

# Cost-effective Decarbonization

Updated environmental strategy 2023-2050



# Delivering on the transition towards low carbon shipping

Our decarbonization journey has a unique starting point with a fleet of combination carriers being the most carbon efficient deep sea transportation solution in the dry bulk and tanker space existing today. Over the next years we plan to further improve this competitive advantage through harvesting untapped efficiency improvement potential across KCC's business. In parallel we are actively preparing for the utilization of new low- and zero-carbon fuels. The transition to such new fuels, however, is not likely to start in earnest before the end of this decade and will require regulatory and customer support to succeed. KCC's revised strategy, replacing KCC's initial strategy presented in January 2020, is based on our comprehensive learning and experience in these subjects built over the last years. Our ambitions remain high — We are future bound!



**Engebret Dahm**  
CEO of Klaveness Combination Carriers

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Where we are

NOW

# Executive summary

## A strategy for delivering cost-effective, low-carbon shipping.

Klaveness Combination Carriers offers a world-leading, low-carbon transportation solution. Our vessels reduce the carbon footprint per ton-mile of transported cargoes by 30-40% compared to standard vessels.

KCC presented its first environmental strategy in January 2020. After coming to the end of the first strategy period at the end of 2022, we present this updated strategy setting out how — using our lessons learned, customer collaboration and strong market position — we will deliver a 45% reduction in EEOI by 2030 (2018 baseline).

### The combination concept

Our combination carriers efficiently combine cargoes in trades and thereby avoid sailing long distances without cargo onboard.

### Performance now

Our fleet's carbon intensity for 2022, with 83% on-hire days in combination trade and 12% in ballast, was 25% below that of standard dry bulk and product tanker vessels in the same trades. In main combination trades, the fleet's carbon intensity was 32% below competing standard vessels.

### Going further

On the back of the recent years' experience and lessons learned we aim at delivering further large reductions in carbon intensity. How we will achieve them is described in detail in this strategy.

### By 2026

KCC aims at delivering a 30% improvement in carbon intensity (EEOI) compared to 2018 through voyage, trading and energy efficiencies.

### By 2030

KCC aims at delivering a 45% improvement in carbon intensity (EEOI) compared to 2018 through newbuilds and alternative fuels.

### By 2050

KCC is committed to get to net-zero emissions by 2050.

### Beyond decarbonization

KCC aims at delivering additional positive environmental outcomes through vessel recycling, waste minimization and air quality improvements.

# The Combination Carrier Concept

KCC solves and capitalizes on inefficiencies in deep-sea shipping. We employ our combination carriers in trades where they efficiently combine cargoes normally transported by standard dry bulk and tanker vessels and where these standard vessels sail long distances without cargo onboard.

KCC's combination carriers cut the carbon footprint by 30-40% per transported ton-mile compared to standard vessels in combination trades. They achieve this reduction by maximizing utilization and quantity of cargo transported through switching between dry and tanker cargoes with minimum ballast in between the dry bulk and tanker cargo.

- 1 Tank
- 2 Dry bulk
- 3 Ballast

## KCC's solution

~10% Trading empty (ballast)



## Panamax dry bulk

~40-50% Trading empty (ballast)



## Product tankers

~30% Trading empty (ballast)



# Our performance today

There are considerable differences in the carbon intensity when comparing KCC's combination carriers to its competitors — standard dry bulk and product tanker vessels.

## Carbon intensity

Carbon intensity is measured using the Energy Efficiency Operational Index (EEOI), as defined by IMO: Grams CO<sub>2</sub> emitted per transported ton cargo per nautical mile (both fuel consumption at sea and in port included).

# -25%

Our fleet's carbon intensity for 2022, with 83% on-hire days in combination trade and 12% in ballast, was 25% below that of standard dry bulk and product tanker vessels in the same trades.

In main combination trades our fleet's carbon intensity was (32%) below that of competing standard dry bulk and tanker vessels illustrating the current potential of trading efficiency improvements.

EEOI Benchmark standard vessel 2022\*



EEOI KCC 2022



EEOI in main combination trading 2022\*\*



\* Calculated based on standard vessels (Panamax/Kamsarmax dry, MR-tankers and LR1-tankers) making the same transportation work in the same trades as performed by KCC's CABU and CLEANBU vessels in the relevant period.

Weighted average EEOI for the individual trades performed. There is a degree of uncertainty related to the benchmark values as these are estimated using data from Baltic Exchange and AXS Marine.

\*\* EEOI in the current main trades to/from Australia and South America excluding voyages with extraordinary long ballasting.

# Key lessons learned: 2020 Environmental Strategy

We took some key learnings away from our 2020 Environmental Strategy and which we have brought with us in our updated strategic approach:

- 1 International decarbonization regulations are slow-moving.
- 2 With a few exceptions, most charterers are not yet ready to pay for decarbonizing ocean freight, but this will likely change.
- 3 Today's carbon offsets are not credible. We focus on reducing our own emissions.
- 4 It takes time to identify, test out and implement energy efficiency measures.
- 5 Increasing organizational understanding and implementing training requires time.
- 6 More limited access to and higher pricing of biofuels than expected.
- 7 More complexities and uncertainties around the shipping industry's future choice of zero emission fuels and technologies.





