

**SEMBCORP MARINE'S LNG-BATTERY
HYBRID TUG – WORLD'S FIRST TO
BE EQUIPPED WITH GAS ENGINES
FROM ROLLS-ROYCE**

The new LNG-battery Hybrid Tug, which will be operational at Tuas Boulevard yard in 2021, is one of the 12 low carbon emission tugs commissioned to be built as part of our decarbonisation strategy.



**ADDRESSING
ENVIRONMENTAL
CHALLENGES**

IMPROVING AND INNOVATING OUR OPERATIONS TO
REDUCE OUR CARBON FOOTPRINT, CONSERVE NATURAL
RESOURCES AND PROTECT THE ENVIRONMENT



7 AFFORDABLE AND CLEAN ENERGY

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ADDRESSING ENVIRONMENTAL CHALLENGES

Sembcorp Marine supports the goals of the Paris Agreement with a clear strategic direction. We have embarked on climate programmes to reduce the Greenhouse Gas (GHG) emissions in our operations and continue to design and deliver sustainable solutions for our customers.

This year, we have started to align our disclosures with those recommended by the Task Force on Climate-related Financial Disclosures (TCFD), specifically our approach to address the four core elements – governance, strategy, risk management and metrics and targets. We plan to provide further disclosures on this in the future. We are also enhancing our environmental policy to guide our management approach and strategy on issues such as climate change mitigation, adaptation and resilience, and ensure that it is implemented across our various operational sites.

In this report, we voluntarily publish our climate-related financial disclosures in the four key areas as recommended by the TFCFD.

GOVERNANCE



Sembcorp Marine's Board of Directors and Senior Management Committee (SMC) have oversight of climate-related risks and opportunities through the Sustainability Council which oversees our corporate sustainability strategies, policies, performance and mitigation actions.

The Sustainability Secretariat reports to the Sustainability Council and coordinates with the Economic, Environmental, Social and Governance (EESG) working groups to implement strategies, identify emerging issues and engage our stakeholders on sustainability issues, including climate-related matters.

To guide the Group's strategic direction, the Board and SMC meet annually to review key business plans while taking into account climate-related risks and opportunities.

STRATEGY



Climate-related risks and opportunities are integrated into Sembcorp Marine's business strategy through the annual strategic planning process and our environmental sustainability framework. We have identified policy and regulation changes, technological shifts, evolving stakeholder expectations, and growing threat of extreme weather events as key climate-related risks.

In keeping with the global and industry shift towards decarbonisation, we proactively leverage our engineering capabilities to diversify into gas value chain and renewables solutions, including offshore wind farms and zero-emission vessels. We also pursue opportunities in energy-efficient and low-emission engineering solutions to help ship owners comply with more stringent fuel and emission regulations through retrofits and upgrades.

Moving forward, we plan to conduct scenario analysis to evaluate the resilience of our business strategy against climate-related risks and opportunities for different time horizons.

Sembcorp Marine implemented five Environmental Management Programmes (part of our ISO 14001 Environmental Management System) to sustain an environmentally-friendly culture in our yards by promoting efficient use of material, energy and natural resources, while minimising waste and preventing adverse environmental impact, including mitigating climate change, during our operations.

Natural Resources & Energy Management Programme



Air Quality Management Programme



Waste Management Programme



Water Quality Management Programme



Control of Chemical/Hazardous Substances Programme



RISK MANAGEMENT



Our Environmental Sustainability workgroup identifies, manages, monitors and controls environmental issues arising from our operations through risk assessment and environmental impact assessment as part of our ISO 14001 Environmental Management System.

The Group also actively pursues opportunities to leverage its capabilities to provide sustainable solutions as well as implement energy- and resource-efficient solutions in its operations to reduce climate-related risks and mitigate our environmental impact.

METRICS & TARGETS



Sembcorp Marine uses a robust set of metrics and targets to manage and monitor our exposure to climate-related risks and opportunities.

