



# Danaos LCTP

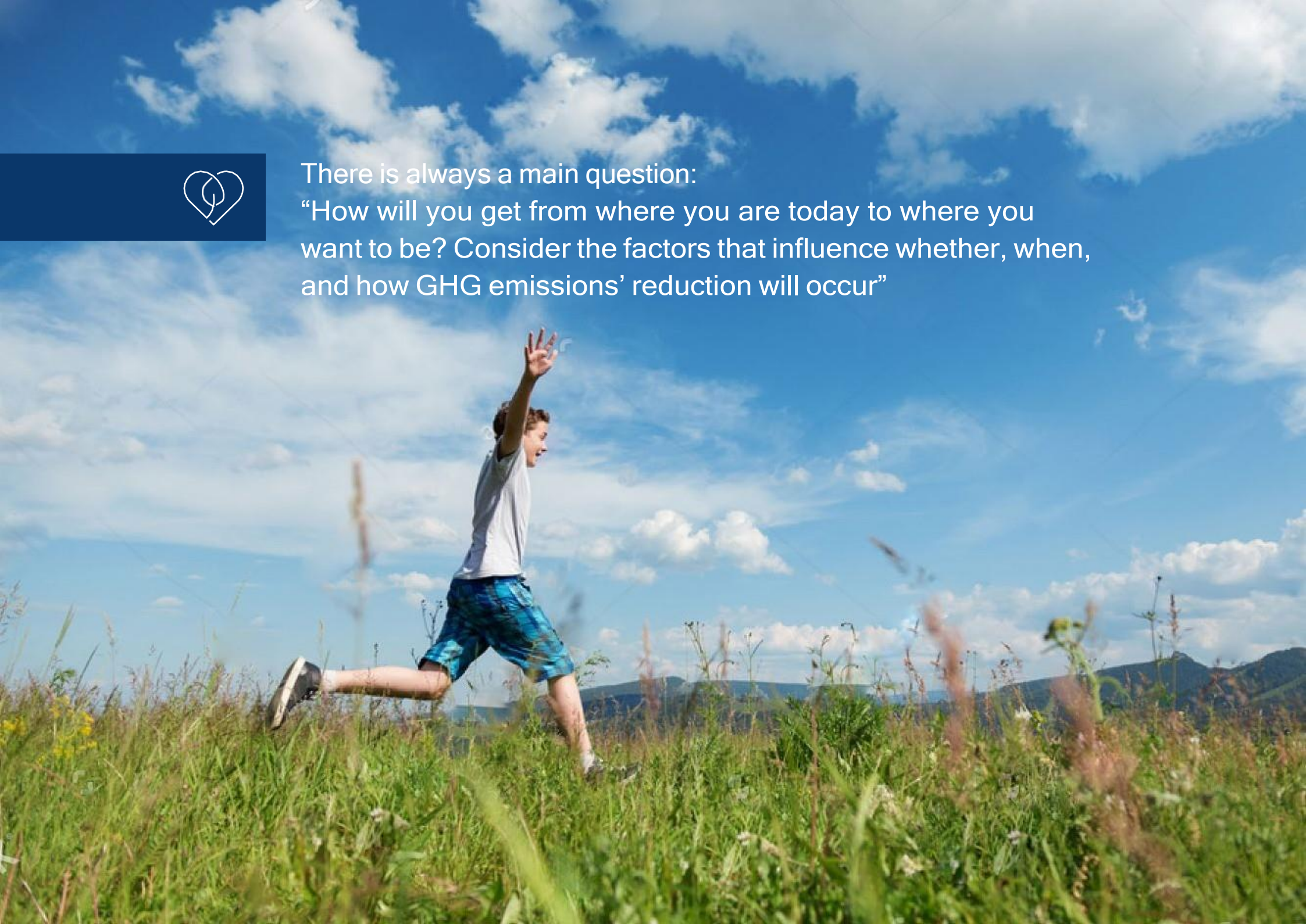
DANAOS SHIPPING CO LTD  
LOW CARBON TRANSITION PLAN

SEPTEMBER 2023





There is always a main question:  
“How will you get from where you are today to where you want to be? Consider the factors that influence whether, when, and how GHG emissions’ reduction will occur”



# The LCTP concept



The Paris Agreement's long-term temperature goal is to keep the rise in mean global temperature to well below 2°C above pre-industrial levels, and preferably limit the increase to 1.5 °C, recognizing that this would substantially reduce the effects of climate change.

The transition to a climate-neutral society is both an urgent challenge and an opportunity to build a better future for all. All parts of society and economic sectors will play a role – from the power sector to industry, mobility, transportation, buildings, agriculture and forestry.

Company's key objective is to address IMO target, keep the global temperature increase to well below 2°C and pursue efforts to lower it to 1.5°C. The structured way of company's planning to achieve our environmental goals is recorded in Danaos Low Carbon Transition plan (Danaos LCTP).

GHG reduction target is considered to be consistent with the low-carbon transition plan for the following reasons:

- The low carbon transition plan for international shipping is out of scope of NDC (Nationally Determined Contribution) under the UNFCCC (United Nations Framework Convention on Climate Change), and it is formulated by IMO (International Maritime Organization).
- Since the IEA considers the IMO's GHG emission reduction target to be equivalent to the SDS scenario, we consider that our GHG reduction targets set out in our environmental vision are consistent with the IMO targets and exceed them.

An additional scenario referenced in IEA-World Energy Outlook-2021 is the Sustainable Development Scenario (SDS). As a "well below

2°C" pathway, the SDS represents a gateway to the outcomes targeted by the Paris Agreement. Like the Net Zero Emissions (NZE), the SDS is based on a surge in clean energy policies and investment that puts the energy system on track for key SDGs. In this scenario, all current net zero pledges are achieved in full and there are extensive efforts to realize near-term emissions reductions; advanced economies reach net zero emissions by 2050, China around 2060, and all other countries by 2070 at the latest. Without assuming any net negative emissions, this scenario is consistent with limiting the global temperature rise to 1.65 °C (with a 50% probability). With some level of net negative emissions after 2070, the temperature rise could be reduced to 1.5°C in 2100.

**In conclusion Danaos LCTP, addresses IMO target, and focuses on Paris Agreement targeted outcome, following SDS and pursuing efforts to meet the SDS and pursuing efforts to meet the 1.5°C goal**



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# Letter from the Management



**We have reached 42.6% in 2022 compared to 2008 and targeting to 50% in 2030 (aiming to 60%)**

For many years, we have been following the regulating principles and standards in our effort to protect the environment and fight climate change. Now, in Danaos, we are expanding our environmental ambition as it has become clear that the ESG factors and sustainability performance of our company are an urgent priority and shall be further integrated into our business strategy.

Sustainability is an integral part of Danaos, which has already begun the efforts towards decarbonisation, transforming our business to meet the new challenges with the aim to create sustainable value for our customers, shareholders and society as a whole. We have embedded sustainability as a firm element of our company's strategy, and we have set ambitious sustainability goals aiming to be carbon neutral in 2050. The encouraging progress we have achieved so far is reflected in the promising results we are seeing today, having reached 42.6% in 2022 compared to 2008 and targeting to 50% in 2030 (aiming to 60%).

We have set short-, mid-, and long-term strategies to improve our carbon footprint and ensure that climate action remains an imperative priority for our company. Our roadmap for progress in climate change includes energy efficiency improvements, while investigating new paths for low-carbon solutions. We have incorporated shadow carbon pricing in our internal scenarios used as a tool for appraisal of environmental costs and guidance in strategic and business planning decisions, enabling us to prioritize low-carbon investments and maintaining the competitive edge, while at the same time allowing us to better anticipate future regulatory changes.

We have been focusing on digitization and predictive analytics to enhance the transition towards circular system principles and we are working hard to integrate recycling, reduce waste from our operations and improve supply chain efficiency in order to contribute to circular economy.

