborative · Accountable







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## **Speakers' Profiles**



#### Wong Kim Yin, Group President & CEO

Mr Wong is Group President & CEO. He has over 20 years of leadership experience in the energy sector and investment management. As a former group chief executive officer of Singapore Power (SP Group), Mr Wong led the transformation of the company towards an increased focus on sustainability and innovation.

Prior to the SP Group, Mr Wong was senior managing director of investments at Temasek International, overseeing investments in the energy, transportation and industrial sectors. He was also with The AES Corporation managing project development and mergers and acquisitions across the Asia Pacific.



#### Eugene Cheng, Group Chief Financial Officer

Mr Cheng is Group Chief Financial Officer. He oversees the Group's finance, strategy, portfolio, and commercial function and brings with him extensive experience in financial and strategic leadership across the aviation, offshore oil & gas, marine engineering and logistics industries.

Prior to joining Sembcorp, Mr Cheng was chief corporate officer of SATS where he oversaw key business functions such as business development, strategic investments and mergers and acquisitions (M&A), as well as corporate strategy. Mr Cheng also served as group chief corporate officer of IMC Industrial Group. He was an investment banker with JP Morgan and Citigroup, specialising in M&A advisory, corporate financing and capital raising.



#### Vipul Tuli, CEO, South Asia

Mr Tuli oversees investments and key stakeholder relationships in India and Bangladesh. He is also the Managing Director of Sembcorp Energy India Limited, a leading independent power company in India wholly-owned by Sembcorp.

He has 25 years of experience in the energy sector. Prior to Sembcorp, he was a senior partner with McKinsey & Company where he helped to build and lead its Asian energy practice. He has also advised government institutions on issues of energy policy, organisation, industry structure, and regulation.



#### Koh Chiap Khiong, CEO, Singapore & Southeast Asia

Mr Koh is responsible for driving the strategic direction and growth of the Singapore and Southeast Asia markets for Sembcorp. He has deep knowledge of the energy and water sectors with extensive experience in managing infrastructure-related businesses.

Prior to his current appointment, Mr Koh was the group chief financial officer from 2010 to 2018 and was instrumental in shaping the company's growth and investments as it expanded its operations overseas.



## **Speakers' Profiles**



#### Andy Koss, CEO, UK & Middle East

Mr Koss oversees Sembcorp's operations comprising large-scale industrial assets on the Wilton International site, a portfolio of flexible gas engines and battery energy storage systems across the UK, together with the company's business interests in the Middle East.

Mr Koss has nearly 30 years of experience in the financial and energy sectors. Prior to joining Sembcorp, he spent 15 years at Drax Group where he rose to chief executive officer of generation and oversaw the group's UK power generation sites and key functions. He was deputy group treasurer of Provident Financial, and has held various accounting and investment banking roles at companies including Coopers & Lybrand, UBS and Dresdner Kleinwort Benson.



#### Hong Howe Yong, Deputy Head, Group Centre of Excellence

Mr Hong is the Deputy Head of Group Centre of Excellence at Sembcorp. He is responsible for leading and growing the Group's Engineering and Technological capabilities.

He has a strong track record of 26 years in refinery and chemical operations with ExxonMobil. He has held various global and local leadership roles in strategic planning, supply chain, manufacturing and engineering.



#### Alex Tan, CEO, China

Mr Tan is CEO of China at Sembcorp, responsible for the operations, strategic direction and business growth of its sustainable solutions offerings in China.

Mr Tan has over 20 years of experience in the chemical, logistics and financial sectors. He spent 17 years at Air Products, an industrial gases company, taking on various management roles in Singapore and China before becoming president of its Southeast Asia operations. He also held various corporate development and finance roles at IMC Industrial Group and TD Securities.



#### Kelvin Teo, CEO, Urban

Mr Teo is CEO of Sembcorp's Urban business which comprises industrial properties, business hubs, commercial and residential projects in Vietnam, China and Indonesia. He oversees business performance, joint venture relations and the integration of urban solutions for the development of sustainable developments.

He was previously the Urban business' president and chief operating officer, as well as chief financial officer. He is a council member of the Singapore-Jiangsu Cooperation Council, Singapore-Sichuan Trade and Investment Committee, and the Vietnam-Singapore Business Council. Mr Teo is a recipient of the Vietnam Government's Friendship Medal for his long-standing contribution to the country's socio-economic development and enhancement of Vietnam-Singapore relations.



## Glossary

AI	artificial intelligence	LCO
bn	billion	m, m
C&I	commercial & industrial	M&A
CAGR	compound annual growth rate	mn
CCUS	carbon capture, usage and storage	ML
CO <sub>2</sub> , tCO <sub>2</sub> e	carbon dioxide, tonnes of carbon dioxide equivalent	MNC
ESG	environmental, social and governance	MTB
EBITDA	earnings before interest, taxes, depreciation, and amortisation	MTT
EV	enterprise value	MW;
EI	exceptional items	OEM
EPC EPCm	engineering, procurement and construction engineering, procurement, construction and management	O&N PLF
CAGR	compound annual growth rate	QC
ETS	enhanced technical support	PPA
FDI	foreign direct investment	PV
FIT	feed-in-tariff	QC
FY	financial year	RCF
GFA	gross floor area	ROE
GHG	greenhouse gas	SEC
GW, GWp	gigawatt, gigawatt-peak	SOP
H <sub>2</sub>	Hydrogen	TSR
ha	Hectare	VBR
HSSE	health, safety, security & environment	WTG

Hz	hertz	
IPP	independent power producer	
JV	joint venture	
kw, kwh	kilowatt, kilowatt-hour	
LCOE	levelised cost of electricity	
m, m²	metres, square metres	
M&A	mergers & acquisitions	
nn	million	
ML	machine learning	
MNCs	mutlinational companies	
MTBF	mean time between failures	
MTTR	mean time to repair	
/W; MWh; MWp	megawatt; megawatt-hour; megawatt-peak	
DEM	original equipment manufacturer	
M&C	operation and maintenance	
PLF	plant load factor	
QC	quality control	
PPA	power purchase agreement	
νV	photovoltaic	
QC	quality control	
CF	revolving credit facility	
ROE	return on equity	
SECI	Solar Energy Corporation of India	
SOP	standard operating procedure	
SR	total shareholder return	
/BR	virtual brain renewables	
VTG	wind turbine generator	



# **Sembcorp Industries**

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Investor Relations

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