

Elevating our global environmental management operations

Environmental Management



# Executing the world's most complex projects guided by our strong **commitment** to **environmental** stewardship



At McDermott, we are focused on what we do best - delivering complex projects that serve the energy industry and the growing needs for energy transition.

We understand the challenges of executing large scale EPCI projects and remain unwavering in our commitment to identify new and innovative pathways to execute projects while reducing our environmental footprint.

In 2022, McDermott continued to further demonstrate our commitment to environmental performance through the following guiding principles:

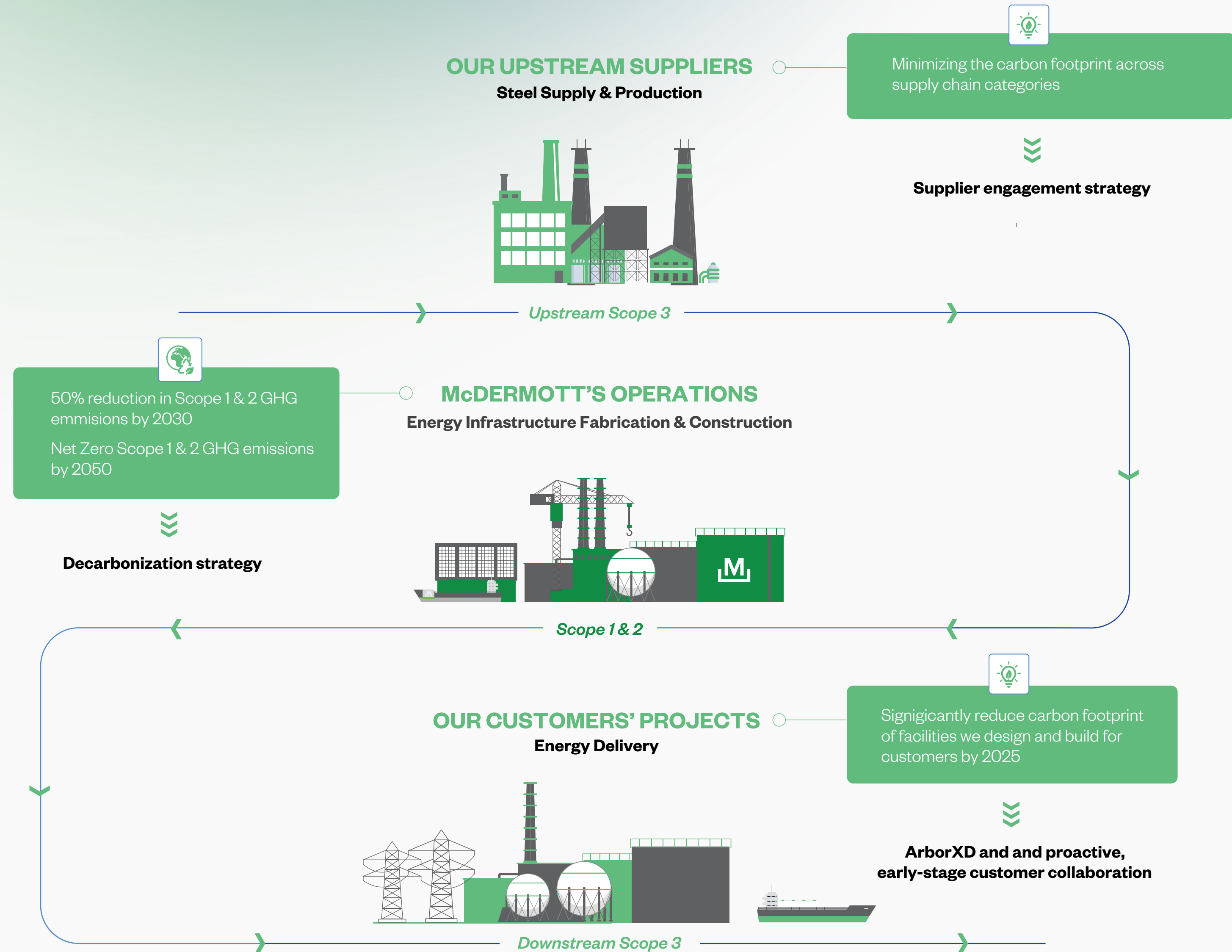
- **Securing long term sources** of renewable power for our onshore fabrication facilities
- **Increasing oversight and accountability** of project emissions by reconfiguring our emissions data to report carbon footprint by project
- **Embedding sustainability principles** into project execution using project-specific developed Sustainability Charters or Execution Strategies.



# GHG emissions

We are uniquely positioned to influence the complete value chain of GHG emissions.

Our greatest contribution is offering engineering and technology-based solutions to support our customers and suppliers in achieving emissions reductions through their operations.





