

Ocean Transportation

# Making Zero Carbon Shipping A Reality

June 2022

Reporting year 2021



# Leadership message



Changing energy systems is not a simple matter. It is a complex and long-term process – one that will not be linear. Every day we realize the magnitude of the challenge we must overcome together as an industry. With a backdrop of post-Covid growth coupled with supply chain disruptions, 2021 was a challenging year not only for Cargill but also the wider industry in our quest to reduce emissions from shipping. The growth of economies, higher demand in freight, port congestion, and higher sailing speeds of our fleet all contributed to increased emissions. We are 5.9% above the required Sea Cargo Charter trajectory for 2021, this is an increase year-on-year. I am convinced that this figure would have been higher without the interventions we have implemented to date.

Working together with others, we are learning, adapting, and applying a wide range of initiatives to make zero carbon shipping a reality, knowing that we will face challenges and setbacks. The 2030 and 2050 targets are ambitious, but I remain committed and optimistic that we will be able to achieve them.

We can see positive results in parts of our fleet and continue to strive toward long-term, sustainable emissions reductions. We are working closely with our counterparties and wider stakeholders through various initiatives to deliver continual improvements in carbon intensity, spanning from ship technical efficiency and operating efficiency to fleet and supply chain optimization. We also continue to invest in and pilot new technologies and fuels to reduce the carbon intensity of our fleet.

For the Sea Cargo Charter, 2021 is the inaugural reporting year. For the first time, we have a global framework in place

for assessing and disclosing the climate alignment of industry-wide chartering activities against which we can measure the impact of our efforts. We now have a common, global baseline to quantitatively assess and disclose if chartering activities are in line with climate goals. This is a critical step in our decarbonization journey and provides a standard starting point from which we can measure future improvements. Most importantly, we are collecting data that allows us to have discussions and make decisions that are data driven.

While Cargill Ocean Transportation has been reporting our emissions since 2017, it was only during 2021 that we aligned our reporting methodology with that of the Sea Cargo Charter to allow for year-on-year comparisons. For the Cargill corporate emissions target, we are using 2017 as our baseline.

We have a solid and comprehensive decarbonization strategy in place, we have the right strategic partnerships in place, and we now have a data reporting framework in place. I am confident that we can make progress and contribute to transforming the industry and society.

A handwritten signature in black ink, appearing to read 'Jan Dieleman'. The signature is stylized and fluid.

**Jan Dieleman**  
President, Cargill Ocean Transportation

# The challenge: *transforming the shipping industry*

The International Maritime Organization (IMO) set a target in 2018 to reduce greenhouse gas (GHG) emissions from shipping by at least 50% by 2050 against a 2008 baseline, which includes reducing the carbon intensity of ships by at least 40% by 2030. Achieving these targets requires a radical transformation of the maritime industry.

In line with Cargill's overall Scope 3 reduction targets, we have adopted a target of reducing our Energy Efficiency Operational Indicator (EEOI) by 30% by 2030, against a 2017 baseline.

## Sea Cargo Charter target

## Progress

Climate alignment to be within the required trajectories adhering to the IMO goal of GHG reduction of 50% by 2050 for chartered fleet

5.9%  
over 2021 trajectory baseline

## Cargill 2030 target

## Progress

30%  
CO<sub>2</sub> reduction per ton mile (EEOI)