In Danaos, we continue to step up from an environmental point of view, keeping sustainability to our company's core values. Our Low-Carbon Transition Plan illustrates how we create sustainable value through our business strategy, and how, through our climate actions, are making a contribution to a better future for our planet.

Dimitrios Vastarouchas  
DCOO & Technical Director  
Chief Sustainability Officer

# Danaos Sustainability Approach

## Our Vision - Our Values

We implement the highest standards of efficiency, safety, and reliability by:



Enhancing the training of our personnel ashore and on-board.



Integrating fully the vessels in the organization.



Actively participating and leading research & development projects.



Promoting company culture and bonding of all personnel on board.



Seeking growth by our strong comparative advantages to become the leader in our sector.



## Our Mission Statement

Danaos seeks to provide safe, efficient and cost-effective seaborne container transportation and remain the premier choice for containership owners. To meet this goal, we continuously make substantial investments in operational, technical and financial infrastructure while striving for

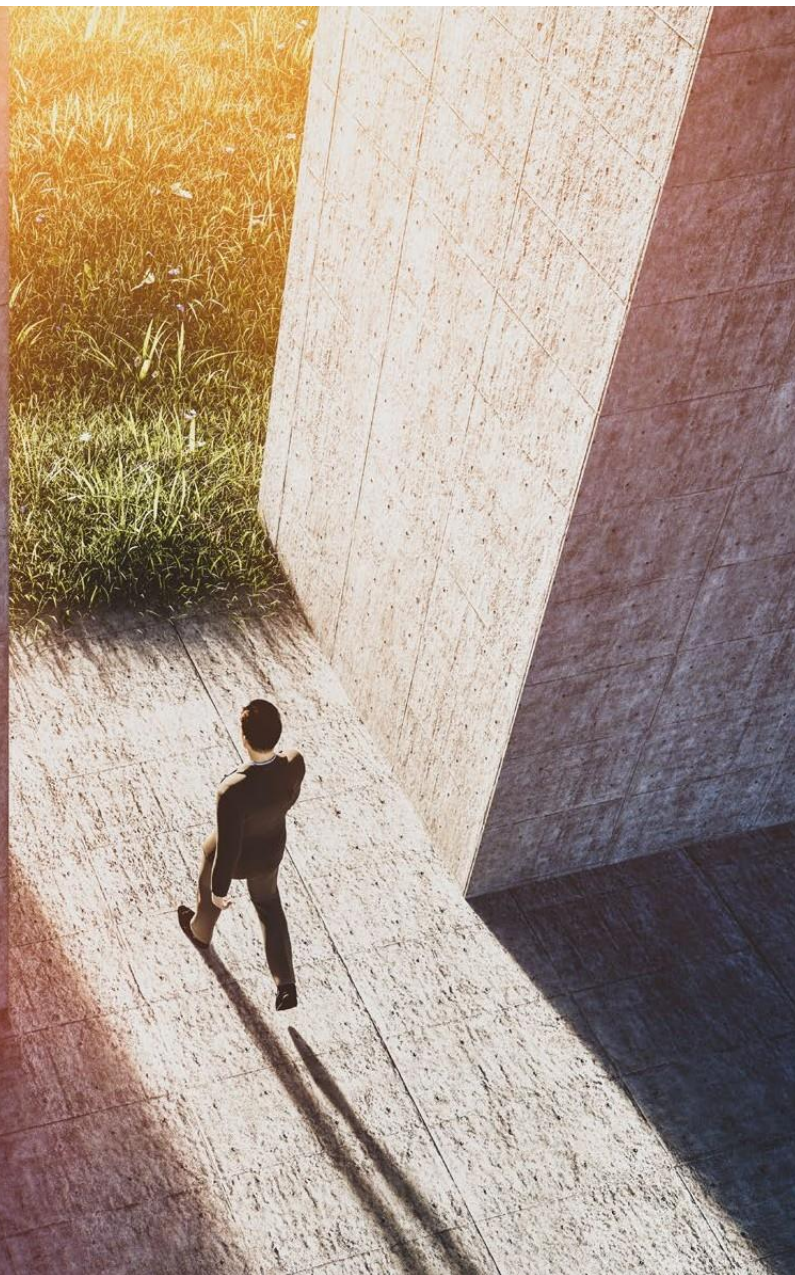
environmentally friendly solutions. Company is committed to be aligned with Paris Agreement and IMO Regulations and pursue efforts to keep mean global temperature rise to 1.5 °C.

## Our Sustainability Roadmap

Danaos R&D Department has been historically focusing on enhancing environmental consciousness and we have been producing the Danaos Annual Environmental Report since 2012, which, among other things, reports the company's direct emissions, monitors environmental performance goals and evaluates the progress every year. Through the course of last few years, our focus has shifted to a more dynamic approach considering both internal and external factors of our company, which has given rise to the evolvement of our Environmental Reporting to CSR and finally ESG, while in 2022 we reported for the first time to CDP and our intention is to report to CSA.

At Danaos, sustainability is an integral part of our corporate culture and an important regulator in decision making. We constantly employ the highest operating standards onboard and ashore to ensure an ethical, safe and pollution-

free environment for everyone. We evaluate our progress against our commitments, refining our strategy accordingly, and we are happy to see that significant progress on our journey has been made. Danaos recognizes the importance of being a responsible part of the society and our Environmental, Social and Governance (ESG) approach provides us with a strategic roadmap to become a more sustainable and resilient business. Low Carbon Transition Plan refers to the Environmental part, the "E" in ESG equation, is fully supported by the Management and is shared among department managers; last but not least, it is communicated to all employees both ashore and onboard.



# Terminology

## Carbon Neutrality & Climate Neutrality Decarbonization

The concept of carbon neutrality is sometimes used as a synonym for climate neutrality, from which it differs for the range of climate-changing factors considered: only carbon dioxide (CO<sub>2</sub>) in the case of carbon neutrality, all GHG and other relevant bio-geophysical changes due to human activities in the case of climate neutrality.

The process by which countries or other entities aim to achieve a low-carbon economy, or by which individuals aim to reduce their consumption of carbon (IPCC 2014).

## Environmental Scenarios



	Net zero emissions by 2050 scenario	Announced pledges scenario	Stated policies scenario	Sustainable development scenario
Definitions	A scenario which sets out a narrow but achievable pathway for the global energy sector to achieve net zero CO <sub>2</sub> emissions by 2050. It doesn't rely on emissions reductions from outside the energy sector to achieve its goals.	A scenario which assumes that all climate commitments made by governments around the world, including Nationally Determined Contributions (NDCs) and longer-term net zero targets, are met in full and on time.	A scenario which reflects current policy settings based on the sector-by-sector assessment of the specific policies that are in place, as well as those that have been announced by governments around the world.	An integrated scenario specifying a pathway aiming at: ensuring universal access to affordable, reliable, sustainable and modern energy services by 2030 (SDG 7); substantially reducing air pollution (SDG 3.9); and taking effective action to combat climate change (SDG 13).
Objectives	To show what is needed across the main sectors by various actors, and by when, for the world to achieve net zero energy related and Industrial growth process CO <sub>2</sub> emissions by 2050 while meeting other energy-related sustainable development goals.	To show how close do current pledges get the towards the target of limiting global warming to 1.5°C, it highlights the “ambition gap” that needs to be closed to achieve the goals agreed at Paris in 2015.	To provide the benchmark to assess the potential achievements (and limitations) of recent developments in energy and climate policy.	To demonstrate a plausible path to concurrently achieve universal energy access, set a path towards meeting the objectives of the Paris Agreement on climate change and significantly reduce air pollution.

(source: IEA WEO 2021 scenarios)

## Paris Agreement

The Paris Agreement sets out a global framework to avoid dangerous climate change by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C. It also aims to strengthen countries' ability to deal

with the impacts of climate change and support them in their efforts.

The Paris Agreement is the first-ever universal, legally binding global climate change agreement, adopted at the Paris climate conference (COP21) in December 2015.