# We have the same **mindset** when it comes to reducing emissions for our customers as we do for **reducing** our own emissions

## GHG REDUCTION EFFORTS AT OUR OPERATIONS

Our scope 1 emissions increased slightly in 2022 primarily due to increased construction activity. Also, our Amazon vessel was reactivated to operational status accounting for 11% of our marine operations.

In 2022, our reductions in total scope 1 and 2 operating emissions were predominantly due to our increased use of renewable energy usage for our onshore fabrication facilities, electrification of key assets, and optimization of our fuel and energy usage in our yards through implementation of digital platforms.

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# 22%

absolute  
scope 1 & 2  
reduction

versus 2020 base year





# Supporting our customers' GHG initiatives

Our customers' priorities are our priorities. Over the past three years, McDermott has supported customers in advancing Net Zero goals by identifying opportunities to reduce emissions across the project lifecycle.

Achieving low carbon project delivery across all our projects and product lines remained a focus for our project teams. We progressed guidelines, processes, and procedures during 2022 as part of our global sustainable project execution toolkit. With the toolkit, McDermott has a consistent, well-adopted approach to reducing our environmental impact and carbon footprint.

## EMBEDDING SUSTAINABILITY INTO OUR PROJECT EXECUTION

- 2020**  
**Governing procedure**  
 Established the foundations of our enterprise-wide carbon footprint methodology
- 2021**  
**Accessible digital tool**  
 Integrated our enterprise-wide carbon footprint methodology into our tool, ArborXD
- 2022**  
**Visible periodic reporting**  
 Developed project-specific carbon emissions data collection mechanisms to evaluate the project lifecycle and evaluate carbon emissions reduction projects on a cost-benefit basis; embedded low carbon project delivery into our execution philosophy





# Introducing the Carbon Footprint Dashboard for all projects

Establishing clear metrics and targets for continued assessment and measurement of our performance through meaningful data points remains critical to delivering on our commitments to reduce carbon emissions across the value chain.

Consistent with our focus and to increase our data set, in 2022 we began collecting project-specific emissions data as part of our internal quarterly project reviews. We use this data to analyze and identify trends in GHG emissions on a more granular level – more specifically by business operations and product type. Based on trends identified in 2022, we aim to set KPIs and targets by product type to establish a standard for low carbon EPCI project delivery throughout 2023.

Empower carbon conscious decision making





# ArborXD

Establishing baseline emissions and measuring reductions.

During 2021, we launched our own carbon footprint calculation tool, ArborXD, to reduce operating emissions of the facilities we design and build for customers. In 2022, we expanded the functionality of ArborXD to include four (4) product lines - LNG, Upstream, Refinery, and Petrochemicals, as we also estimate the EPCI carbon footprint of the projects we execute.

Woodside's Scarborough Floating Production Unit Project is a premiere project that highlights McDermott's low carbon EPCI project delivery.

[→ Scarborough press release to learn more](#)

## SOME OF OUR EMISSIONS REDUCTION STRATEGIES AT AFLOATING PRODUCTION UNIT PROJECT





# Supply chain decarbonization

We take a proactive approach in addressing our supply chain emissions.

Supply chain emissions from the products that we purchase in support of successful project delivery contribute to our upstream scope 3 emissions. These emissions, which lie largely outside of our operational control, remain a challenge to measure, report, and track progress.

Through a collaborative approach with relevant stakeholders, from suppliers to manufacturers to distributors and transportation and logistics providers, we strive to support sectorial decarbonization within our top 10 categories:

- steel products
- static equipment
- logistics
- civil subcontractors
- cable
- fuel
- electric and instrumentation equipment
- valves
- rotation equipment
- structural and mechanical and piping subcontractors.

## SUPPLY CHAIN DECARBONIZATION ROADMAP

In 2022, we conducted an internal joint workshop with Sustainability, Supply Chain, and Engineering teams to develop our Supply Chain Decarbonization roadmap. The result of our collaboration focuses on:



**Targeting high points in our value chain** where we believe we will have the greatest impact



**Collecting meaningful data and metrics** as a basis for informed decision-making regarding supplier and material selection



**Identifying the right platform** to support our Supply Chain sustainability strategy



**Communication and engagement** to encourage and promote continuous improvement

## SUPPLIER ENGAGEMENT

We engaged with two significant logistics and service providers supporting one of our projects to identify key areas for emission reduction and sustainable solutions. As a result, we are assessing the following:

- Multimodal optimization such as possibilities of increased use of rail and short sea shipping and inland waterways, replacing trucks and air transport
- Increased deployment of energy-efficient vehicles
- Use of Sustainable Fuels Program





# Energy and fuel use

By owning and operating our own fabrication facilities, we provide our customers with a unique advantage to maintain operational control and influence over the emissions, energy, and fuel usage.

## DECARBONIZING FABRICATION OPERATIONS

Our fabrication yards are at the heart of the EPCI project cycle.