2.7%  
over 2017 baseline

## Standing Cargill targets

## Progress

80%  
of our fleet will be rated A through D by RightShip

On target  
in 2021

100%  
compliance with the IMO's Global Sulphur Cap in 2021

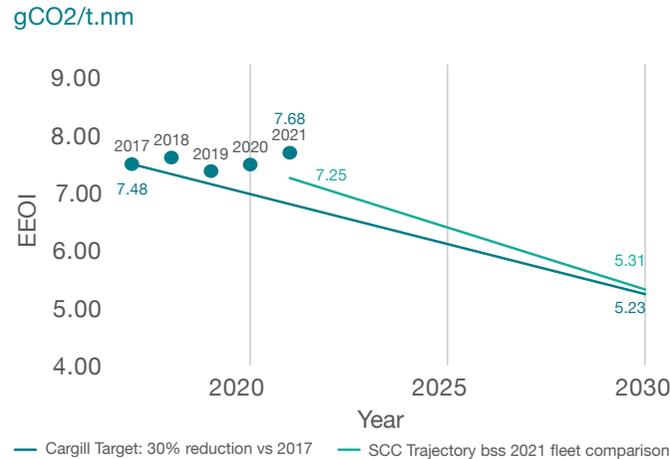
On target  
in 2021

# Establishing a baseline for change

In 2019, Cargill set a target to reduce Scope 3 GHG emissions in its global supply chains by 30% per ton of product by 2030, over our 2017 baseline.

To be able to compare previous years with the Sea Cargo Charter methodology, we aligned our methodology to that of the Sea Cargo Charter, by applying a retrospective increase in EEOI of 6% to account for the inclusion of ballast voyages prior to our charter. When doing this, the graph shows that the 2017 EEOI is 7.48, compared to the 2021 EEOI of 7.68, this is about a 2.7% increase from the 2017 baseline.

## SCC intensity (EEOI)



## Carbon intensity by vessel size

EEOI% change year-on-year by vessel size

	2017	2018	2019	2020	2021
<b>Cape</b>		4.9	-3.4	-0.8	2.3
<b>Handy</b>		-0.5	-5.0	-4.1	6.0
<b>Panamax</b>		1.6	-5.2	0.0	6.0
<b>Supramax</b>		-1.7	-5.4	-5.0	6.6
<b>Tankers</b>		-1.7	-14.0	4.1	-5.1

### What is the Energy Efficiency Operational Indicator (EEOI)?

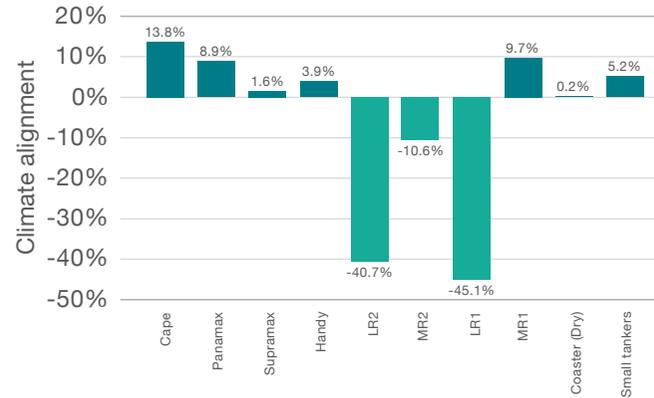
The EEOI, or CO<sub>2</sub> emissions divided by transport work, can be considered as the average carbon intensity of a ship in its real operating condition, taking into account actual speeds, draughts, capacity utilization, distance travelled, and the effects of hull and machinery deterioration and weather. The units for EEOI are gCO<sub>2</sub>/t.nm.

We apply the *IMO Guidelines for Voluntary use of the Ship Energy Efficiency Operational Indicator (EEOI)* within our methodologies. Further, and in line with the Sea Cargo Charter, we include ballast voyages undertaken prior to commencement of our charters within the EEOI calculation.

# Our Sea Cargo Charter Results

2021 was a year of significant growth in economies leading to higher demand in freight, port congestion, and higher sailing speeds which all contributed to an increase in emissions. Overall market emissions increased by 4.9%\* and with the growth of our fleet, we were 5.9% above the Sea Cargo Charter trajectory. This highlights the need for us to take further action, and we remain committed to long-term sustainable emissions reductions. We work closely with various counterparties and a wide spectrum of stakeholders to improve our overall carbon intensity — spanning from ship technical efficiency and operational efficiency to fleet and supply chain optimization. We also continue to invest in and pilot new technologies and fuels.