The EU and its Member States are among the close to 195 Parties to the Paris Agreement. The EU formally ratified the agreement on 5 October 2016, thus enabling its entry into force on 4 November 2016. For the agreement to enter

into force, at least 55 countries representing at least 55% of global emissions had to deposit their instruments of ratification.

## Science - Based Targets

Science-based targets show companies how much and how quickly they need to reduce their greenhouse gas (GHG) emissions to prevent the worst effects of climate change.

The Science Based Targets initiative (SBTi):



Defines and promotes best practice in emissions reduction and net-zero targets in line with climate science.



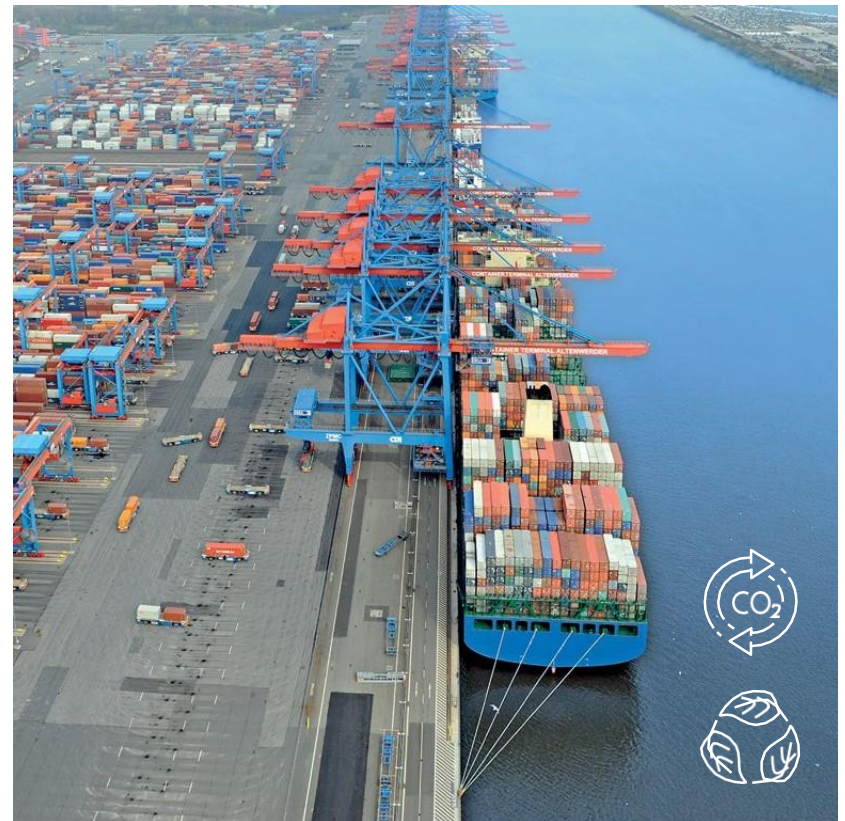
Provides technical assistance and expert resources to companies who set science-based targets in line with the latest climate science.



Brings together a team of experts to provide companies with independent assessment and validation of targets.



The SBTi is the lead partner of the Business Ambition for 1.5°C campaign - an urgent call to action from a global coalition of UN agencies, business and industry leaders, mobilizing companies to set net-zero science-based targets in line with a 1.5°C future.

