



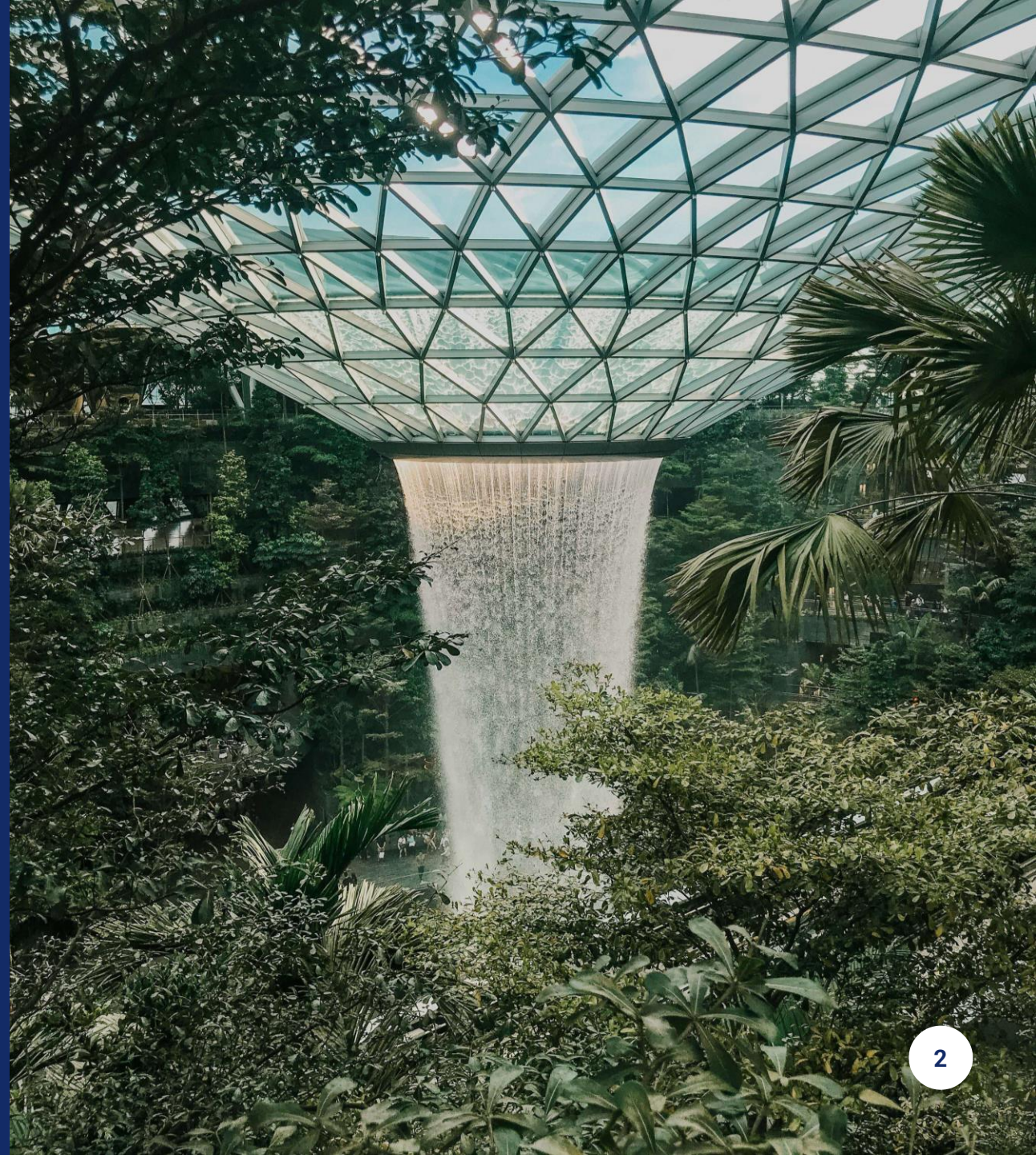
Outlook of the Energy & Chemicals Sector in Singapore