## Climate alignment



## The Sea Cargo Charter

Cargill played a leading role in the development of the Sea Cargo Charter in 2020.

The Sea Cargo Charter provides a common, transparent framework for assessing and disclosing the climate alignment of chartering activities. The Sea Cargo Charter achieves this by defining a linear decarbonization trajectory that is aligned with the IMO’s goal of 50% reduction in shipping GHG emissions by 2050. Signatory charterers assess the carbon intensity of their fleet on an annual basis, according to the published methodology, and compare this against the Sea Cargo Charter trajectory. Results above the trajectory (positive %’s) indicates that additional work needs to be done to “catch up” with the IMO’s goal, while results below the trajectory (negative %’s) indicate performance that is ahead of target. The carbon intensity metric used by Sea Cargo Charter is the EEOI. 2021 is the inaugural year of the Sea Cargo Charter Annual Disclosure Report.

For more information, visit [www.seacargocharter.org](http://www.seacargocharter.org)

## Average fleet size in 2021

Cape	54
Panamax	246
Supramax	162
Handy	139
Tankers	56
<b>Total average</b>	<b>657</b>

## Looking ahead

As part of our preparation for the Sea Cargo Charter, we made changes to our emissions data gathering and analysis processes. This improved both data quality and quantity.

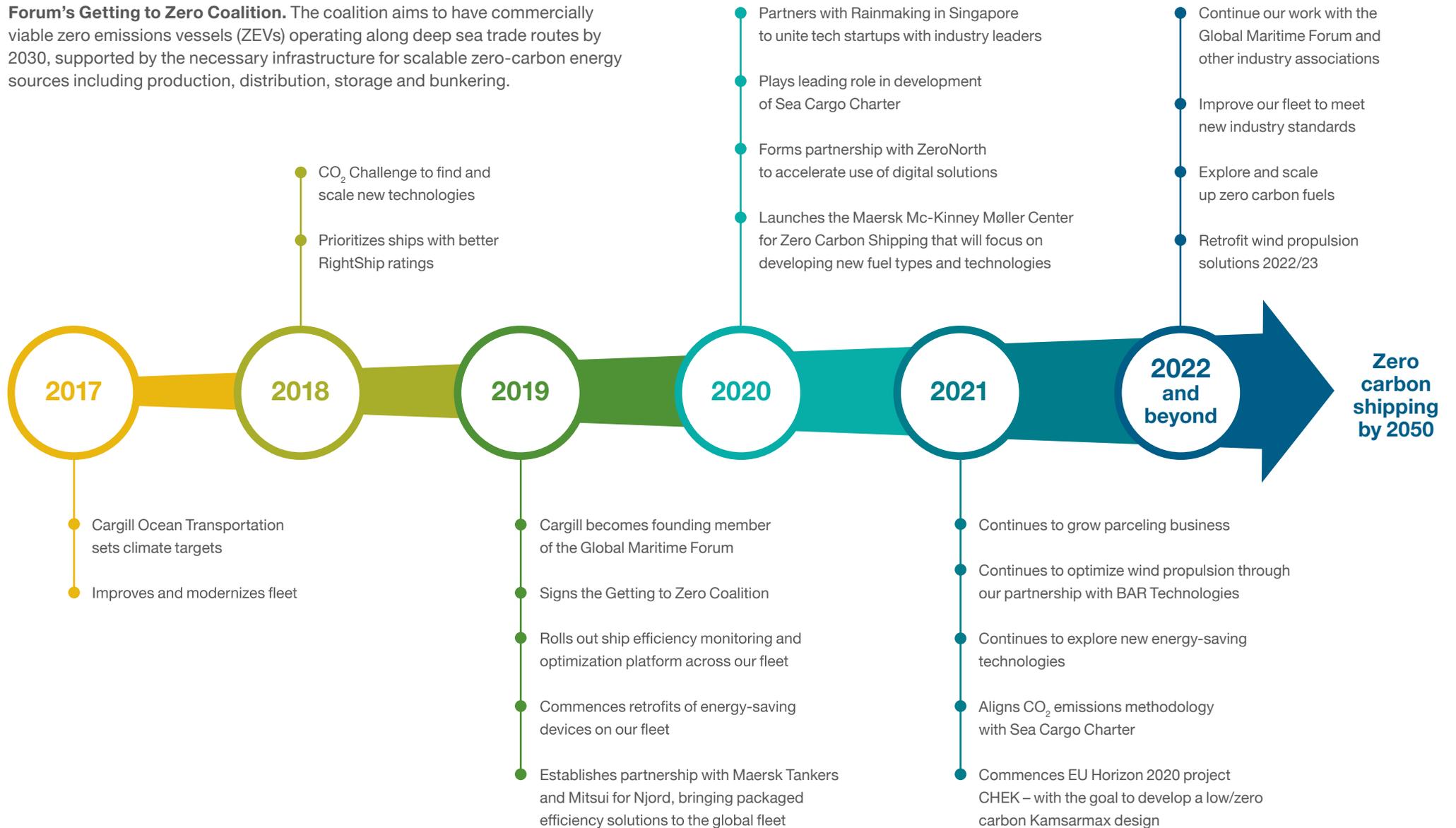
Cargill achieved 91% voyage coverage in our 2021 Sea Cargo Charter reporting. In compliance with the preferred pathway, our Sea Cargo Charter reporting was independently verified by DNV. We recognize that there is still room for improvement, and in 2022 we are investing in further upgrades to achieve greater coverage and higher accuracy.