Principal ambition for the period including

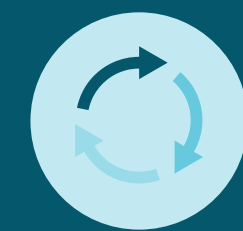
# 2026



Ambitions



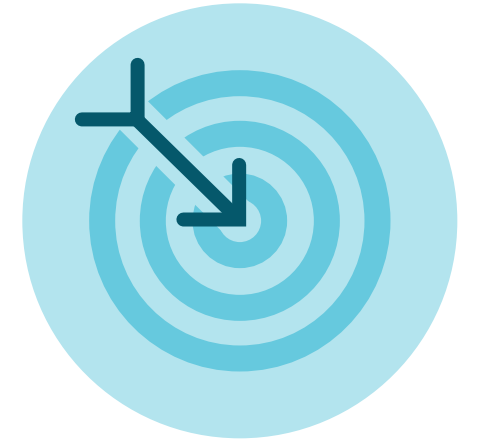
Levers



Actions

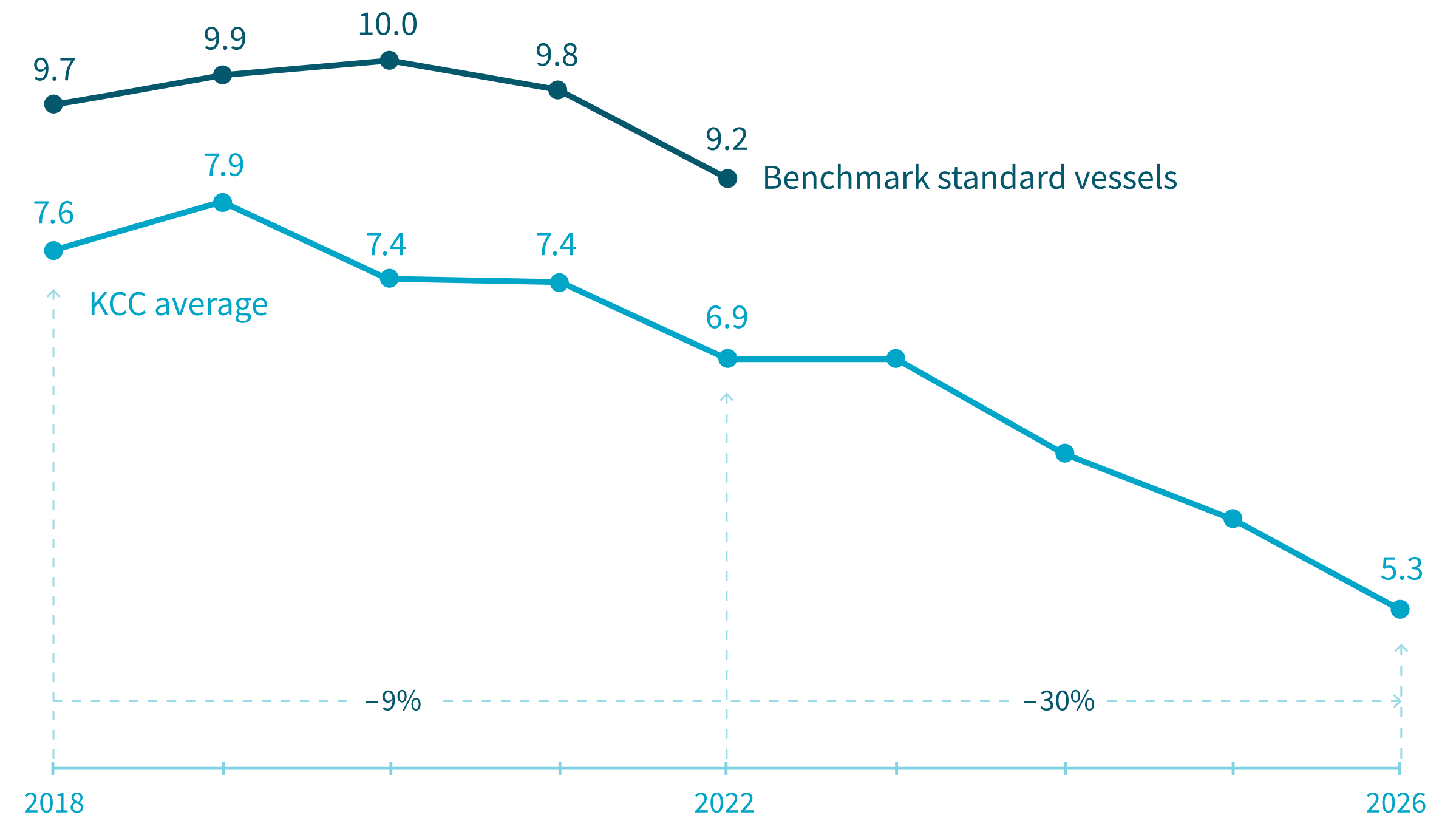
Principal ambition for the period including 2026

# Reduce our carbon intensity (EEOI) by 30% compared to 2018



Harvesting untapped efficiency potential. In the period 2023–2026 our principal goal is to maximize the efficiency of our transport work and continue lowering our carbon intensity by scrutinizing efficiency improvements throughout our business. In parallel we will actively prepare for the future transition to new low and zero emission fuels.

By acting now, we will maintain our lead as the most carbon-efficient shipping company in the deep-sea dry bulk and tanker segments.