Sharing with SCIC
29 August 2024

Agenda

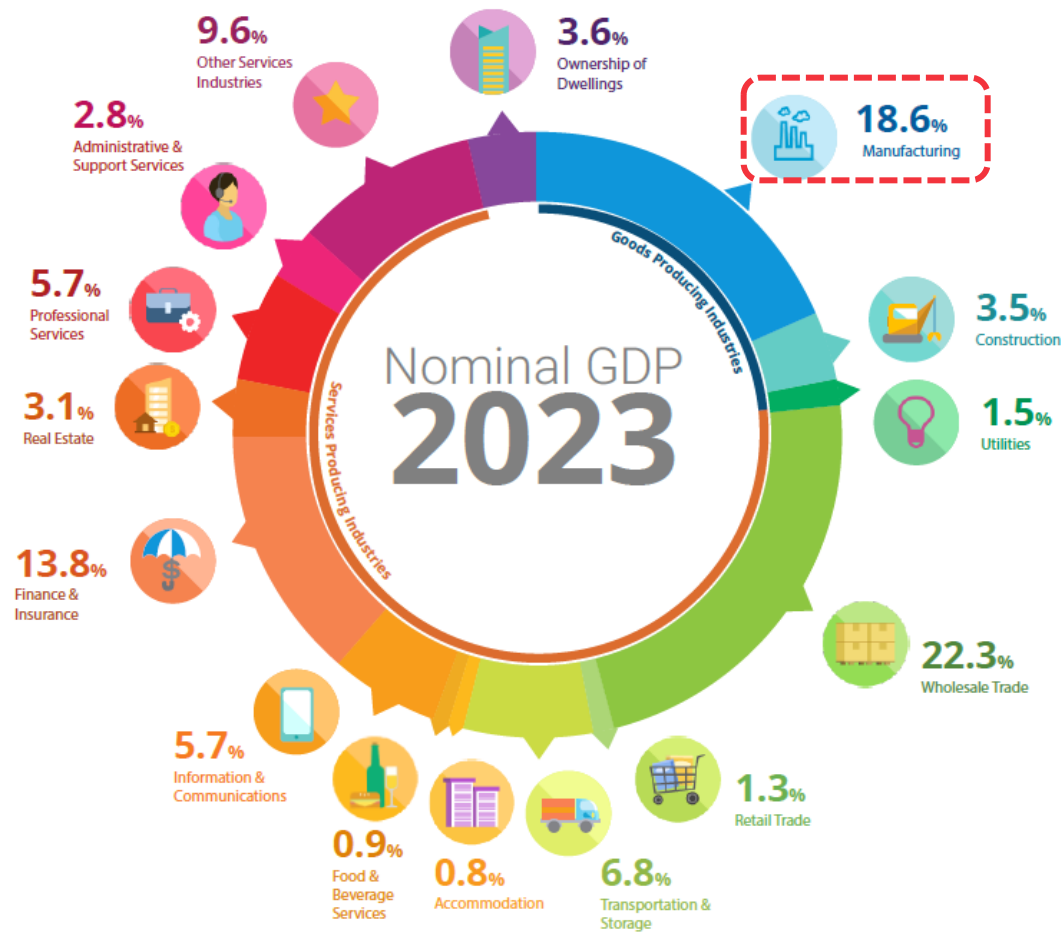
1. Overview of the E&C Sector in Singapore
2. Vision for the E&C Sector in Singapore





Overview of E&C Sector in Singapore

The Energy & Chemicals (E&C) sector is a critical node of Singapore's economy.

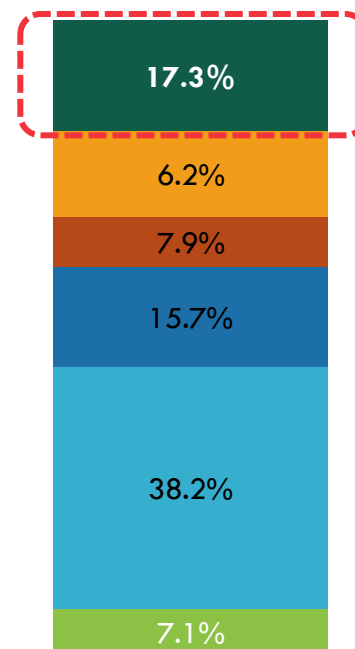


>27,000 employed



~3% of GDP



E&C accounted for 17.3% of S\$125B manufacturing value-add in 2023.






- Energy & Chemicals
- Biomedical Manufacturing
- Transport Engineering
- Precision Engineering
- Electronics
- Others

Singapore is at the forefront of the industry with > 100 E&C companies anchored here.

Headquarters

-  **TOTAL** Asia Pacific HQ for 6 business divisions
-  **EVONIK** RHQ for APAC
-  **SUMITOMO CHEMICAL** Asia HQ Incl sales, marketing and distribution activities

Trading Activities

-  **bp** Eastern hemisphere trading hub for oil, gas, chemicals, carbon and finance
-  **Shell** Trading and marketing hub for Asia Pacific
-  **TRAFIGURA** Global trading, finance & treasury and shipping hub

Innovation

-  **ExxonMobil** EM/NTU/A*STAR corporate lab for low carbon solutions
-  **CORTEVA** agriscience APAC Office, R&D Lab
-  **Denka** Life science R&D Centre
-  **ADISSEO** A Bluestar Company R&D Centre at the Marine Aquaculture Centre
-  **BASF** Newtrition® Lab Asia Pacific
-  **Givaudan** Fragrance Creative Centre & Manufacturing Facility
-  **EVONIK** Asia Research hub for life sciences, tissue engineering, skincare and functional surfaces

Singapore remains as a strategic location for E&C for global companies pursuing new opportunities.