The results show significant variations in performance across the different ship types and sizes. While some of these variations are due to the macro economic drivers described, we are working within the Sea Cargo Charter Technical Committee to review the trajectories as well as identify any reasons for the outperformance that could be replicated across the wider fleet.

\* Reference: Shipping emissions rise 4.9% in 2021 by Lloyds List

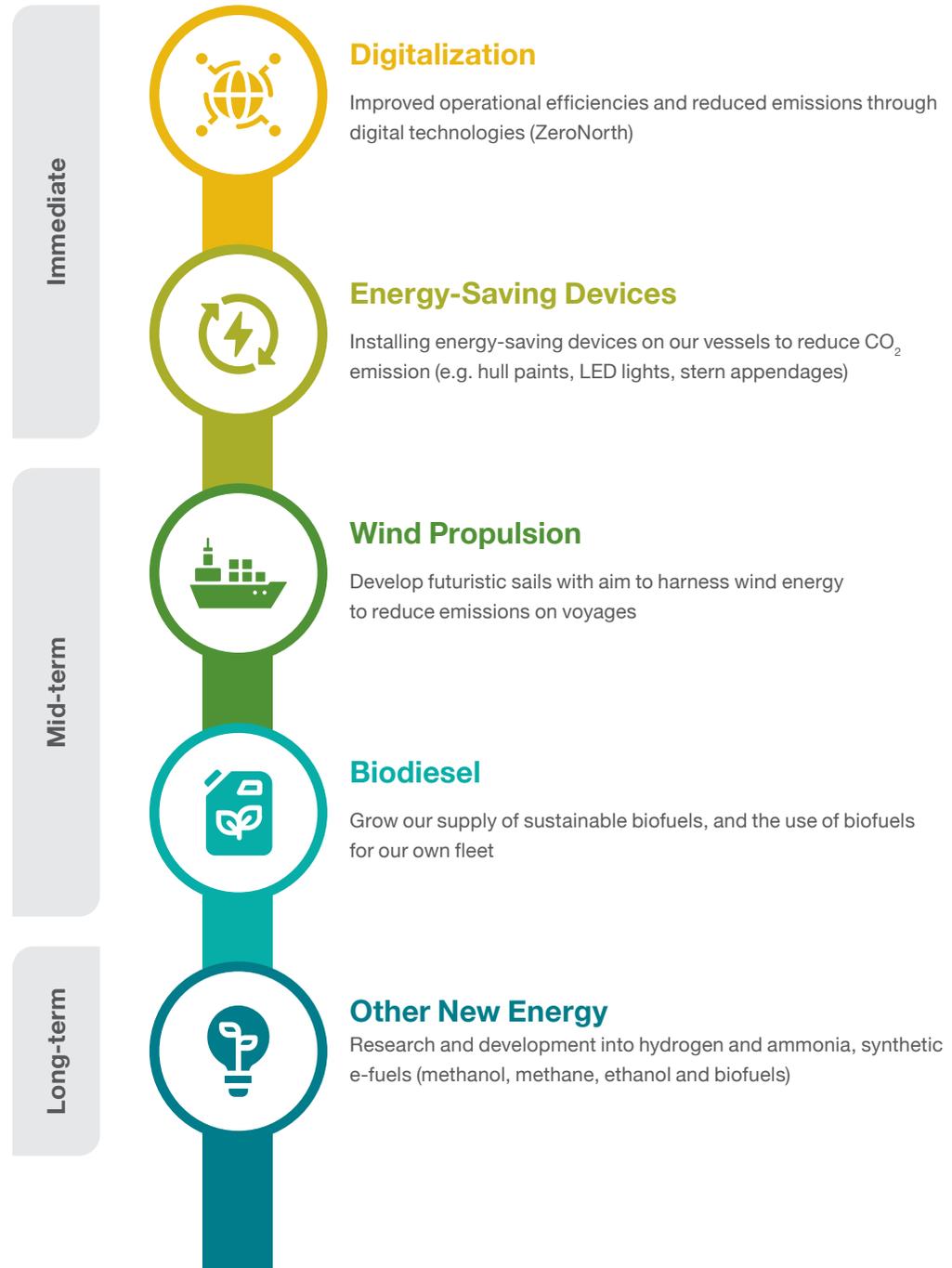
# Our 2050 pathway to Zero

**Our pathway is aligned with our commitment to the Global Maritime Forum's Getting to Zero Coalition.** The coalition aims to have commercially viable zero emissions vessels (ZEVs) operating along deep sea trade routes by 2030, supported by the necessary infrastructure for scalable zero-carbon energy sources including production, distribution, storage and bunkering.



# How we will achieve our decarbonization goals

We are applying existing technologies to deliver immediate reductions in emissions, working to scale up wind and biodiesel in the mid-term, and collaborating to explore the long-term solutions that can get the shipping industry to net zero.



# Making our zero carbon vision a reality

**Wind offers  
significant  
saving  
possibilities**

**Cargill is exploring different wind-assisted propulsion (WAP) technologies. We believe that wind could make an important contribution to achieving our decarbonization goals.**

WAP technologies have the potential to deliver double-digit percentage reductions in emissions. This is more than what is achievable from the majority of retrofittable technologies available today. They could help to bridge the gap until alternative low and zero carbon fuels are available, and then help reduce the consumption of these new fuels once they are deployed.

An example of our exploration into WAP technologies is our strategic partnership with BAR Technologies with whom we are bringing “WindWings” to bulk shipping. These are large, solid wing sails that measure 38 meters in height and can fold flat on deck when not in use.

The prototype sails designed by BAR are being manufactured by Yara Marine Technologies for installation on board a Kamsarmax *Pyxis Ocean* (owned by MC Shipping), that we will charter at least until 2027. The sails will be installed with a comprehensive monitoring system to gather data on their performance, so we can calibrate and validate our simulation models and continue to improve their overall design and operation.