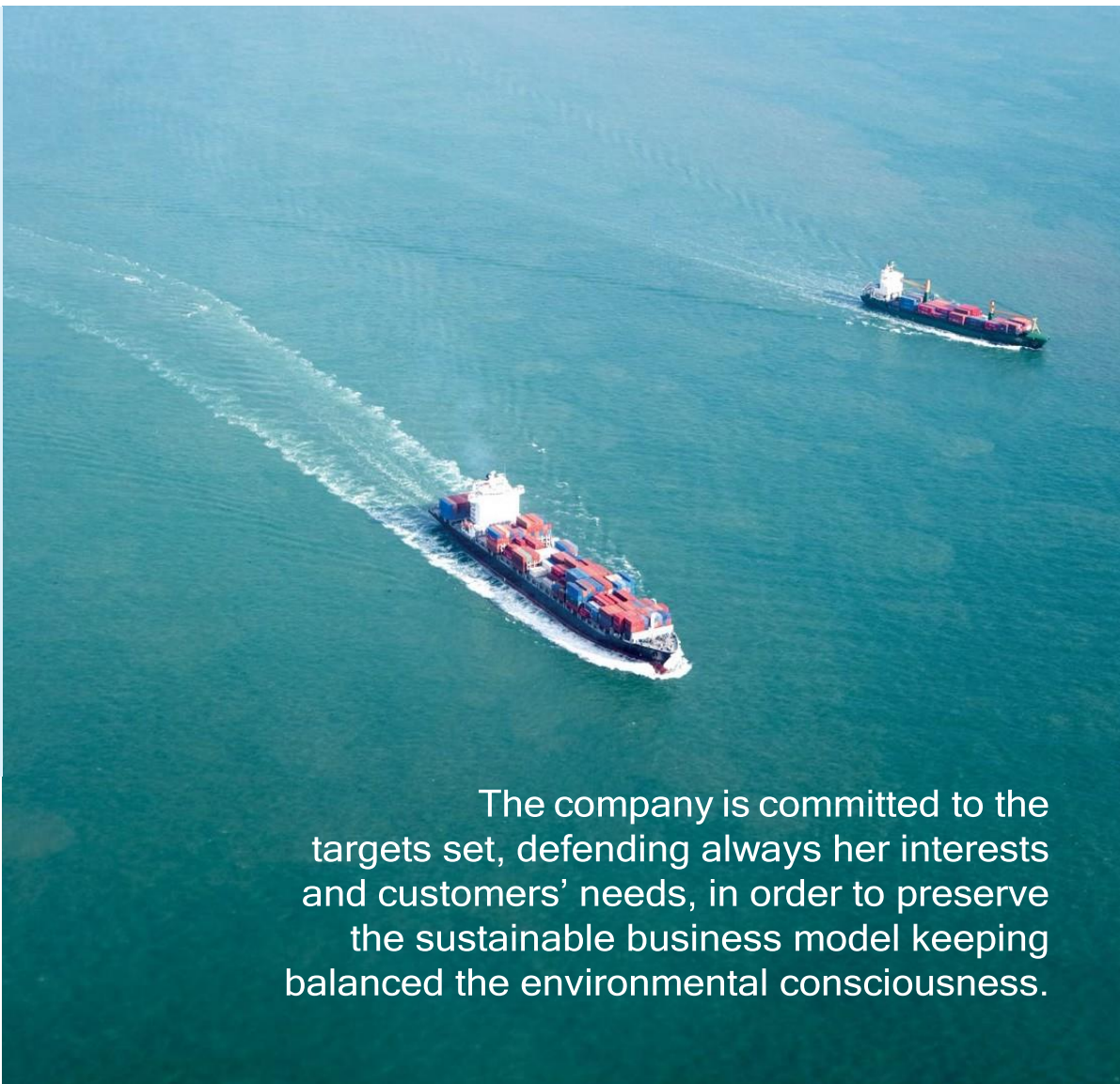


# Climate Related Goals Fully Aligned with Sustainability Goals

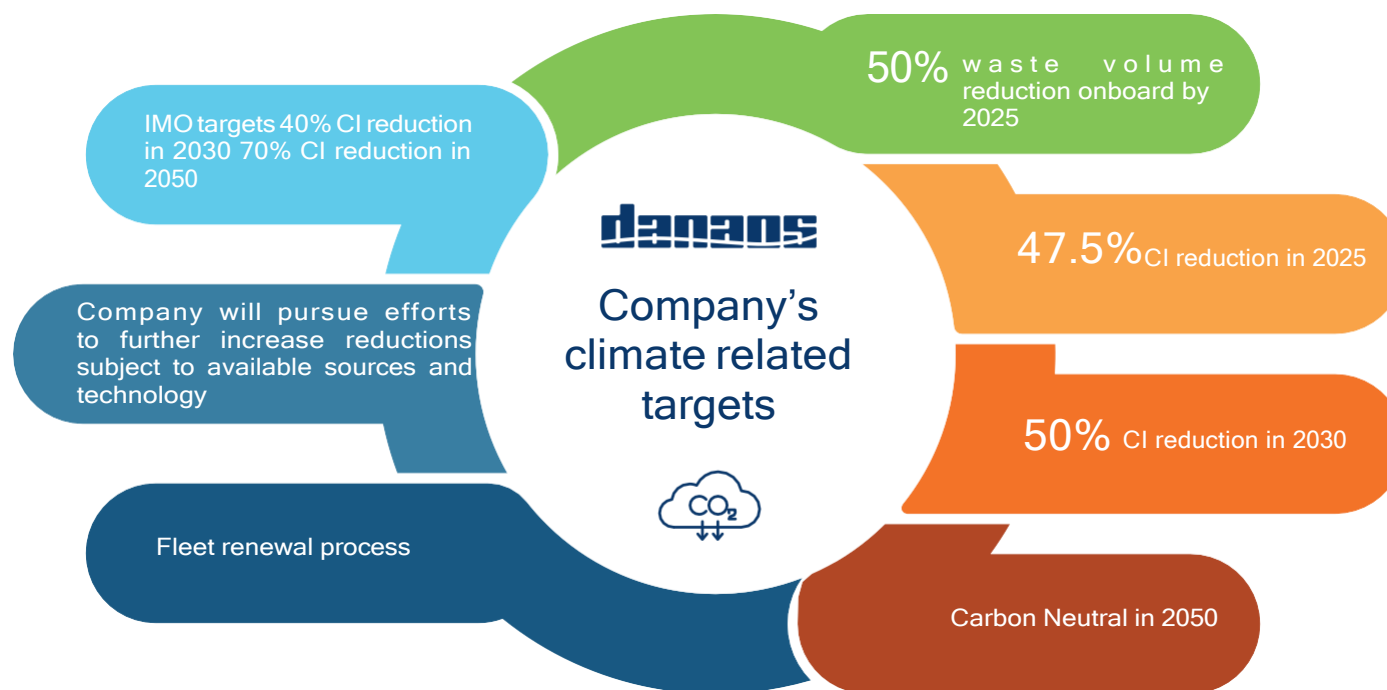
The company is officially committed to climate related targets, as stated in Sustainability Report of 2022. This drive was based on the following parameters:

- ✓ Targets production from deep analysis of last decade results of carbon emissions and ships' performance
- ✓ Company's confidence on meeting the targets
- ✓ Company's environmental awareness and understanding of climate risks
- ✓ Company will to be aligned with Paris Agreement and society needs
- ✓ Company's policy and strategic actions
- ✓ Market's chain value

Commitment to targets set by the management and approved by BOD, increases the leverage to all employees, of being diligent and keen to exercise outmost efforts in meeting company goals. Climate risks are increasing while 2050 comes closer, ringing the bell of temperature increase and potential harmful consequences.

An aerial photograph showing two large container ships sailing on a vast, blue ocean. The ship in the foreground is larger and closer, leaving a white wake behind it. The second ship is further away and smaller in the frame. The water is a deep blue-green color.

The company is committed to the targets set, defending always her interests and customers' needs, in order to preserve the sustainable business model keeping balanced the environmental consciousness.



Company's climate related ultimate target of 2050 is fully aligned with Paris Agreement and 1.5°C scenario. These targets follow trajectories for better monitoring and follow up; it is not a straightforward process, since existing fleet's improvement has an "optimization ceiling" with

most engines installed onboard being unfeasible for the time, to be upgraded to dual fuel modes and burn zero carbon emissions fuel in the future. Thus, it is very important to highlight that decarbonization will be carried out in two steps: At first, max. optimization of current

fleet is to be done, aiming towards CI improvement, and second, renewal of the fleet with zero fuel vessels, starting from next decade, developing in parallel carbon emission offset when further improvement could not be feasible. Reverting to first step, which is the

running one, company will seek for commitment and validation of targets with Science Based Targets tool for shipping from SBTi, in order to strengthen CI reduction even more from current targets set.

# LCTP Timeline

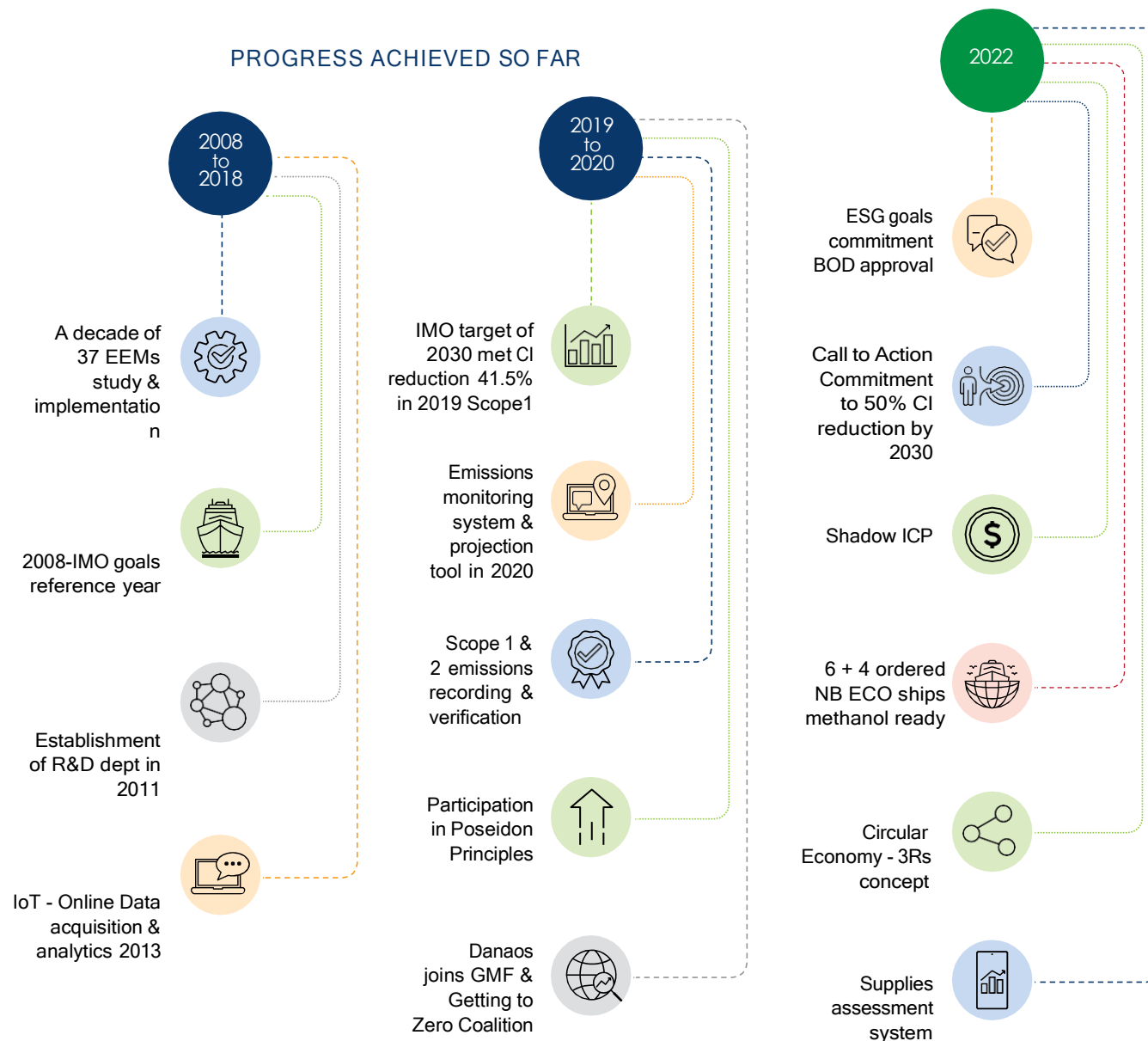
The emissions reference year set by IMO is 2008. According to the current IMO targets, shipping has to reduce Carbon Intensity in the EEOI form by 40% in 2030, and 70% in 2050, vs 2008 values, whilst, total emissions by 50% in 2050.