To manage the risk of higher energy costs due to higher carbon taxes in the future, we measure and monitor the share of renewable energy in our energy mix and Scope 2 GHG emissions from our consumption of purchased energy.

We have also set up metrics and targets to monitor our progress in pursuing climate-related opportunities. We have been actively investing in R&D and pursuing business opportunities for our gas and renewable energy solutions and target to generate at least 30% of our total revenue from these by 2025.

ADDRESSING ENVIRONMENTAL CHALLENGES

Sembcorp Marine's Climate Programmes



As the world transits to a low-carbon economy to fight climate change, Sembcorp Marine is committed to using our resources optimally while delivering sustainable solutions and services to our

customers. Reducing our carbon footprint is our main priority and this will be achieved through our various smart and sustainable yard initiatives, including increasing the capacity of our solar panels.

STRIVING TO AVOID
15,000 tCO₂e
ANNUALLY BY 2025

The figures stated in this chart have been validated by Carbon Care Asia. Scan for more information



Expect to avoid **5,306 tCO₂e** annually

Operational since 2019, our solar roof has a capacity of 4.5 MWp, and can generate 5,000 MWh of electricity. We intend to expand our solar capacity to 12 MWp by 2025, resulting in 12,000 MWh of electrical generation.

SOLAR ROOF



929 tCO₂e avoided annually

Our production facilities and workshops are operational 24 hours a day. To reduce our energy usage intensity (EUI) in these facilities, we have made the switch to LED lightings progressively.

LED LIGHTINGS



2,568 tCO₂e avoided annually

Consolidating our operational workforce into a central location within the yard reduces the time required for commuting as well as reduces our carbon emissions from transport vehicles. Our dormitories will be able to house 18,000 workers by 2030.

IN-HOUSE DORMITORIES



Our Corporate Office has achieved the Green Mark certification for its energy efficient equipment, green features and eco-friendly design. Find out more on pages 30-31 of our Sustainability Report 2019.

CORPORATE OFFICE



Expect to avoid 2.46 tCO₂e per 3-tonne forklift annually

By 2025, every new forklift in our Tuas Boulevard Yard will be electrically-powered, transitioning our reliance from diesel to greener electrical energy.

ELECTRIC FORKLIFT



Expect to avoid 251 tCO₂e per LNG-battery Hybrid Tug annually

Our continued investment and innovation in low carbon sustainable solutions enable GHG emissions to be avoided during their operation compared to conventional fuels.