# Making our zero carbon vision a reality



## Energy-saving devices to reduce CO<sub>2</sub> emissions

By installing energy-saving devices (specialized hull paints, LED lights, hydrodynamic improvement appendages, etc.), we are reducing CO<sub>2</sub> emissions on selected vessels by 5%-10%. We have installed energy-saving equipment on 24 vessels and saved more than 5000 mt of fuel.

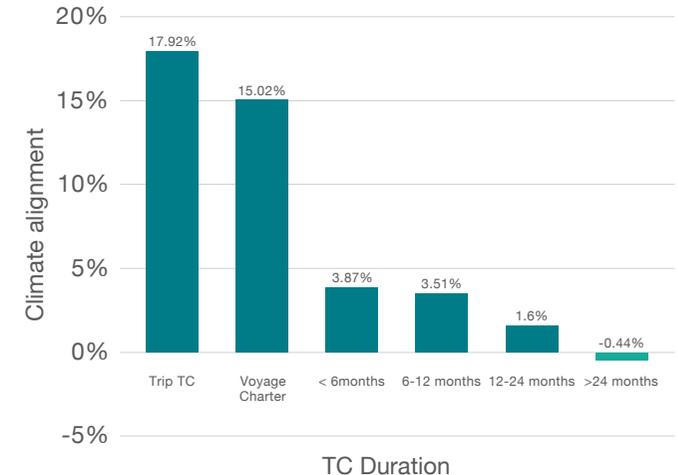
Through “Njord” our strategic collaboration with Maersk Tankers and Mitsui — we are leveraging our combined expertise to provide turn-key energy-saving device solution packages to the wider maritime market.



## Optimizing emissions through parceling

We continue to reduce emissions for our parceling customers versus their conventional shipping models. Parceling maximizes intake. By utilizing bigger vessels, we reduced overall carbon intensity. We measured 37 parceling voyages and saw a reduction of 19% GHG and 18% EEOI.

We continue to grow our parceling business and have established a separate parceling desk.



## Long-term time-charter vessels have reduced emissions

As well as improving the operational and technical efficiency of the ships in our fleet, we strive to further reduce our emissions via efficient vessel selection practices – particularly on our longer-term charters, where our acceptance criteria are progressively more stringent. We select newer and better performing vessels and, where beneficial, we also install energy saving devices on these vessels. Our 2021 Sea Cargo Charter submission reflects the results of these efforts in the relative outperformance of the EEOI for these longer-term charters. We will continue to monitor this in 2022 to confirm the trend and deliver further incremental improvements.

# Making our zero carbon vision a reality

**We are growing a more energy-efficient fleet, working with shipowners to improve the efficiency of their vessels.** Our digital vessel performance projects have tested a range of performance management and voyage optimization tools. In 2021, we implemented ZeroNorth's "Optimize" software to optimize voyage speed to reduce emissions and became a strategic investor in the company.

**We have undertaken multiple trials of fuel oil/biofuel (FAME) blends up to 30%.** So far, we have conducted 17 successful trials in the Netherlands with a total quantity of 8,300 mt with the largest bunkering being above 1,000 mt of B30 for a single vessel. This represents an average CO<sub>2</sub> equivalent reduction of 21.8% versus conventional fuels amounting to a total of 6,800 tonnes CO<sub>2</sub> equivalent which are calculated according to the RED II methodology and verified by DNV. The FAME component comes with a proof of sustainability certificate,

which is issued by the International Sustainability & Carbon Certification.

**We are a founding partner of the Maersk Mc-Kinney Møller Center for Zero Carbon Shipping** which is actively involved in projects looking across the full spectrum of alternative fuels and energy efficiency technologies, including ammonia and methanol as maritime fuels.

**We are exploring and testing new solutions for antifouling coatings and hull cleaning** that would reduce the CO<sub>2</sub> emissions caused by fouling, while minimizing the impact on the marine environment.



# Partnering for progress



**Mærsk Mc-Kinney Møller Center**  
for Zero Carbon Shipping