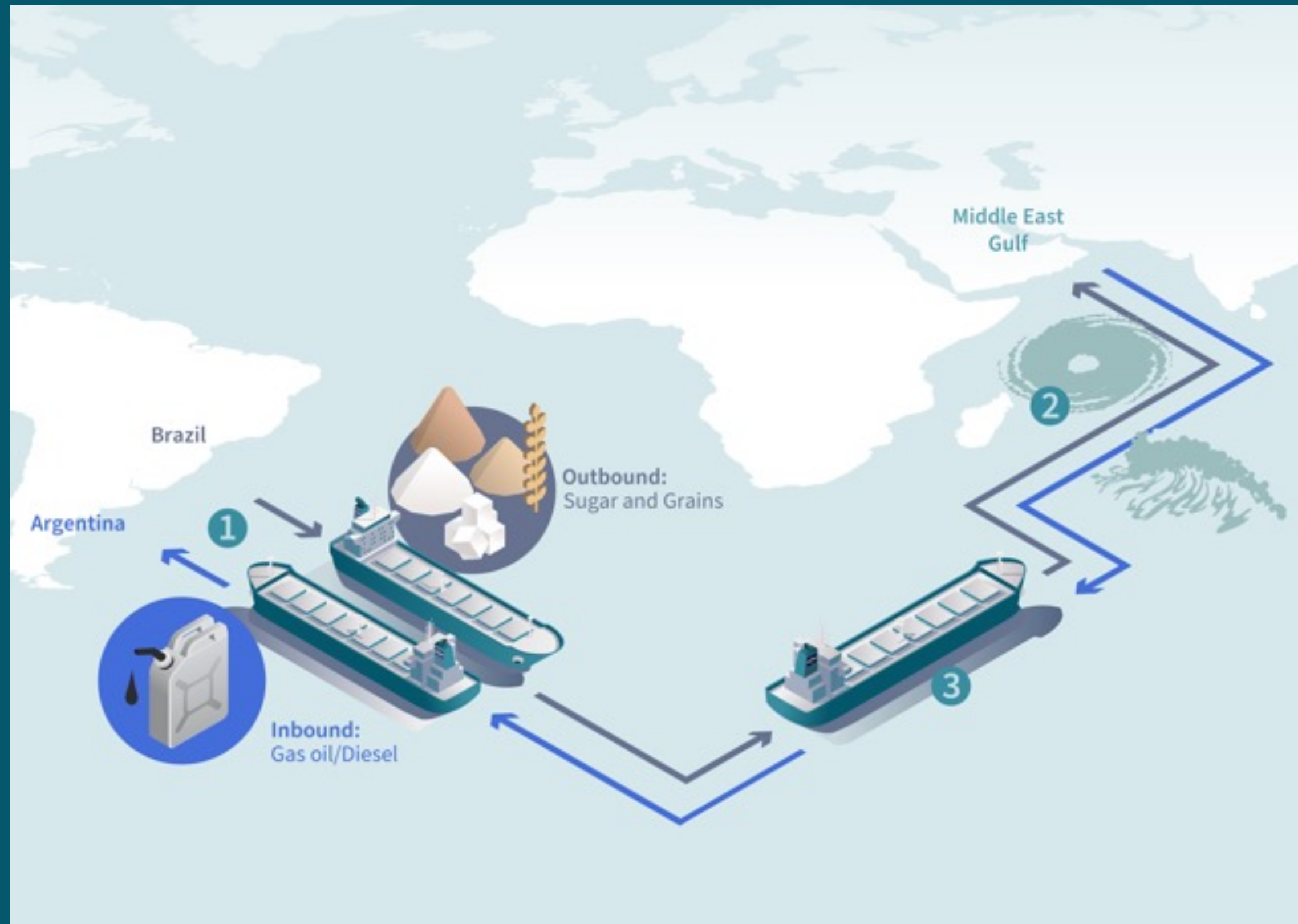


Principal ambition for the period including 2026

# Key levers



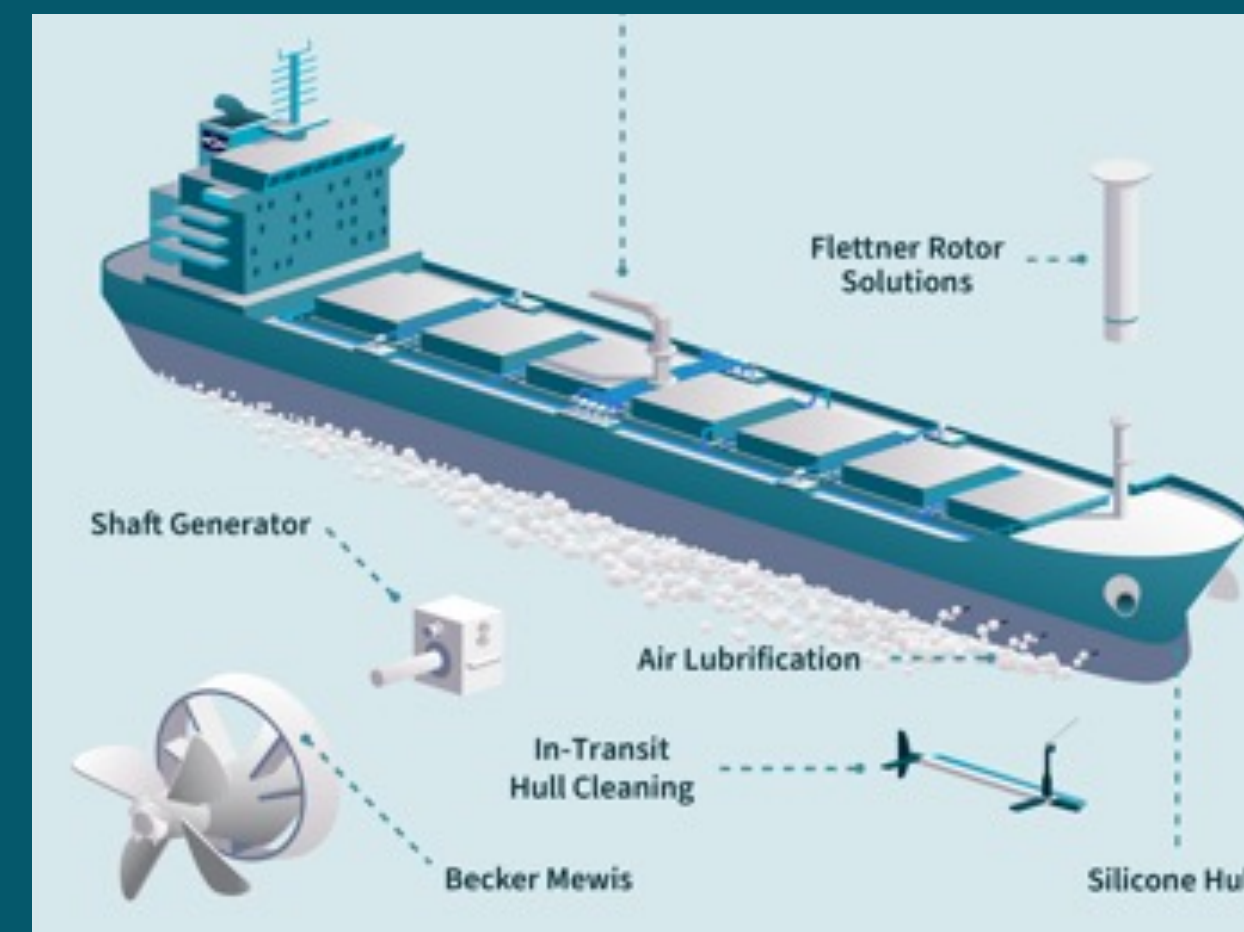
## Optimize trading efficiency



## Perfect voyage efficiency

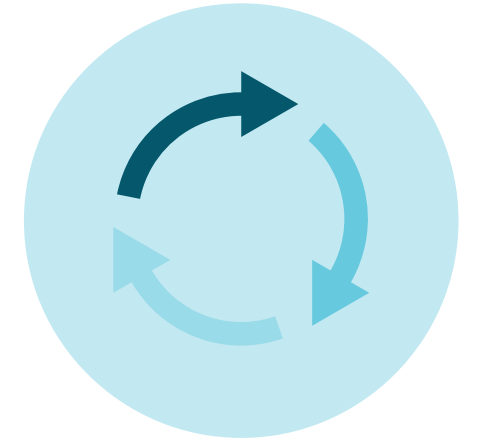


## Improve energy efficiency



Principal ambition for the period including 2026

# Actions: Optimize trading efficiency



We work to:

Maximize cargo intake

Maximize loaded voyages/  
minimize ballast

Minimize waiting time in port

Avoid high-speed voyages

To achieve this:

Customer collaboration  
is key

KCC's Sustainability-linked contract framework is developed to strengthen co-operation with customers through:

Improved quality of emission reporting.

Joint initiatives to improve efficiency.

Joint carbon emission reduction targets.

Carbon pricing mechanism linking freight payments to carbon emission performance.

We have implemented several internal rules and tools to optimize decisions, among others

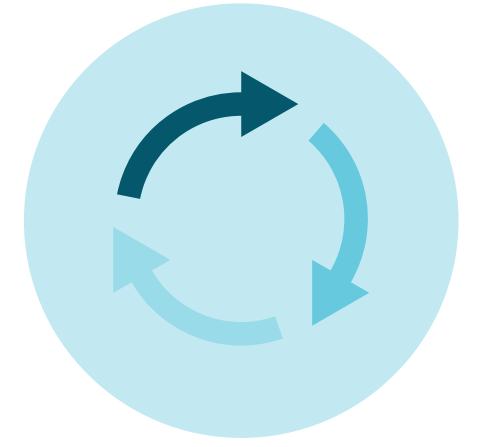
Internal shadow carbon pricing all chartering decisions involving long ballasting.