The company has been committed to stricter targets, EEOI reduction by 50% in 2030 (aiming to 60%) vs 2008, and be carbon neutral in 2050, aligned with Paris Agreement ultimate goals.

LCTP refers to a number of actions taken or to be taken in future, as well as targets that have already been met and are to be met in future. LCTP consists of three parts:

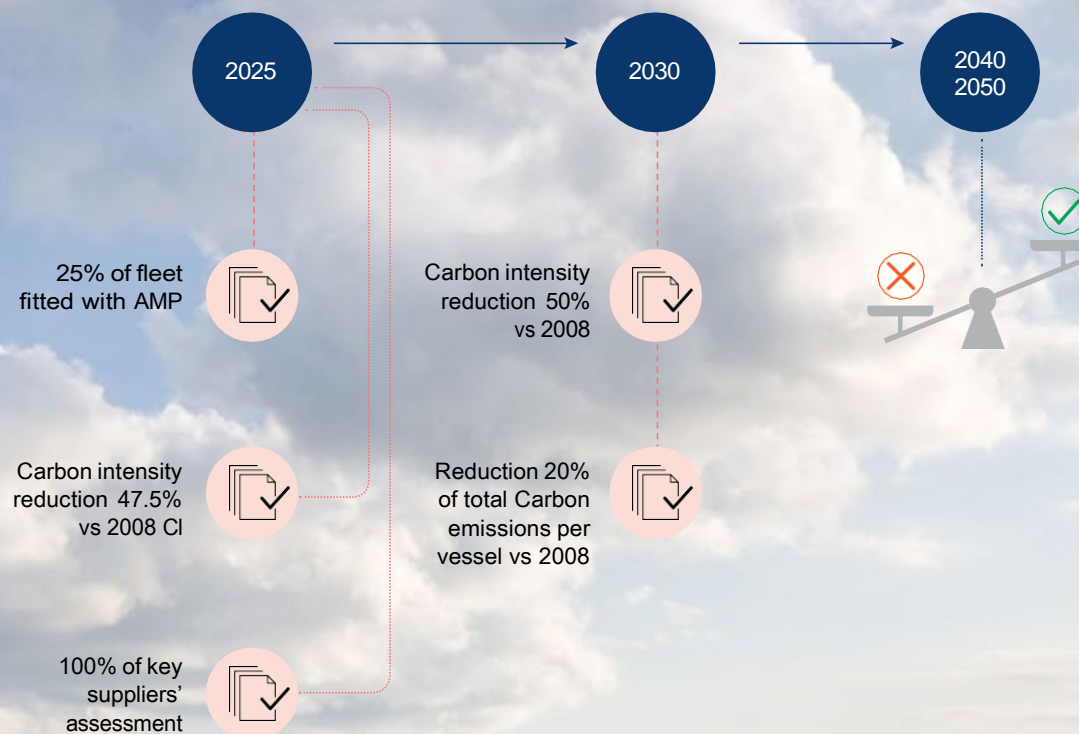
- The past period, starting from the reference year 2008, up to 2020 which is considered “the last year”,
- The current reporting year 2022, that refers to what happened the running year
- The future period, referred to 2025 (ESG report’s targets date), 2030 (IMO milestone year), 2040 (new target for CI reduction to net zero), 2050 (the ultimate date according to the selected SDS)

## BRINGING OUR TARGET FORWARD



The path to carbon neutrality is demanding and dependent on external factors such as, green fuels availability, available sources, market condition, geopolitical issues, technology maturity and further risks that will appear throughout the years to come. That necessitates the need to exercise combined efforts and work jointly with stakeholders. Consequently, within the company financial, commercial, research and technical, operations, crew and training, have to co-work through agile teams to achieve positive results. At the same time, policy makers, trade unions and the remaining shipping industry players, have to cooperate and optimize the business model, aiming towards decarbonization and sustainability achievement. The following graph illustrates basic steps that constitute the LCTP's pillar.

## DELIVERING OUR TARGETS ON OUR CLIMATE STRATEGY



# The Monitoring Process & Tool Development

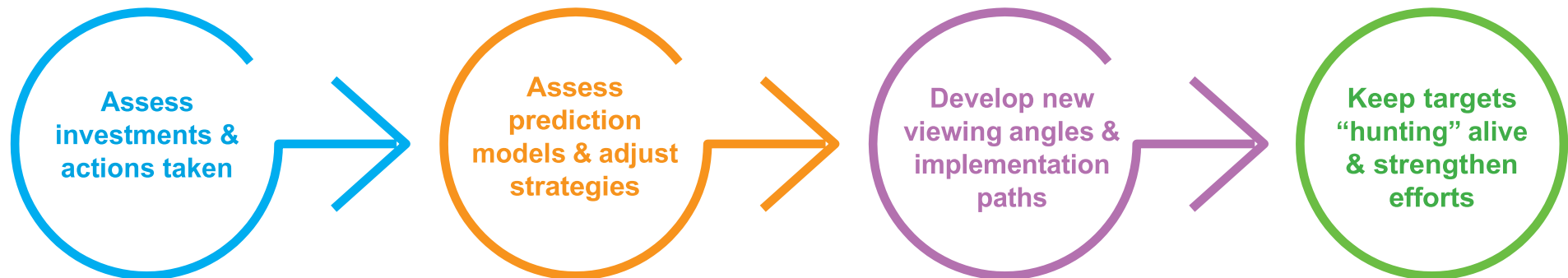
Setting targets without reviewing them regularly transforms the whole decarbonization process to a questionable helical path that rotates continuously with no end. Without proper monitoring of new regulations, verification mechanisms and actual carbon emissions production onboard, which is the company's Scope 1

emissions source, identification of process inadequacies, proper implementation of optimization measures and/or follow up by both shore and ship personnel, set up of structured research, cannot be achieved.

Recognizing the importance of MRARA, not only for the decarbonization process but for

the overall ships' performance assessment and fuel consumption reduction, Danaos has invested in R&D, establishing an R&D dptm back in 2012 and supporting R&D, with a min fund of US\$ 1 mil annually.

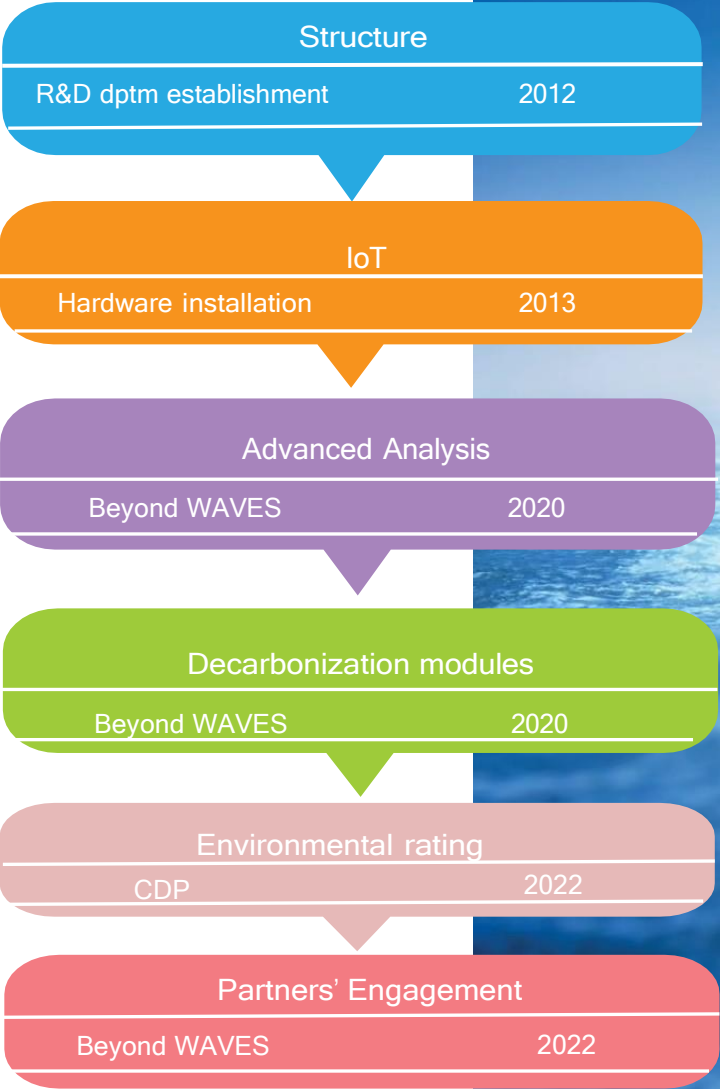
Consequently, the foundation of a company's decarbonization path, is the proper Monitoring, Recording, Analysis, Review and Action (MRARA), set of actions that will enable company to:



Danaos R&D, working with and developing further the WAVES platform, prepared in 2020, the “Beyond WAVES” monitoring platform which takes full advantage, mainly, of the following functions:

Key monitoring functions

- IoT applied on the majority of company’s fleet
- AI applied in performance analysis
- Internal procedures digitization
- Big Data analysis and interpretation
- Parallel local and centralized control
- Advanced reporting production
- Transparent data sharing
- Incorporation of Shadow ICP
- Incorporation of regulations
- Incorporation of Environmental Initiatives
- Data sharing with our clients
- Most of all, instant access to current the carbonization status



# Carbon Emissions Reporting

Decarbonization is not a simple process and involves a number of stakeholders. The point is not only how a company performs, but also, how much contributes to culture enhancement, stakeholders' engagement and policy makers' guidance. Therefore, GHG emissions reports should not be limited to internal use only, but to be also accessible to clients and authorities, and a part of them, to the public.

Furthermore, carbon emissions reports enable a variety of purposes such as the following:

- Company's targets setting follow up
- Use of emissions at various mechanisms such as Gold Standards, CDM etc
- Use of emissions reporting in various rating schemes
- Use of emissions reporting in various Initiatives such as Poseidon Principles, Climate Bonds etc
- Sharing of emissions report with our clients, providing Scope 3 emissions data to them
- Assessment of financial impact or potential investment with the use of ICP
- Assessment of operational profiles and data sharing with our clients

The list does not stop to the above mentioned but can be expanded in new fields and cover other needs too.

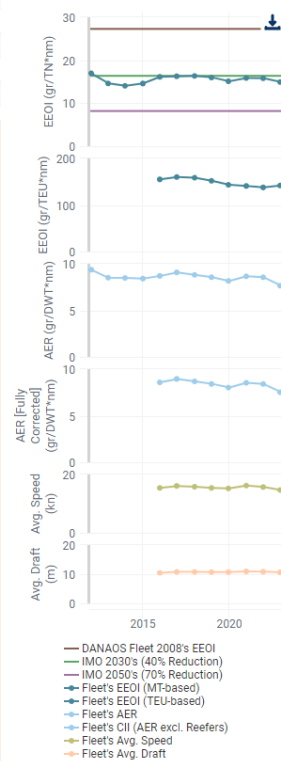
R&D dptm developed a reporting system that covers mainly:



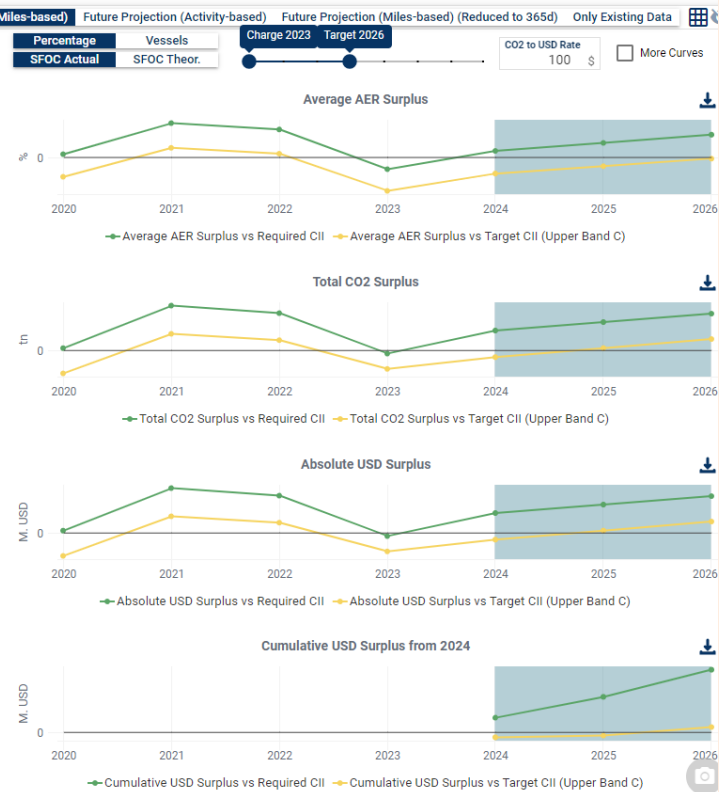
Emissions Allocation for Charterer								
Year	Charterer	Scope 1: Own Operations		Scope 2: Purchased Electricity				
2021	CMA CGM	1,008,464.2 MT CO2eq.		132.6 MT CO2eq.				
Code	Name	Size	Chartered Days	Scope 1 MT CO2eq.	Scope 2 MT CO2eq.	CII Band	AER (gr/DWT*nm)	
131	BELITA	8500	365	59,169.8	8.1	D	7.9	
71	CMA CGM ATTILA	8500	365	90,696.5	8.1	D	8.0	
73	CMA CGM BIANCA	8500	365	79,236.0	8.1	C	7.3	
116	CMA CGM MELISANDE	8500	365	77,380.2	8.1	C	7.1	
63	CMA CGM MOLIERE	6500	365	62,803.0	8.1	E	9.4	
64	CMA CGM MUSSET	6500	365	74,873.9	8.1	E	9.7	
65	CMA CGM NERVAL	6500	365	70,570.9	8.1	E	9.1	
66	CMA CGM RABELAIS	6500	365	43,079.9	8.1	D	8.8	
67	CMA CGM RACINE	6500	365	57,951.8	8.1	C	8.1	
74	CMA CGM SAMSON	8500	365	79,456.7	8.1	D	7.6	
72	CMA CGM TANCREDI	8500	365	82,862.1	8.1	D	7.5	

### Carbon Neutrality Initiatives for ADVANCE, AMERICA (+ 64 more)

#### EEOI/AER Values (2012-2023)



#### Fleet's AER vs Carbon Neutrality Initiatives [CNI] (2012-2026)



# Incorporation of Shadow ICP

Have a process strategy; whereas most people know how to be prepared for the substantive actions that will eventually occur, a few understand the power of shaping the process which will ultimately determine whether, when and how Carbon Footprint evaluation and company impact, will take place. ICP is a significant part of company's Low Carbon Transition Plan (LCTP).

ICP is a multifaceted tool that can support companies in assessing climate-related risks and opportunities in the transition to a low-carbon economy.

ICP is incorporated in company's carbon footprint scenarios developed by R&D dptm. The advanced "Beyond WAVES" software is the main calculation stream.

By using best practice approaches to ICP, companies can embed the trajectory of the low-carbon transition into their daily decision making, determine the most effective strategy in changing market environments, and stay ahead of the curve.