Our strategic approach to decarbonizing fabrication operations focuses on reducing the carbon intensity, tCO<sub>2</sub>/1000 manhours, in our fabrication facilities while maintaining the highest rate of utilization.

Through the use of renewable energy, in 2022 we achieved meaningful reductions in the carbon intensity across our operations 45% less than our 2020 baseline.

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≈ 43,597T  
reduction in CO<sub>2</sub>e through the use of renewable power

## ELECTRIFICATION CREATES A PATHWAY TO LOW CARBON FABRICATION IN BATAM

Our Batam Fabrication Yard (BFY) made significant progress in environmental performance by implementing a range of initiatives in 2022, including:

- the electrification of 63% of compressors, 36% of light forklifts, and the establishment of an electric vehicle (EV) charging facility.

- replacement of traditional lighting with energy-efficient LED lighting to improve visibility and safety for employees while reducing energy consumption.
- investment in modern and efficient air compressor house that provides electric air compressors and advanced dehumidification systems which is expected to be fully operational by 2023.

These initiatives significantly reduce BFY's carbon footprint and dependence on fossil fuels while realizing cost savings and improving overall efficiency and performance in the fabrication yard to solidify BFY's position as a leader in sustainable fabrication yard management.



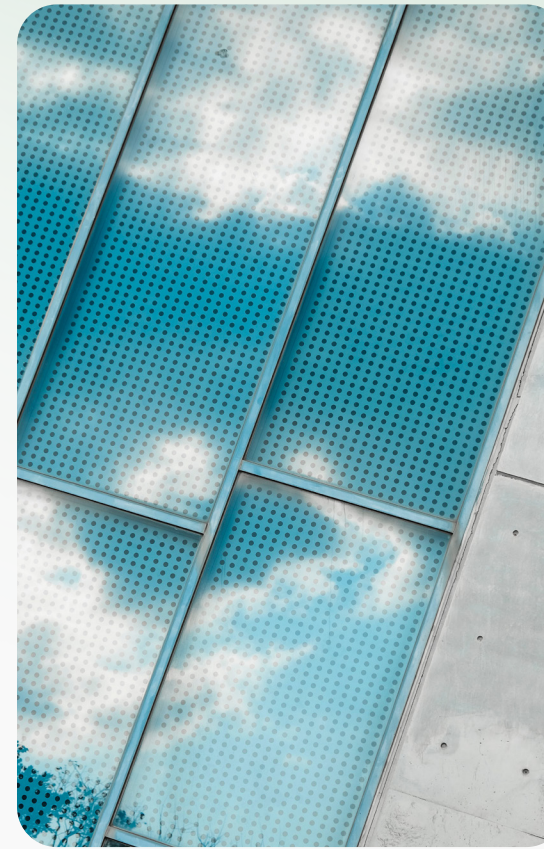


## RENEWABLE ENERGY POWERS FABRICATION FACILITIES

In 2022, five of our fabrication sites (Batam, QMW, Jebel Ali, CB&I Thailand & Clive) sourced via renewable energy certificates (RECs) / Green Tariffs from utility providers or generated (via onsite solar) renewable power equating to approximately 63% of our overall grid source renewable power. These efforts allowed reduction of approximately 44,330 metric tons CO<sub>2</sub>e of global emissions (73% of 2022 scope 2 emissions). Notably, both Batam and QMW predominantly operated on grid sourced renewable power during 2022.

# 63%

of our overall grid power came from renewable sources



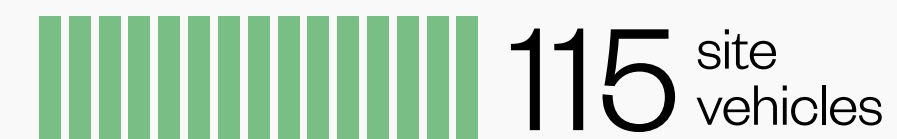
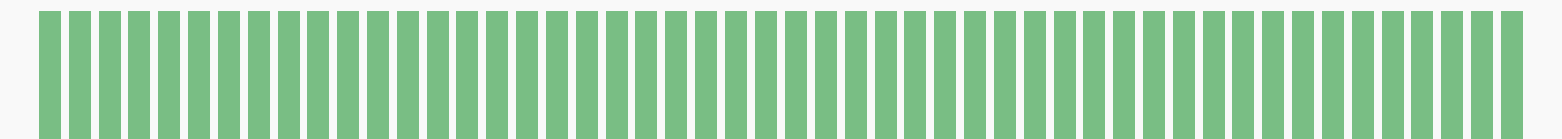
## SOLAR HIGHLIGHTS IN CB&I KASEMPHOL & QMW FACILITY

In 2022, our CB&I Thailand facility installed and operated a 41 kWp photovoltaic (PV) system, equating to 8 metric tons of CO<sub>2</sub>e saved in 2022 and approximately 19 metric tons of CO<sub>2</sub>e per annum. QMW, McDermott's third largest fabrication facility, started installation of a 4,206 kWp PV system which will serve to provide power for approximately 27% of the yard's forecasted electrical load and is projected to reduce emissions by 1,551 metric tons of CO<sub>2</sub>e per annum when fully operational. We are exploring other uses of solar power for our systems in 2023.