All our voyage planning will assume a service speed on maximum 12.5 knots.



Principal ambition for the period including 2026

# Actions: Perfecting voyage efficiency



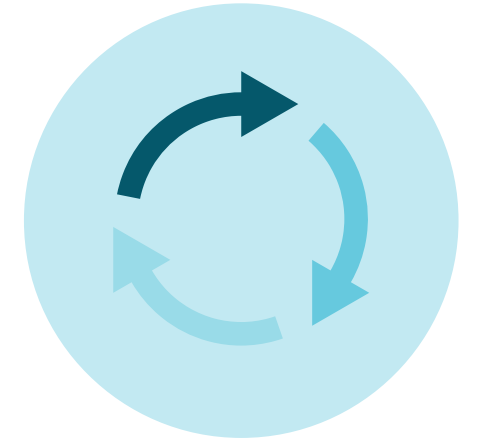
**Digitalizing the fleet** We invest in digital technologies and solutions that enhance voyage efficiency. The incorporation of advanced vessel data and systems enables better decision-making for the crew and simplifies follow-up procedures from the shore.

**Improved crew training and enhanced shore follow-up** To optimize voyage execution and use of new energy efficiency measures, we improve crew training programs and expand the support provided from shore.



Principal ambition for the period including 2026

# Actions: Improve energy efficiency



KCC invests in the following identified key solutions:

## Reduce hull resistance

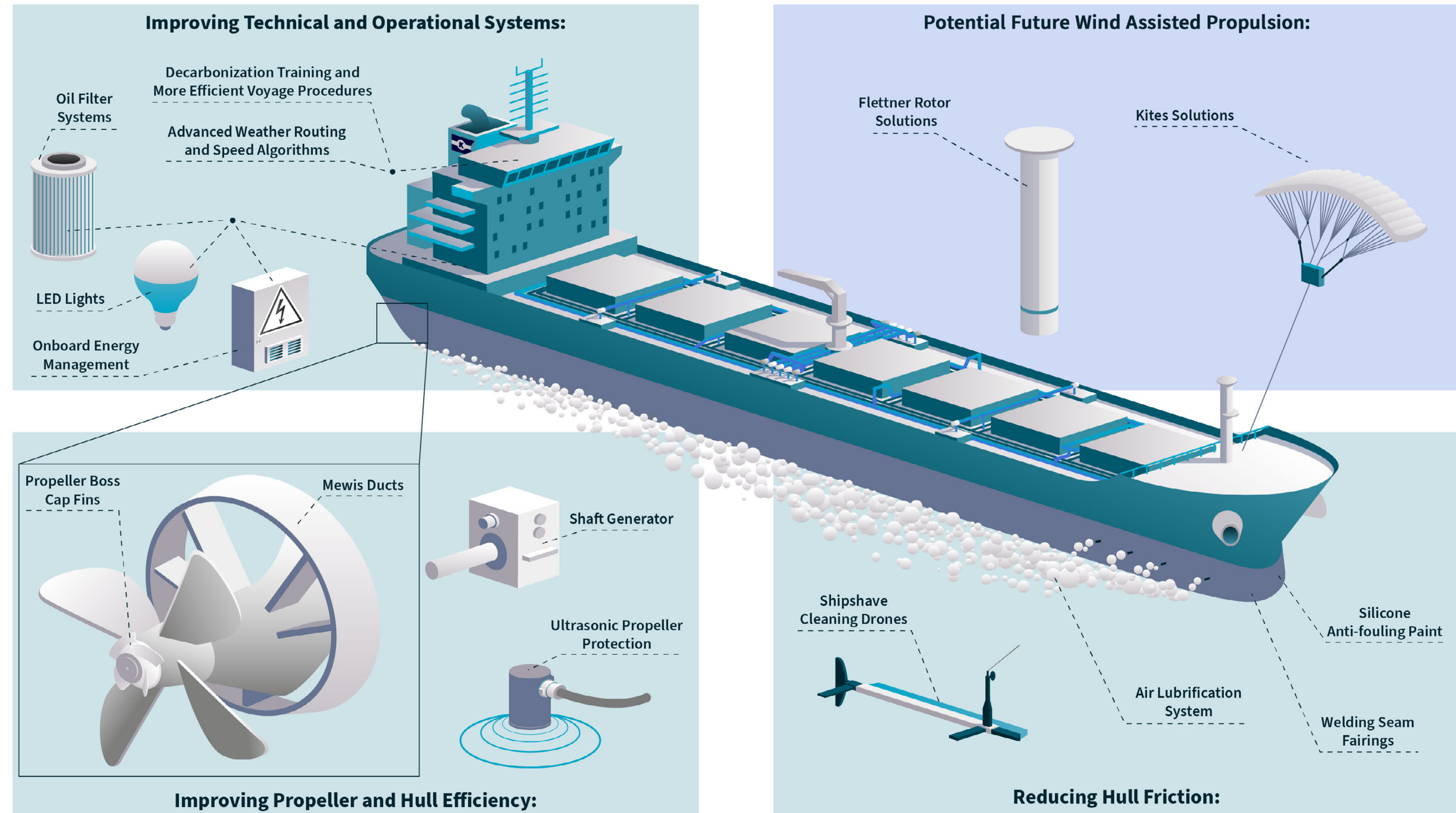
Silicone antifouling, air lubrication system, welding seam fairing, hull cleaning drones.

## Improve propeller and hull effectiveness

Mewis ducts, ultrasonic propeller protection and propeller boss cap fin retrofit.

## Optimize the vessels' energy utilization and evaluate alternative energy generation

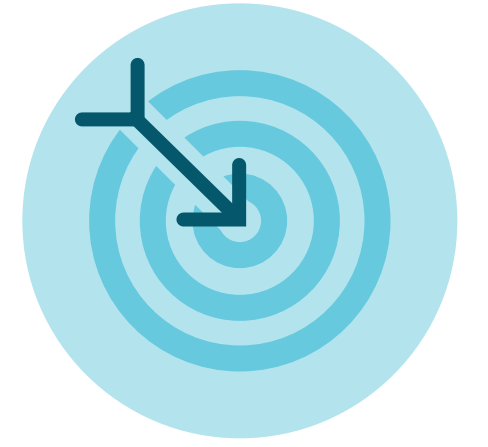
Shaft generator retrofit, LED flood lights and potentially wind assisted propulsion, solar panels, shore power and battery hybrid systems.