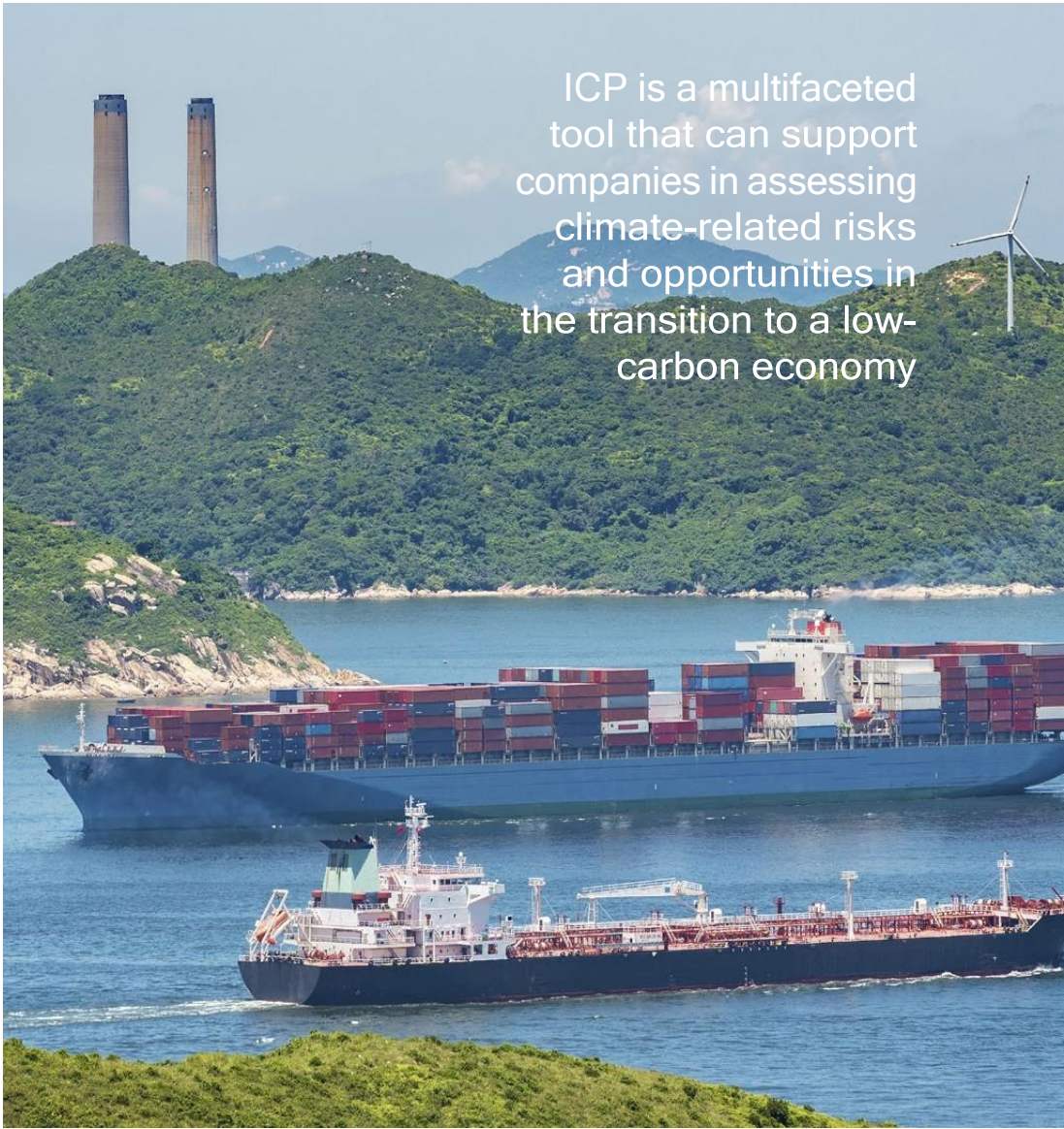
Key company characteristics that affect the ICP approach are:

- Goals of the business strategy on climate change. Company's climate related goals, as stated in Sustainability report, are following TCFD recommendations and are combined with efforts supportive to Paris Agreement achievement, as far as practical.
- Company GHG emissions profile.
- Company influence in the value chain.
- Company culture.

ICP provides company with a uniform monetary metric to align different low carbon transition incentives and chose the most cost-effective measures to reduce carbon footprint.

## Benefits of setting an ICP

- Making carbon considerations more central to business operations and understanding
- De-risking against the future carbon price
- Understanding carbon risk in the business



ICP is a multifaceted tool that can support companies in assessing climate-related risks and opportunities in the transition to a low-carbon economy

- Future-proofing your business strategy
- Generating finance for sustainability initiatives
- Raising awareness internally and externally
- Answering to investors and consumers and responding to their concerns regarding the climate emergency
- Reducing carbon emissions

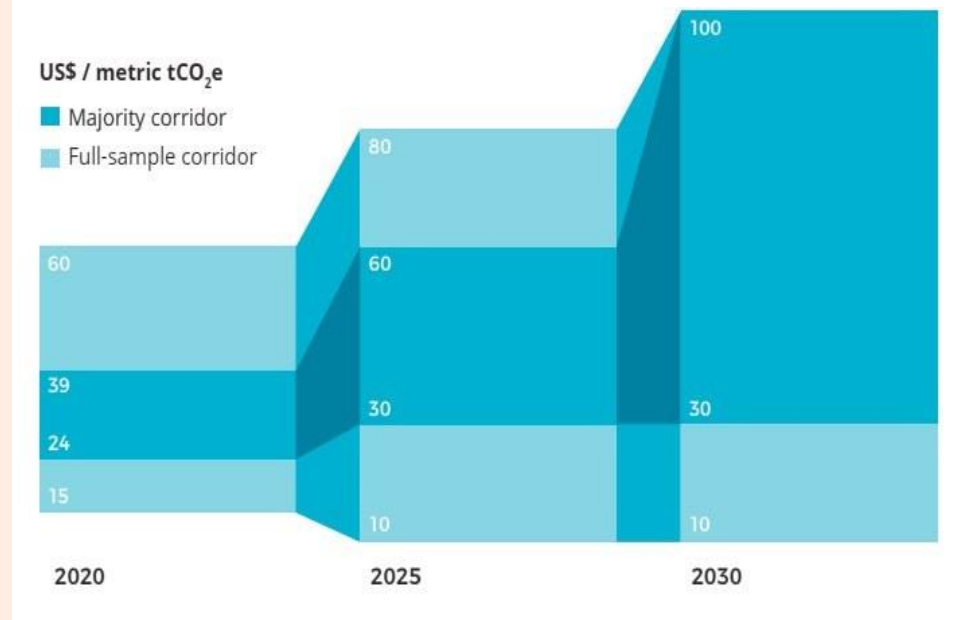
Company follows the four-dimensional framework (4D framework) developed by

“The Generation Foundation teamed up with Guidehouse”.

The Four Dimensions are:

- Height; the price level per unit (US\$/tCO<sub>2</sub>e)
- Width; the GHG emissions produced mainly by ships' operation activities
- Depth; the level of ICP influence on business decisions
- Time; the development of three first dimensions

The first two dimensions, height and width, constitute the carbon value that is to be used in business decisions. That is produced by using the price level adopted, multiplied by the emissions volume produced by “Beyond WAVES” scenarios.



For a shadow cost pricing mechanism, it is preferable to link company's carbon price to an externally published source to reflect the element of risk. There is a variety of sources that can be used, such as the CDP Carbon Pricing Corridors or equivalent. It could also be linked with the cost of appropriate offsets, or the costs of external mechanisms such as the

EU Emissions Trading System (ETS), as RnD developed the assessment mechanism of GHG production within EU especially with the inclusion of shipping in the trading system. Using an externally published source can also be beneficial for company's governance processes and in being able to keep ICP system up to date.