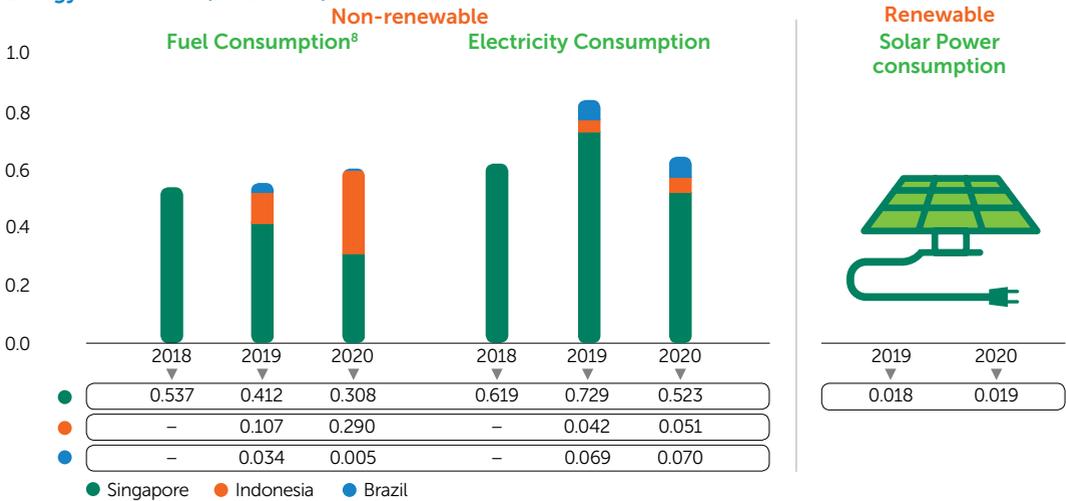
LNG-BATTERY HYBRID TUG



ADDRESSING ENVIRONMENTAL CHALLENGES

Our total energy consumption in FY2020 amounted to 1.266 million GJ, a 10% reduction compared to our consumption in 2019. This is primarily attributed to the reduced operations in FY2020 across the yards. Our energy intensity for the same period was 0.021 GJ/man-hour⁶.

Energy Consumed (million GJ)⁷



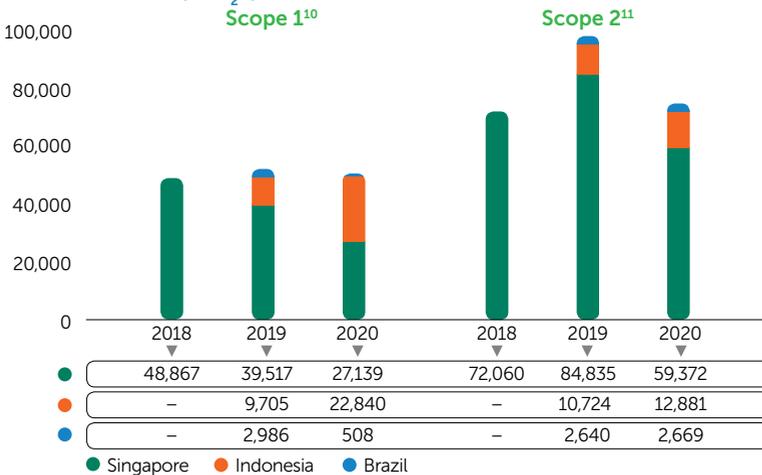
(6) Our restated energy intensity for FY2019 is 0.015 GJ/man-hour.

(7) Our energy sources include electricity, diesel, LPG, CNG, acetylene and solar energy.

(8) Net calorific values (NCV) were sourced from WRI/WBCSD Greenhouse Gas Protocol Emission Factors for Cross Sector Tools (March 2017). NCV for acetylene was referenced from S. McAllister et al., Fundamentals of Combustion Processes (2011).

* - Figures for Indonesia and Brazil were not available for 2018.

GHG Emissions⁹ (tCO₂e)



(9) Operational control approach is used to identify the GHG emissions. The boundaries of our reported emissions currently comprise our shipyards operating in Brazil, Indonesia and Singapore, excluding joint ventures.

(10) Emission factors (EF) were sourced from WRI/WBCSD Greenhouse Gas Protocol Emission Factors for Cross Sector Tools (March 2017). The scope 1 calculations for 2018 have been restated due to revised emission factors used for the fuels. Only CO₂, CH₄ and N₂O emissions are included in the calculation of direct GHG emissions. Global Warming Potential (GWP) factors used are from the 2014 IPCC Fifth Assessment Report. Emission data is derived from combustion of non-renewable fuels consumed in our yards and follows the requirement of GHG Protocol.

(11) Grid EF for Singapore was obtained from Energy Market Authority (EMA), grid EF for Brazil and Indonesia were obtained from Institute for Global Environmental Strategies (2019) – List of Grid Emission Factors version 10.6. Scope 2 emissions for Singapore for 2018 and 2019 have been restated based on latest Grid EF obtained from Energy Market Authority (EMA). Only CO₂ emissions are included in the calculation of indirect GHG emissions. Emissions data is derived from purchased electricity consumed in our yards and follows the requirement of GHG Protocol.

* - Figures for Indonesia and Brazil were not available for 2018.