## AI PLATFORM USED TO IMPROVE VEHICLE UTILIZATION IN JEBEL ALI

In 2022, we completed Phase 1 of the rollout of an AI platform in our Jebel Ali fabrication yard to monitor 115 site vehicles. The platform uses internet of things (IoT) installed devices to collect vehicle data via a common dashboard to provide the fleet management team with actionable insights to improve utilization, manage fuel consumption, and schedule maintenance, thereby reducing overall emissions. In 2023, our Jebel Ali yard will further expand the use of the software through Phase 2 to include yard equipment generators and compressors.



● Phase 1 ● Phase 2



# Marine construction

McDermott maintains a specialized, competitive fleet of marine construction vessels capable of executing the world's largest scale offshore projects.



We reduced related emissions 4% from 2021 levels, primarily attributed to divestment of two marine assets. Our vessel carbon intensity reduced by 7%. While that is positive, our vessel fleet accounted for 66% or 130,058 metric tons of CO<sub>2</sub>e of our scope 1 and 2 emissions in 2022. To reduce emissions in our marine operations we have a team working toward a clear, actionable roadmap. This includes ongoing evaluation of emerging technologies that can support more efficient marine operations, reducing time offshore, lowering fuel burn rate, and improving utilization of our marine assets.

In evaluating potential pathways to decarbonize our marine operations, we consider accessibility, availability, and maturity of technology. In an offshore environment in which construction activities carry a high-risk profile, any proposed solution must be sufficiently tried and tested prior to implementation in the field.



## FLEET OPTIMIZATION AND SUSTAINABILITY MEASURES:

- **Automation:** This year, our Amazon vessel entered operational status as the most automated J-Lay vessel in the world. Cutting-edge automation onboard has several environmental benefits including reduction of personnel needed for similar J-Lay operations, fewer support vessel trips, and reduced emissions.
- **Efficient Route Planning:** Using DTN Route Guard for transit planning, we optimize fleet use by route and weather patterns. These optimizations create a positive impact on our fuel consumption and carbon emissions. Given that there is no repeatability of route, we are exploring how we can quantify the impact of transit planning for our fleet during 2023.
- **Data-driven sustainability:** Tracking our fuel consumption per vessel based on idle, dynamic positioning (DP), and transit mode provided a reliable system for collecting data. Our focus will be on using this data to identify measurable and more targeted sustainability measures.
- **Waste Management:** Onboard filtration systems eliminated the need for plastic water bottles on all our fleet vessels.

**7%**  
reduction in  
vessel carbon  
intensity  
from 2021



### OPTIMIZING OUR MARINE FLEET: CLEANER, SAFER, AND SMARTER ASSETS

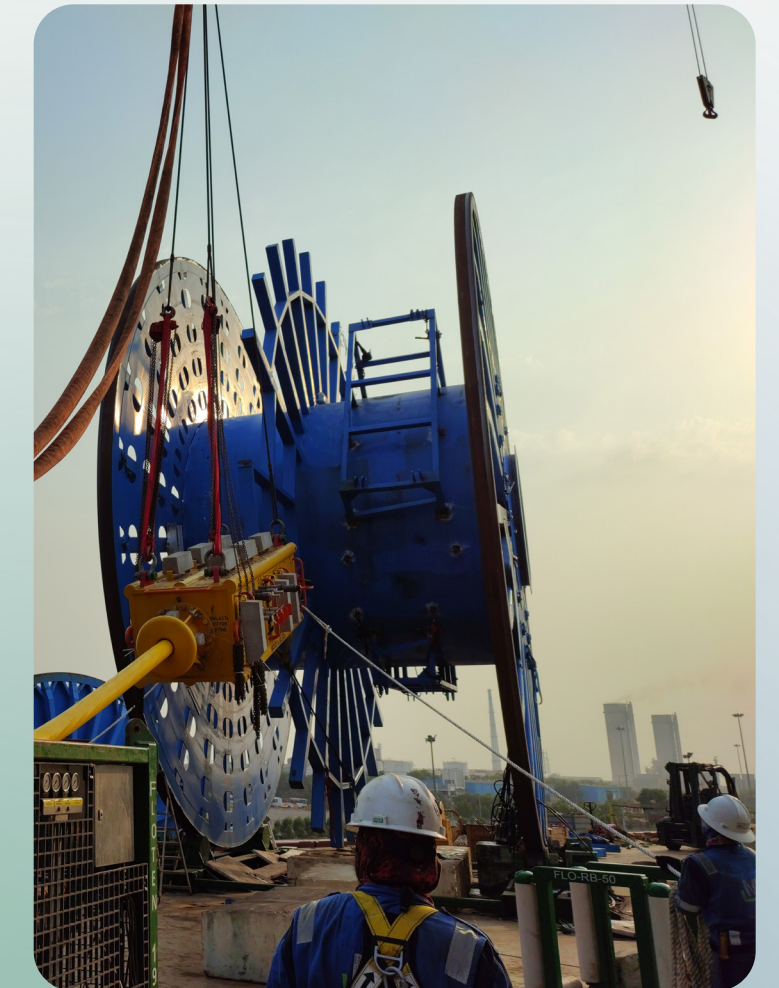
With the Amazon vessel's advancement, McDermott sold the Lay Vessel North Ocean 105 (LVNO105) lowering our fleet emissions by an estimated 8,000 metric tons of CO<sub>2</sub>e yearly.