Principal ambition for the period

2027-30

2027–2030 ambition

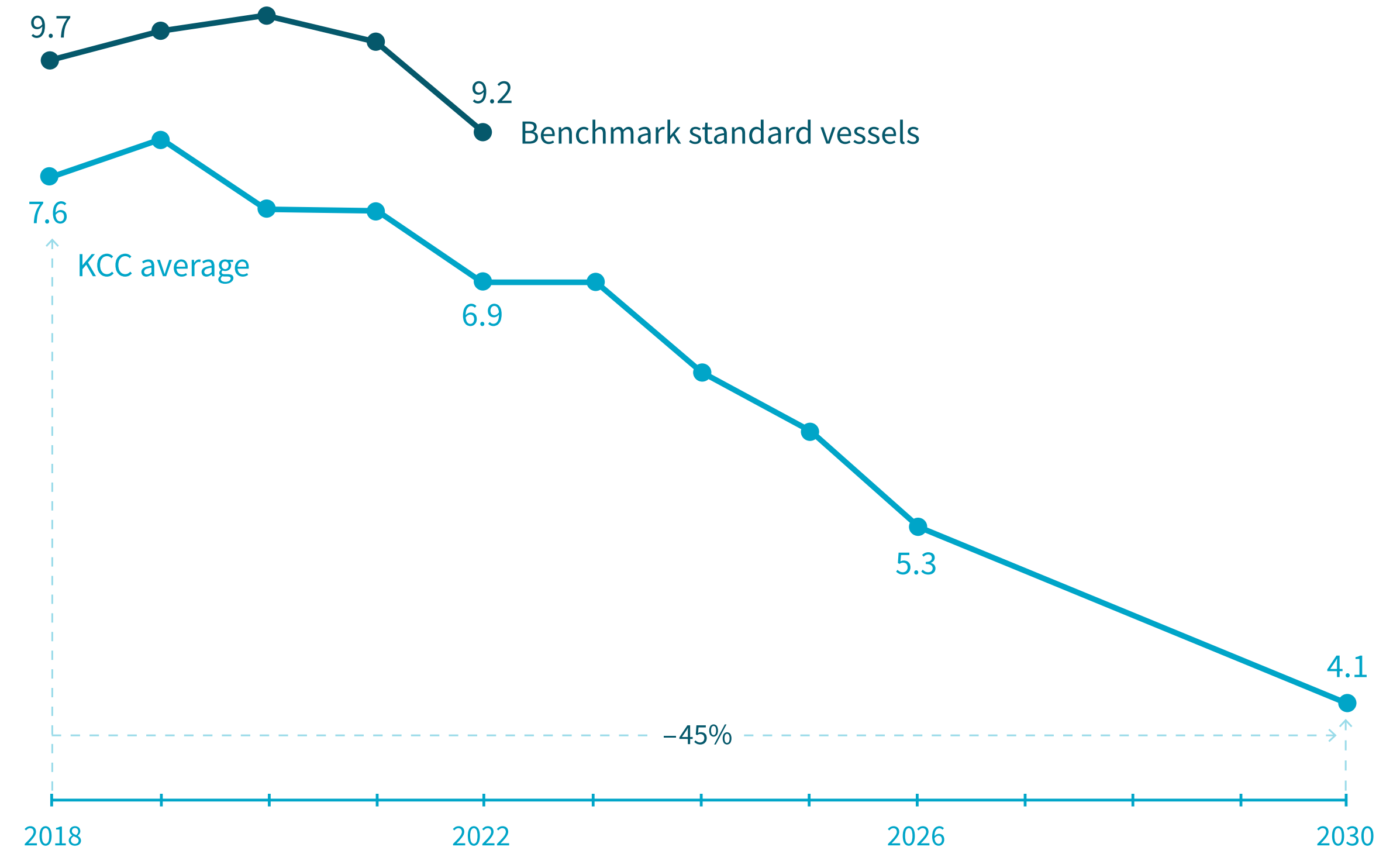


# Reduce our carbon intensity (EEOI) by approximately 45% compared to 2018.

Start transitioning to alternative fuels while maintaining ambition for further efficiency improvements. Key levers:

Backed by customer support and new and stricter regulations, KCC shall start using biofuels and zero emission fuels in its daily operation.

Additional large efficiency improvements through fleet renewal and continued energy efficiency investments.





2027–2030 ambition

# Actions: Phasing in zero emission vessels and fuels



## Fleet renewal including introducing the first zero-emission vessel

Minimum three of the oldest CABU vessels shall be replaced by newbuilds with minimum 35% lower carbon footprint.

All KCC newbuilds delivered after 2023 will be prepared for later conversion to burning zero-emission fuels.

Introducing the first zero-emission vessel into KCC's operation.

## Start using biofuels and zero emission fuels in daily operation

In co-operation with customers, sustainable biofuels shall constitute a minimum 15% of the fuel mix in 2030.

Minimum 50% of the fuel used by the zero-emission vessel(s) in operation shall be zero-emission fuels.

## Further energy efficiency improvements

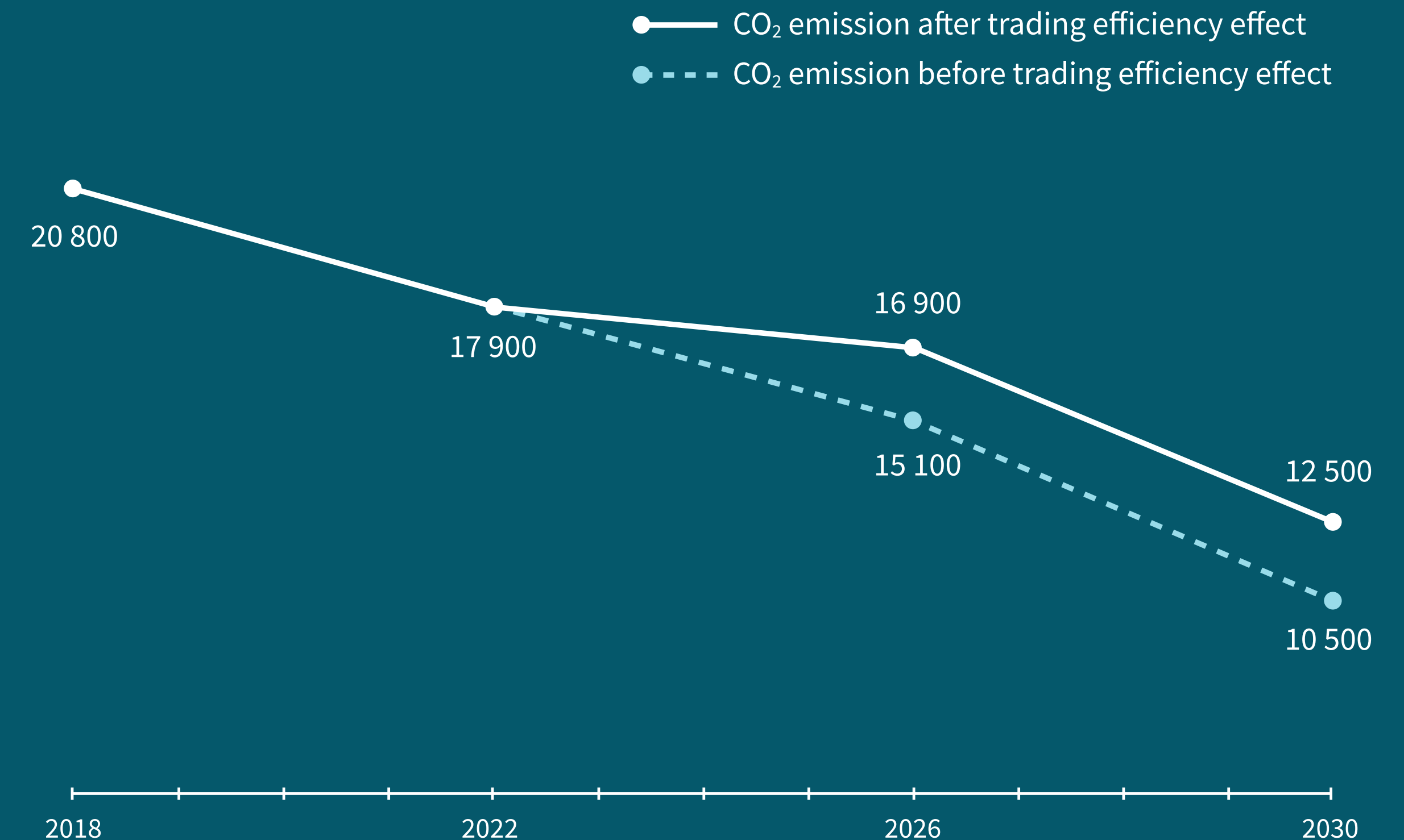
Continue investing in new cutting-edge technologies to improve energy efficiency of the current fleet.