In 2023, the E&C sector led in FAI commitments, accounting for 35% out of the total \$12.7B FAI attracted.

Singapore continues to see high-value investments in Petrochemicals and Specialty Chemicals

Overall, the E&C sector achieved commitments amounting to:

\$4,503m	\$446m	\$2,349m
in Fixed Asset Investments (FAI)	in Total Business Expenditure (TBE)	in expected Value-Added (VA) per annum



Evonik is expanding its capacity to produce DL-methionine on Jurong Island by 40,000 tons to around 340,000 tons per year.
The planned process optimization measures will improve the carbon footprint of MetAMINO® produced in Singapore by 6%



Sumitomo Seika recently announced they will invest US\$160M to build a new Super Absorbent Polymer Plant on Jurong Island.
The plant will serve the growing Southeast Asian and South Asian diaper markets.



Kuraray will construct a US\$410 mil Ethylene-Vinyl Alcohol (EVOH) plant on Jurong Island
EVOH is a proprietary resin used in food packaging that helps block oxygen and prevents food from spoiling. The new plant will have a capacity of 18,000 tons per annum and will be constructed with a view to double the capacity to 36,000 tons per annum as early as 2026.

In 2024 the industry performed better than 2023 but near-term challenges persist; Long-term macro trends remain robust

Near-term outlook



In 1H2024, Singapore's Energy and Chemicals manufacturing output grew +6.1% compared to the same period in 2023.



Globally, new capacity has led to historically low operating rates



Market conditions will likely drive more rationalisation – reduction of capacity in Europe and Asia

Long-term macro trends



Food (In)security



Increasing urbanisation



Growing affluent middle class



Climate change

Singapore has raised its climate change commitments to achieving net-zero by 2050

Charting Singapore's Net Zero Future

Achieve net zero emissions by 2050

Long-Term Low-Emissions Development Strategy (LEDS)

Reduce 2030 emissions to 60 MtCO_{2e} after peaking emissions earlier

2030 Nationally Determined Contribution (NDC)

Accelerating Low-Carbon Transition in Industry, Economy and Society

Catalyse business transformation

- Sustainable energy and chemicals hub in conjunction with industry
- Grants for energy efficiency and emissions reduction

Invest in low-carbon technologies

- Carbon Capture Utilisation and Storage
- Low-carbon hydrogen
- Solar and energy storage systems

Pursue effective international cooperation

- International carbon markets with high quality carbon credits
- Regional power grids for green energy

Adopt low-carbon practices

- Green commutes via public transport, Walk-Cycle-Ride & cleaner energy vehicles

KEY ENABLER

Right-pricing carbon to shape business decisions and consumer behaviour

Carbon tax
S\$50-80/tCO_{2e}
by 2030

A National Agenda To A Greener Future

Singapore's Green Plan 2030 was launched in 2021 as a whole-of-nation movement to advance our sustainable development agenda.



City in Nature

Singapore continues to build upon our greening efforts to be a livable, sustainable and climate-resilient city.



Energy Reset

Singapore aims to use **cleaner energy sources across all sectors**, focusing on 3 different thrusts:

- (1) Green Energy
- (2) Green Transport
- (3) Green Buildings



Sustainable Living

Singapore continues to promote green commutes & work towards achieving a Zero Waste nation through.



Green Economy

Singapore seeks **green growth opportunities** and harness sustainability as a competitive advantage by sectoral transformation and decarbonization.



Resilient Future

Singapore is committed to building up our climate resilience by

- (1) Shoring up our coastal and flood defenses
- (2) Strengthening food security
- (3) Keeping Singapore cool.



Vision for the E&C Sector in Singapore

Singapore's E&C sector will need to respond to various structural forces, including stakeholder pressure to mitigate climate change.

Growing pressure to address climate change from countries, consumers, corporates, investors

Chemicals demand set to grow substantially in Asia, driven by urbanization and rise of middle class

Global E&C businesses pivoting to higher-value chemicals, decarbonizing their operations, and creating low-carbon ventures



1. Singapore's E&C sector needs to decarbonise and transform in a pragmatic and collaborative way



2. Singapore's E&C sector is poised to seize opportunities arising from demand for chemicals, especially in higher-value petrochemicals and specialty chemicals.



3. Singapore should also anchor low-carbon activities of the major E&C companies, to capture a share of the emerging green economy

Key shift #1 : Jurong Island is being transformed into a Sustainable Energy & Chemicals Park.