McDermott's Derrick Barge 27 (DB27) was recently retired in accordance with the Hong Kong Convention green recycling process. In addition, a ClassNK-approved ship recycling yard was inspected by McDermott personnel prior to sale to ensure proper health and safety measures are implemented.

We continue to monitor the dismantling process and will be receiving updates from the yard to demonstrate use of safe and environmentally sound practices as presented in the Ship Recycling Plan. While active, the idle DB27 contributed an estimated 5,750 metric tons CO<sub>2</sub>e to the atmosphere yearly. Retiring this vessel eliminates emissions, and allows the vessel's steel to be recycled.

### EMISSIONS MONITORING OF OUR MARINE FLEET DERRICK BARGE 32 IN FIELD IN THE KINGDOM OF SAUDI ARABIA

We implemented a third-party software to measure engine and auxiliary equipment performance and associated emissions on the DB32, our premier derrick and pipelay barge operating in the Middle East. The software taps into the existing vessel systems to collect raw data using sensors installed on vessel equipment. The collected data is then processed through machine learning algorithms to generate real time carbon emissions monitoring and reporting. This provides clear, consistent, and comparable emissions data year-on-year to aid in better decision making and optimizing performance.





# Circular economy

Circularity at every stage of a projects' lifecycle remains key to minimizing waste and managing our environmental footprint.

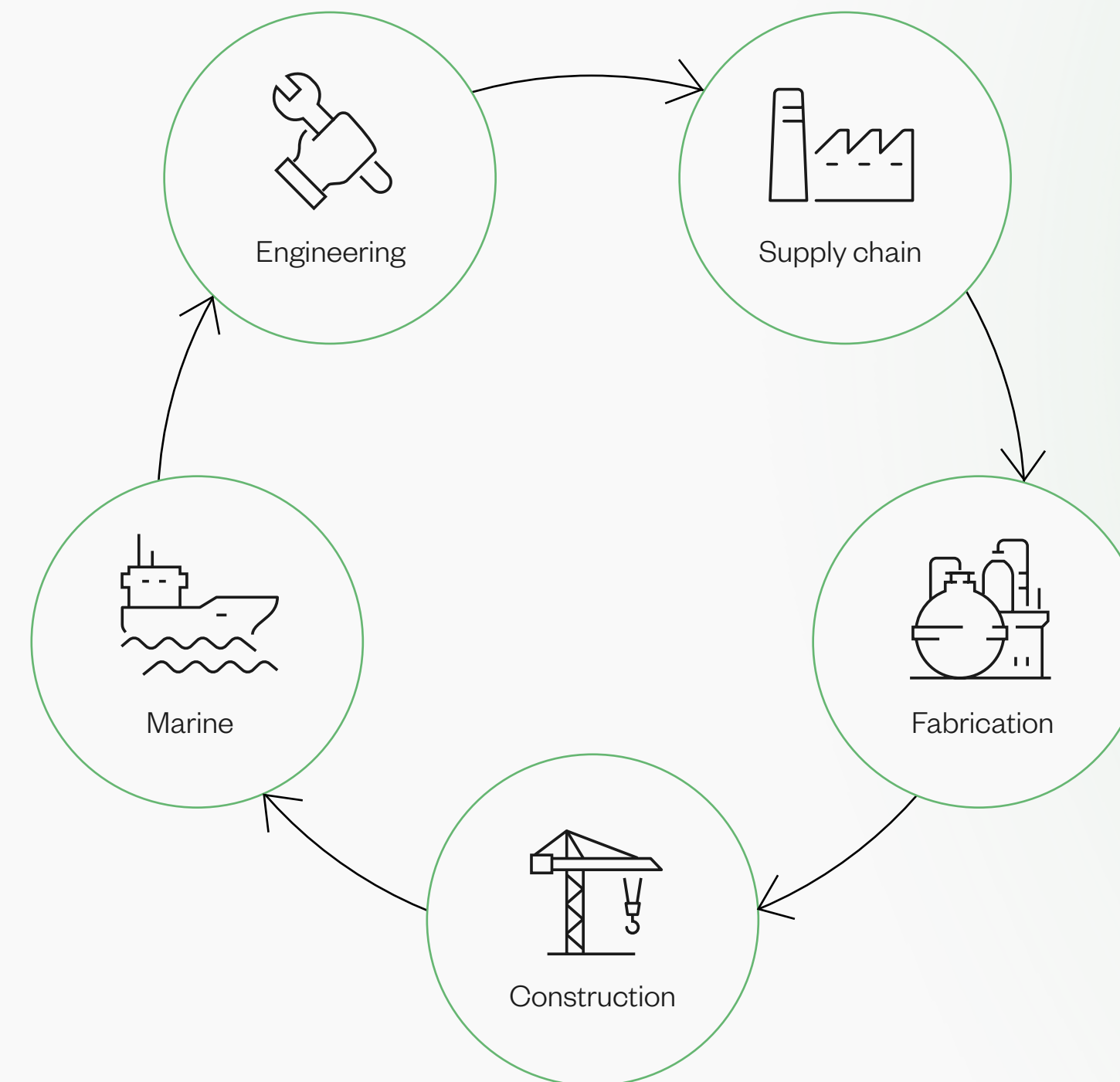
We control our value chain from engineering design and material selection through to procurement and field installation.