# Long term target of large absolute emission reductions

Using new fuels, fleet renewal and efficiency improvements will deliver large reductions in CO<sub>2</sub> emission. Our target to substantially improve trading efficiency will partly offset these CO<sub>2</sub> reductions. Why is this?

Improved trading efficiency means that the vessels increase the time sailing with cargo onboard and they transport more cargo. Vessels sailing with cargo onboard are heavier than vessels sailing empty, having negative effect on fuel consumption and hence CO<sub>2</sub> emission.

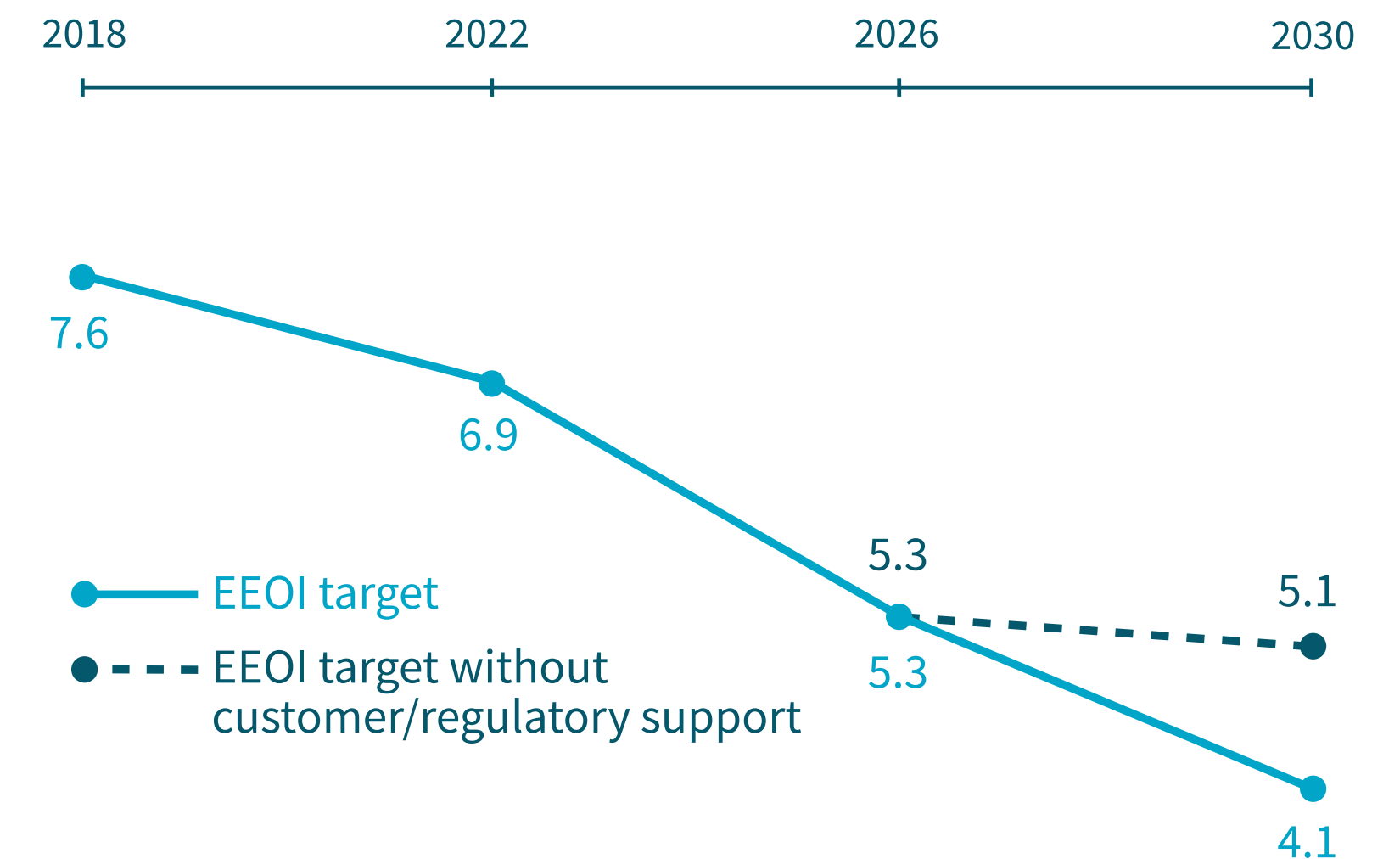
However, this implies fewer vessels are needed for the same transport work and hence total emissions for the performed transport work will considerably decrease and EEOI will drop.



# Fuel transition dependent on new regulations and customer support

Large investments to enable newbuilds to burn new zero emission fuels and using substantially more expensive low or zero emission fuels require support from customers and stricter regulations. Furthermore, it requires substantial expansion of low and zero emission fuel production capacity and port bunkering facilities.

Without regulatory and customer support, what KCC can achieve on its own will mainly be limited to effects of continued efficiency improvements in addition to fleet renewal. Without such support KCC will continue to burn mainly current carbon fuels on both existing vessels and newbuilds. This will reduce achievable emission reductions by 2030. The effects on emission reductions targets are shown in the graphs to the right.