We will support companies to *operate sustainably* and *export sustainable products*



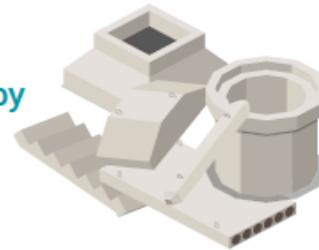
SUSTAINABLE JURONG ISLAND

November 2021



By 2030

Increase the output of sustainable products by **1.5 times** from 2019 levels



Ensure that the refineries and crackers are in the **top quartile** of the world in terms of energy efficiency



Realise at least **2 million tonnes** of carbon capture



By 2050

Increase the output of sustainable products by **4 times** from 2019 levels

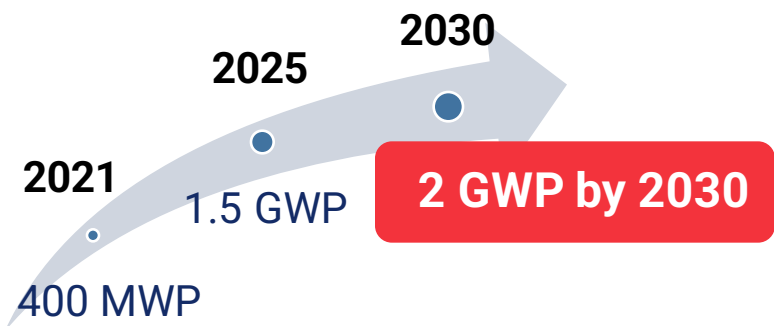


Achieve more than **6 million tonnes** of carbon abatement per annum from low-carbon solutions



Greening the grid will create opportunities for more sustainable production.

SG's Solar Target



Companies can tap on our ecosystem of Solar Providers



SUNSEAP



CLEANTECH SOLAR



sembcorp



Renewable Energy Imports

Companies may be able to access renewable energy via PPAs with importers in the future

- Our target is to import up to 4GW of low-carbon electricity by 2035



EMA's RFP for power imports

- Conditional Approvals that EMA has granted:
 - 1GW from Cambodia
 - 2 GW from Indonesia
 - 1.2 GW from Vietnam

Ongoing EMA's Import Trials

- Laos PDR-Thailand-Malaysia-Singapore Power Integration Project traded up to 100 MW of renewable hydropower from Laos to Singapore
- Pilot scheme to import up to 100MW from Malaysia to Singapore via existing interconnection



Support for companies to pursue sustainable production pathways



Carbon Capture & Storage Infrastructure



Energy Transition Infrastructure



Grant Support for Emissions Reduction



Grant Support for Sustainability Reporting

Key shift #2: Shift to high-value chemicals and specialty chemicals.

Petrochemicals will need to adjust to a lower carbon future



We will continue to anchor high-value petrochemical projects



Explore alternative feedstock options to crude



Focus on emissions reduction and a route to net-zero

Specialty Chemicals Priority Growth Areas



CAGR:
~3.2%

Nutrition & Agriculture

- Animal & Human Nutrition
- Agrochemicals



CAGR:
~5.0%

Hygiene & Health

- Care Chemicals
- Healthcare



CAGR:
>10%

Sustainability

- Biotech, Biobased, Biodegradable Chemicals & Materials



CAGR:
~4-8%

Smart Materials & Mobility

- Lubricant Additives
- Advanced Polymers & Materials
- Electronic Chemicals & Materials

Key Shift #3: Anchor low-carbon activities of the major E&C companies, to capture a share of the emerging green economy

1 Partner with our Institutes of Higher Learning and Research Institutes

The Singapore Energy Consortium (SEC) co-develops energy solutions for low carbon transition with industry.



SINGAPORE ENERGY CONSORTIUM



A*STAR's Institute of Sustainability for Chemicals, Energy and Environment (ISCE2) supports projects in greening our economy and addressing climate change impact

2 Collaborate with local industry partners and solution providers

ExxonMobil



CARBON CURE.

PanUnited

Cross-border carbon capture and storage project

CO₂ sequestration tech for concrete production in SG.



H₂ as a low-carbon alternative study

3 Tap on support schemes and ecosystem developments

Low-Carbon Energy Research Funding Initiative supports R&D and demonstration for low-carbon energy technologies

MPA and EMA have shortlisted 2 consortiums to explore low-carbon ammonia solution for power generation and bunkering on Jurong Island.

Developing Low Carbon Technology Translational Testbed, that leverages modularisation and digitalisation to accelerate development of CCU technologies

We will support companies to anchor high growth economic activities in manufacturing and R&D

**Refundable
Investment Credit
(RIC)**

**Research & Innovation
Schemes for Companies
– RIS(C)**

We will foster collaborations between companies and our local ecosystem

Companies can work with local SMEs/startups, supported by PACT

Diversify Supply Chain



Drive Innovation



Thank you