As we continue to identify opportunities, such as using non-metallic and composite materials in our projects, we are continuously researching new materials and products with a mission to transform the way our industry manages corrosion in offshore facilities.

Our fabrication teams also identify opportunities to re-use resources. For example, using scrap steel in the fabrication of construction aids can reduce purchases of new steel for construction aids by 10%.

In 2023, we plan to integrate circular economy through standardized guidelines, tools, and workflow processes with our materials database and procurement practices.

## PROJECT LIFECYCLE CIRCULARITY THROUGH DESIGN



## NON-METALLICS INITIATIVE WITH SAUDI ARAMCO

We continued to design and develop innovative alternatives to corroding metals typically used in an offshore installation project. The development of these solutions under the 'Non-Metallic Initiative' sought to significantly reduce the cost, environmental impacts, and potential risk of corrosion. Through our partnership with Saudi Aramco in non-metallics, we successfully established implementation solutions for:

- Subsea shroud development
- Use of non-metallic in battery drain drum
- Use of non-metallic cable trays
- Use of polypropylene piping for potable and utility plumbing



# Waste management

Cultivating a culture among employees that prioritizes sustainable practices.

Our global community of employees actively embraces our sustainability vision to minimize our operational environmental footprint by managing waste and using natural resources efficiently.

We built our waste management process on the concept of circular economy, following waste hierarchy principles to divert waste through reduction, re-use, recycling, and recovery prior to landfill disposal.

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## GARNET RECYCLING

Garnet waste is one of the major waste streams from the blasting process that occurs at our fabrication facilities. During 2022, the Batam yard recycled 2,469 tons of garnet waste, diverting 83% of generated hazardous waste from landfill to external recycling facilities. In the Jebel Ali Fabrication yard, our teams diverted 3,057 tons of garnet blast media from landfill to recycling facilities, accounting for 32% of the fabrication yard solid waste for the year.

## MIDDLE EAST OFFICES WASTE & CIRCULARITY INITIATIVES

We eliminated use of plastic water bottles at our Middle East offices through installation of water filtration dispensers and, provision of re-usable mugs and water bottles.

We also reused filtered wastewater for irrigation, construction material for furniture, garden beds, and composting food waste to improve landscaping at the McDermott-owned camp accommodations in Saudi Arabia.

5,526T  
of garnet waste recycled in Jebel Ali and Batam



76%  
solid waste diverted from landfill in 2022



# Water management

Respectful and responsible use of natural resources are inherent to our operations.

Across our global operations, we continue to work towards identifying and reducing water consumption by optimizing the use, reuse, and recycling in alignment with McDermott’s water management efficiency hierarchy guidelines.

Our operations consumed 1,036,668 kiloliters of water in 2022, a 25% decrease from the 2020 baseline. Water reuse increased by 62% compared to 2020 baseline accounting for 2% of total water reuse ration.

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## RAINWATER HARVESTING SYSTEM AND WATER CATCHMENT AND REUSE IN BATAM

Our Batam yard uses a rainwater harvesting system to collect rainwater which is then used for dust suppression over a 72-hectare area during dry periods. The use of rainwater reduces reliance on surface water, subsequently reducing strain on local water resources.