Looking

AHEAD

# Well positioned to deliver cost-effective decarbonization

Our unique position on shipping decarbonization gives us a competitive advantage when it comes to:

## Close customer cooperation

Industrial focus — long term contract relationship with main customers permits close co-operation to reduce emissions.

Introduced sustainability-linked freight contracts creates a framework for customer co-operation.

## Consistent focus onboard and onshore

Early mover — presented detailed environmental strategy in early 2020.

Drawing on extensive experience and learnings throughout the organization built over this period.

## Funding support

Q4 2021: Raised USD 25 million in equity dedicated to investment in energy efficiency measures.

Q2 2022: Approximately USD 1.4 million support from ENOVA for energy efficiency measures.

Strong support from debt sources — sustainability-linked bank finance facilities.



# Well prepared to meet future regulatory requirements



## IMO regulations (EEXI and CII)

The EEXI-score of our 11 fleet vessels built 2016–2021 is considerably below IMO’s requirements (–9% and –6%, respectively).

The preliminary EEXI score of the five vessels built 2001-2007 is 4–10% above IMO’s minimum requirements. Power limitation will be necessary, but the impact on daily operation will be limited. Preliminary analyses suggest all KCC’s vessels will have a CII rating from B to C in 2023.

The IMO CII flaw: The IMO approved CII metric fails to include actual transportation work as it uses registered dwt as a proxy for cargo work. As a laden vessel requires more energy than a ballasting vessel, highly efficient and well utilized vessels such as the combination carriers will actually be penalized through this measure.

## EU Emission Trading Scheme (EU ETS)

EU Emission Trading Scheme (EU ETS): For voyages in and out of EU, shipowners will need to surrender emission allowances for 50% of the reported CO<sub>2</sub> emissions, and there will be a three-year gradual phase-in from 2024 to 2026. In contrast to IMO’s CII-regulation, EU’s ETS for shipping takes into account the quantity of cargo transported.

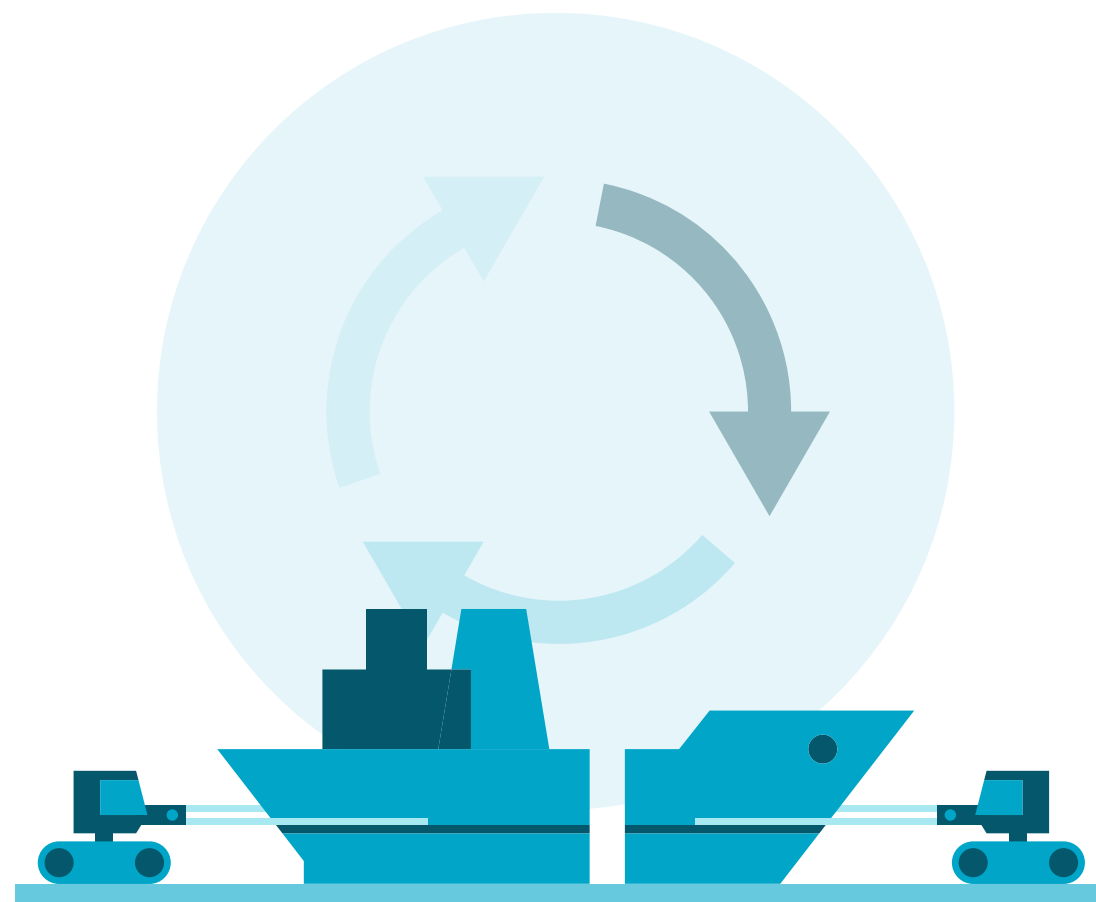
Due mainly to KCC’s superior carbon efficiency with its high utilization and minimum ballast, EU’s ETS will give KCC an important competitive advantage in trades to and from EU.

## Example of EU ETS advantage

In an example with a round voyage with naphtha from Europe to Brazil and iron ore on the return leg to Europe after full implementation of EU ETS for shipping in 2026, a KCC combination carrier would have USD 104,000 lower carbon tax per round-voyage, relative to the total for the LR1 tanker and the Kamsarmax bulker based on a cost of €81 per metric ton (EUA price average 2022). Measured in TCE-earnings per day for the CLEANBU vessels, the carbon tax difference implies around 1,800 \$/d higher earnings on a per voyage basis. If carbon taxes are implemented on a global basis with payment for 100% of emissions, the effect on earnings are estimated to be 3,800 \$/d for KCC vessels, which for all 16 vessels would equate to approximately USD 22 million per year.

# Beyond decarbonization

Decarbonization is not enough. The shipping industry also faces critical environmental challenges, such as air pollution, ocean acidification, and need for waste minimization. We have set the following additional environmental targets:



## Recycling of vessels

Recycling of the vessels will be made in full compliance with the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (Hong Kong convention) and the guidelines of the Norwegian Shipowners' Association.