Year	Renewable Solar Power consumption
2019	0.018
2020	0.019



Solar panels installed at Tuas Boulevard Yard generated 5,364 MWh of electricity, equivalent to:

Avoiding emissions of approximately

>2,190
tCO₂e



Our solutions operate globally in all kinds of water conditions, including the fragile Arctic Ocean. Starting from 31 December 2020, the EU Ship Recycling Regulation (EU SRR) came into force and required vessels of 500 GT and above flying the flag of an European Union/European Economic Area (EU/EEA) member state, or third-party-flagged vessels calling at European ports to have a valid Inventory of Hazardous Material (IHM) certificate. To assist ship owners and managers, we minimise the use of hazardous materials during the design and engineering phase and support our customers in developing the IHM documentation.

In 2020, the United Nations Global Compact (UNGC) developed practical

guidance for shipyards to align their operations to deliver on the nine sustainable ocean principles. The ocean principles cover three broad areas: i) Ocean Health and Productivity, ii) Governance and Engagement, iii) Data and Transparency. Sembcorp Marine, recognised as a key stakeholder, was invited to join the taskforce to contribute good practices and standards that we have institutionalised in our yards globally.

As a responsible ocean citizen, we ensure that all our yards comply with the discharge requirements. In FY2020, we have not incurred any significant fines from non-compliance with environmental laws and regulations, nor caused any significant spills.

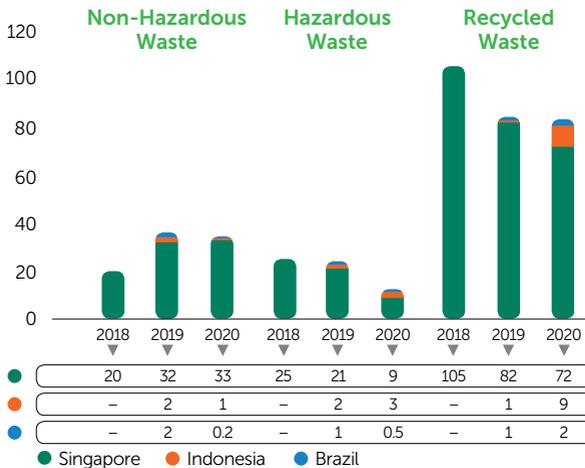


Steel, copper, welding materials and paint products are key raw materials used during our operations. We adopt sustainable practices and processes during the life-cycle stages of every project to optimise the use of resources. We have expanded the scope of reporting this year for material consumption to also include welding consumables, paint and thinner used by the Group. In FY2020, the total amount of steel, copper grits, steel grits, steel shots and welding consumables used by the Group amounted to 229,110 metric tonnes and the total amount of paint and thinner used is 938,905 litres.

All our yards have implemented strict policies on waste management to ensure environmentally responsible waste disposal processes in compliance with the local regulations. These processes include the use of licensed waste management vendors and proper waste segregation.

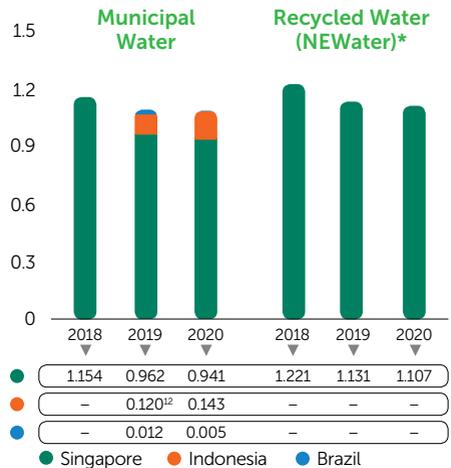
Municipal water and recycled water (NEWater – used in Singapore yards) are the two main sources of water used in our business operations. Besides conducting regular monitoring and leak checks in our yards' water pipe network, we create awareness on water conservation and advocate responsible consumption of this precious resource. In FY2020, we used 2.196 million m³ of water.

Waste by type ('000 tonnes)



* – * Figures for Indonesia and Brazil were not available for 2018.

Water withdrawal by source (mil m³)



(12) This figure has been restated due to recalculation of raw data for one of the yards.

*Recycled water (NEWater) is used only in Singapore.