## DOMESTIC WASTEWATER PROCESSING UNITS

During 2022, over 8 million liters of sanitary wastewater was treated and reused for dust control onsite of our two EPCI onshore projects in Texas – Golden Pass LNG and Borestar Bay 3 – a 22% increase compared with 2021.

## QMW IMPROVES WASTEWATER MONITORING

QMW carried out a comprehensive upgrade of the wastewater treatment system in 2022. After this upgrade, the measured amount of two water quality parameters (Chemical Oxygen Demand and Ammonia) were reduced by more than 50%.



**62%**  
water reuse  
increase  
compared  
to 2020

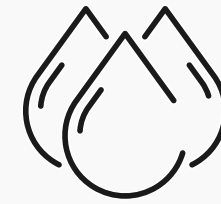


# Air management

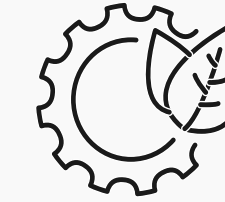
Allocating resources to implement, inspect and monitor, maintain, and report air emissions.

As part of our risk management process, we identify where our industrial and construction activities, processes, and services have the potential to affect air quality. To mitigate any potential impacts to air quality, we allocate resources to implement, inspect and monitor, maintain, and report air emissions in accordance with regulatory requirements, customer expectations, and our own required Best Management Practices (BMPs).

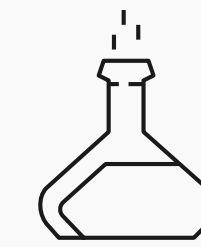
## OUR AIR MANAGEMENT BMPs INCLUDE:



Enacting stormwater management processes to reduce dust pollution



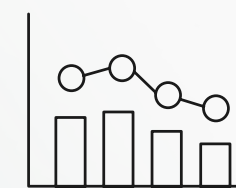
Equipment and machinery maintenance programs for vehicles and combustion equipment to reduce air emissions from poor performance



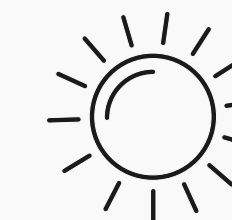
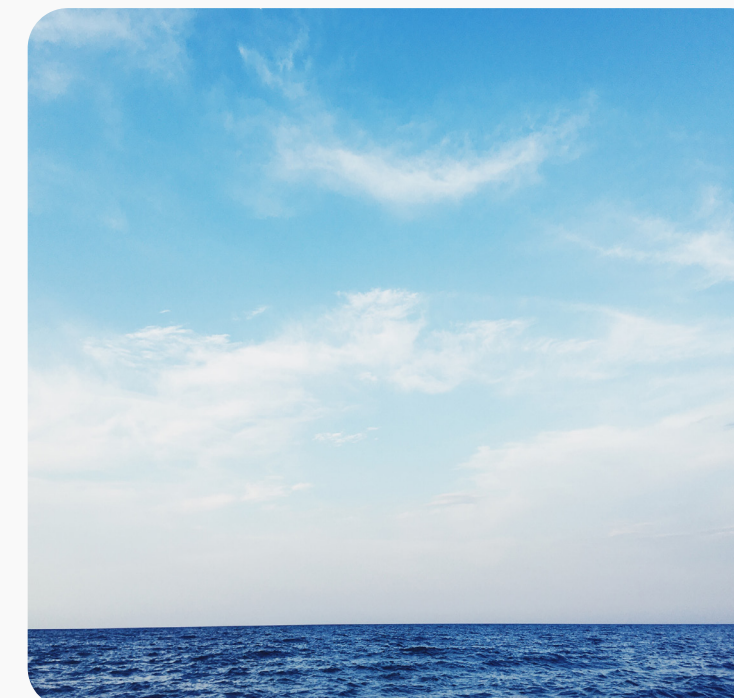
Reducing fugitive emissions associated with use of raw materials



Applying dust shrouds and shields when conducting abrasive blasting



Reducing fugitive air emissions (volatile organics) through spill prevention management of chemical storage and waste minimization programs



Using cleaner energy sources where possible (eg solar, natural gas)



# Biodiversity, land use, and the natural world

The protection and conservation of biodiversity is essential during planning and execution of projects.