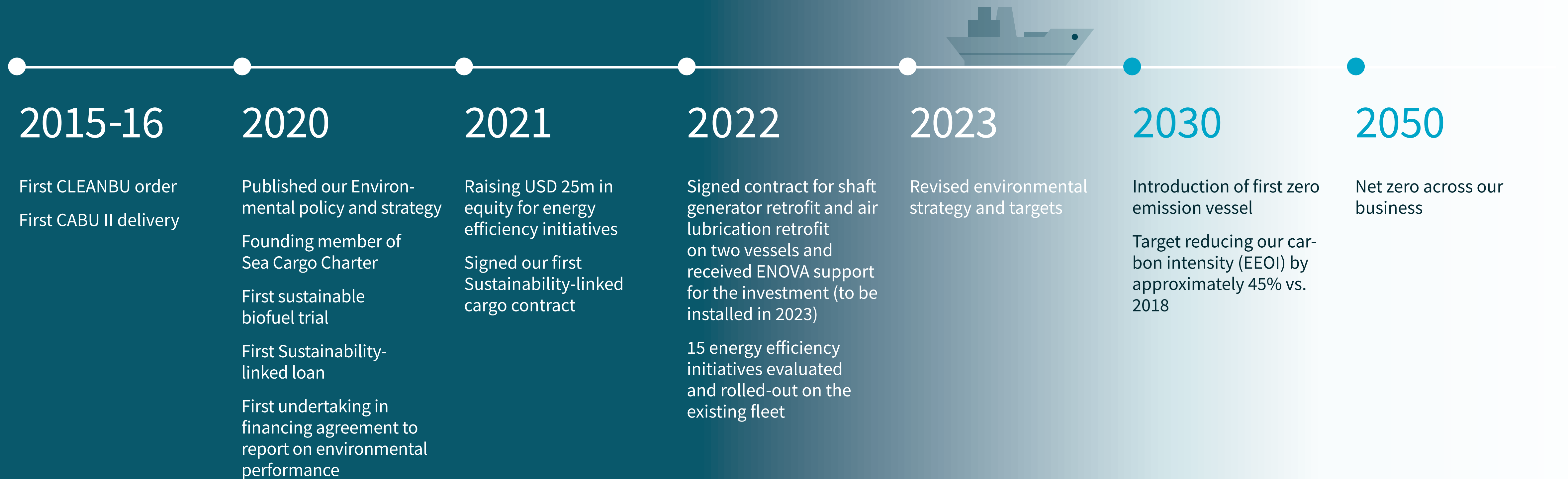
## Waste minimization

The waste from KCC's fleet will be reduced and an increasing share of the waste will be recycled in an environmentally sustainable manner. E.g. by 2026, our ambition is that 100% of worn-out polypropylene mooring ropes shall be recycled and 100% of fuel sludge will be delivered to shore facilities committed to sustainable treatment of delivered sludge.

## Local air-quality

In co-operation with customers, vessels equipped with selective catalyst reduction system (SCR) will use the SCR also in all non-mandatory ports to reduce the emission of harmful NOx gases during port stay.

# Climate leadership

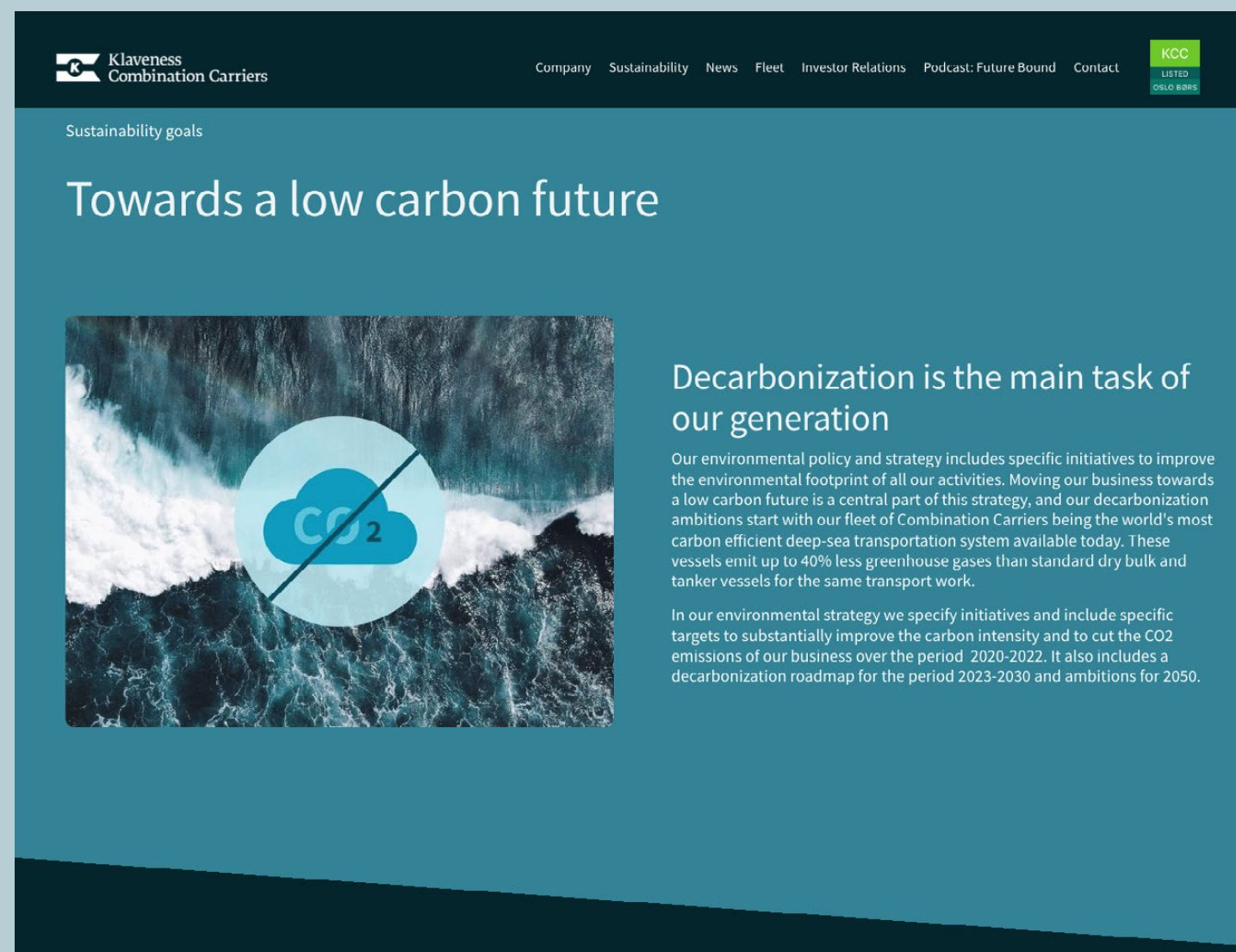




# Read more about our commitments

Learn more about our responsible business practices, our commitments, and our engagement with customers:

[Sustainability — Combination Carriers](#)



Sustainability reports and ESG data:

[ESG Resources — Combination Carriers](#)





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