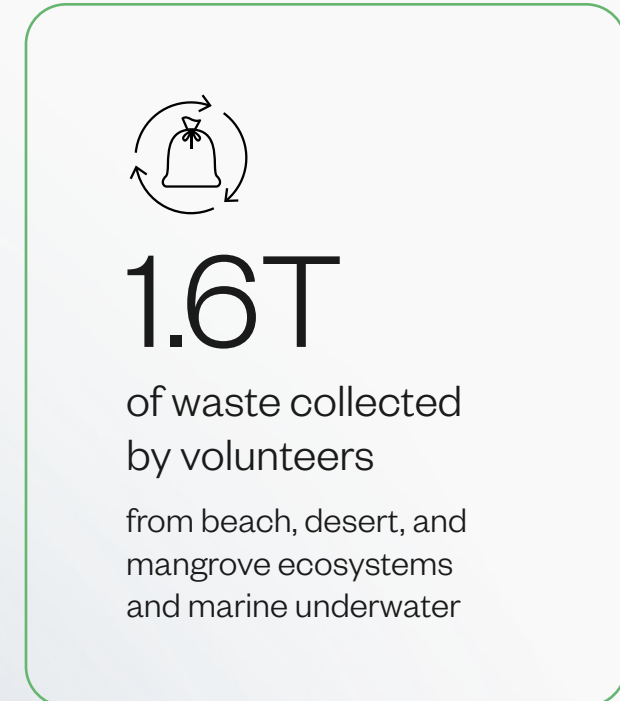
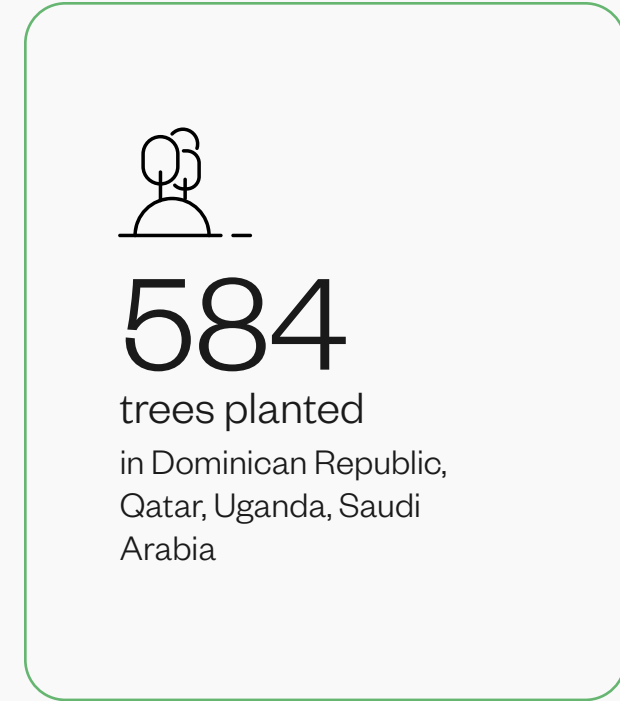
Across our operations, project teams proactively work with customers and collaborate with government entities in support of initiatives to enrich biodiversity and support aquatic life. To do this, we evaluate potential impacts on biodiversity and ecosystems through our Environmental Aspects and Impacts Identification Process. This process identifies risks associated with our operations, the controls to mitigate them, and compliance with applicable environmental laws and permits. We manage biodiversity on our projects based on the principles of identification, mitigation, and implementation, and focus on promoting awareness.

## JOINING FORCES WITH SAUDI MINISTRY TO LEAD ON BIODIVERSITY

For a second consecutive year, our Saudi Arabia operations collaborated with the Ministry of Environment, Water and Agriculture and National Center for Vegetation Cover and Combating Desertification to sponsor the planting of mangroves in various locations within the Kingdom's Eastern Province in support of the "Let's make it green" campaign. Spanning over one month, volunteers were guided by the Ministry to prepare and plant mangrove saplings. The group also cleaned the neighboring mangrove habitat and beach of trash and debris.

## PROTECTING ECOLOGICALLY SENSITIVE AREAS IN AUSTRALIA

We operate in many ecologically sensitive marine areas and strive to protect and conserve the diverse endemic species, habitats, and ecosystems. One such example is in Western Australia where we engaged in preventative strategies and controls to minimize the impacts associated with the transmission of invasive species.





# Spill prevention, control measures, and response

Our Spill Prevention and Control Process is designed to identify early, respond appropriately, and focus on year-over-year continuous improvement.

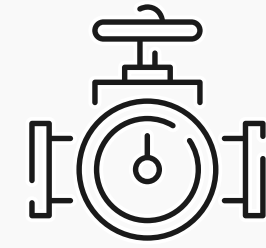
We continue to follow through our Spill Prevention and Control Process to prevent and minimize impacts to our environment.

## 2022 STATISTICS

Four (4) level III spills (2 Water + 2 Land) posed a moderate impact to environment as the spills were greater than 95 but less than 3,785 liters for a total released 6,191 L.

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### TOP 3 LOSS OF CONTAINMENT BY MATERIAL:



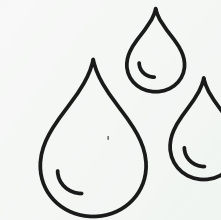
Hydrotest Water

1,911 L



Oil (Hydraulic, Motor, etc.)

1,783 L



Wastewater

1,607 L