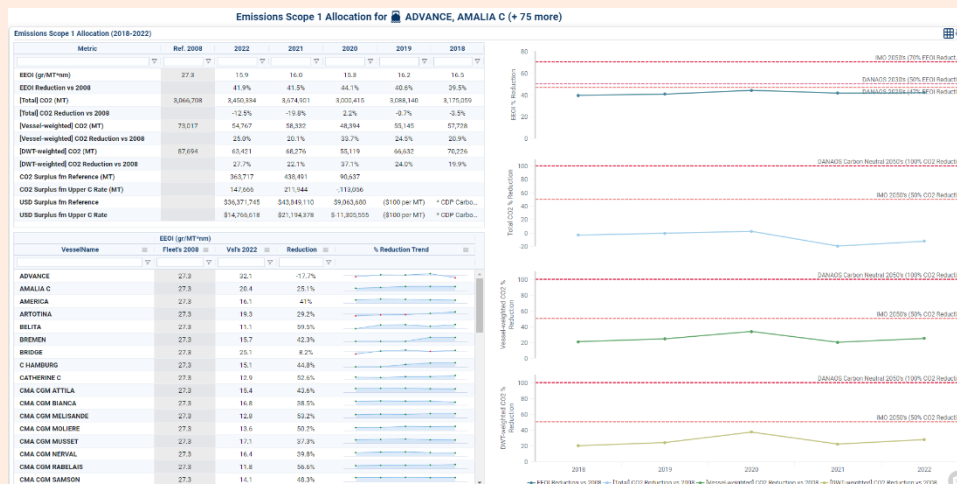
#### Disclaimer

The Shadow Cost Pricing mechanism adopted by the company is used for consultation purposes only and it is not binding, nor supports a specific initiative.

The Shadow Cost Pricing mechanism assists decisions makers, qualitatively and quantitatively, without commitments.

The Shadow Cost Pricing mechanism assists in finding, recommended but not limited to, research pathways on operational scenarios.

Discover the real front man and cover the negotiations partner for his internal negotiations.



# Danaos EU ETS Calculation Scenarios

The EU ETS is a mandatory 'cap and trade' system that currently applies to greenhouse gas (GHG) emissions from power stations, industrial plants and aircraft located or operated within the EU. Participants must acquire and surrender 'emissions allowances' (EUAs), which represent quantities of regulated emitted GHGs on an annual basis. Emissions from maritime transport will be included from 1 January 2024 onwards. According to current regulations company has to report on annual basis GHG emissions to the verifier, according to EU MRV requirements and surrender EUAs by the end of September each year.

Failure to secure and surrender EUAs on time results to penalties' imposition, and potentially loss of EU trade contracts.

In addition to EU ETS, Fuel EU Maritime and EU Taxonomy are also upon discussion from the Commission. Assessment of cost arising from Fuel EU penalty is comparable to EU ETS expenditures, while its ratio is highly increasing with a 5-year interval, while it is a fact that by addressing EU ETS and minimizing GHG emissions will not subsequently influence in the same way the Fuel EU, which targets Fuel efficiency rather than energy saving onboard and optimizations.

Inability to provide EUAs on time results to penalties on GHG surplus, and potentially to loss of the specific market opportunities. In 2022 15 company vessels were operating in EU resulting to USD 190 mil annual income. If the company, is not in position to handle EUAs, Flag administration can prohibit ship's actions in EU territory, thus, the EU market is to be lost. However, ships trade is subject to changes and in 2024 might have more or less ships in EU trade, but based on 2022 as a reference year, there is a risk of losing access to a market of USD 190 mil.

15 vessels in 2022 produced 318,913 MT CO<sub>2</sub> and the company based on these numbers (if same in 2024) should pay for EUAs around 31,891,321 USD based on current CO<sub>2</sub> cost. According to current regulations, for 2024, 40% of EUAs must be surrendered, whilst in 2025 70% and in 2026 100%.

In our calculations we consider max cost, since that will be followed afterwards. In addition, in 2026 the company should pay around 7,000,000 USD on top of EU ETS cost for complying with FUEL EU Maritime, based on 2022 numbers (if same will apply in 2026).

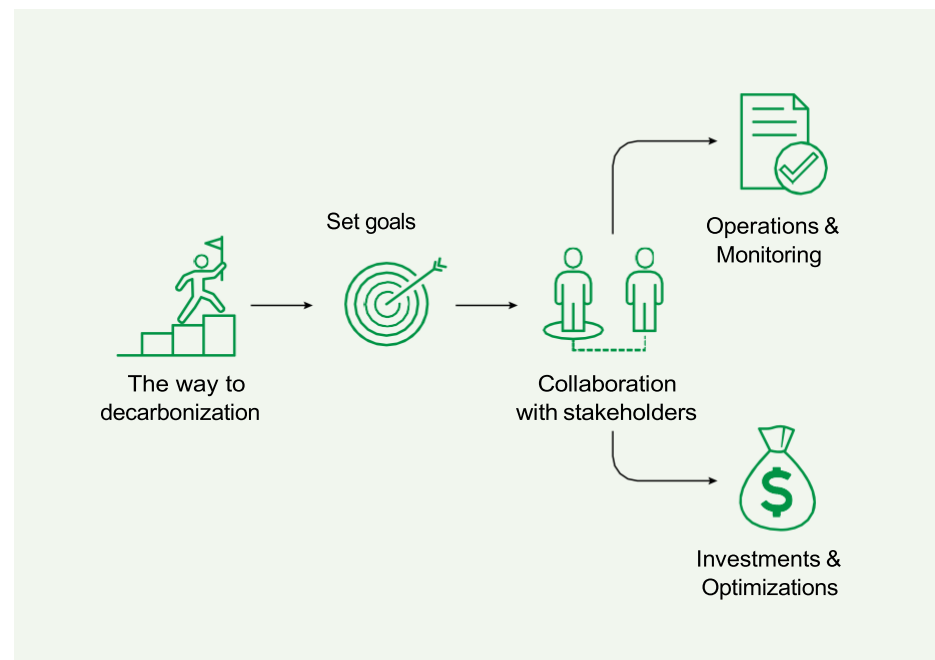


Custom 01/01/2022 00:00 - 31/12/2022 23:59 MRV ETS Calculation Tool for ADVANCE, AMERICA (+ 64 more)

MRV ETS Calculation Tool

CO2 Intra EU 101,394 MT	Fleet-wide Details	Selected Dates	Year 2023	Year 2024	Year 2025	Year 2026
CO2 In/Out EU 434,875 MT						
Vessels in Danaos Fleet 66	Total Tax for Fleet		\$6,373,165	\$12,746,331	\$22,306,081	\$31,865,829
Vessels under MRV Scope 15	Daily Tax per Vessel		\$265	\$531	\$928	\$1,326
	Daily Tax per EU Vessel		\$1,167	\$2,334	\$4,085	\$5,836

# The Way to Carbon Footprint Reduction



Following graph illustrates first steps of the way to carbon neutrality, since the major impact would occur when green fuels & infrastructure will be widely available, with mature technology in place. It is quite important to move ahead with confidence, bearing in mind that subject issue has to be approached from different angles, resources and new field experts are limited and systems have to be re-engineered to cope with new requirements. Danaos has invested in R&D, allocating min USD \$ 1 mil annually; R&D dept already runs 11 years and IoT has been used for the last 8 years.

Danaos will continue to apply EEIMs onboard, having attained the knowledge and experience, while in parallel investigating new paths. There are many proposals available in the market, but only a few of them are really effective to specific ships, thus, selection has to be carefully considered. Meanwhile, digitalization is expanded not only to ship's performance but to the majority of company's functions. Digitalization maturity runs in the same racing with decarbonization, supporting research and materialization.

Decarbonization is a major part of management executives' meeting agenda, and plays significant role in decision making and investments planning. ICP is to be used to quantify various scenarios' financial impact. Investments materialization will be the derivative of a number of

factors considered such as feasibility, sustainability, financing, knowhow and available resources. Shipping industry and transportation in general, are pure commercial fields, that have to be re-enhanced and well educated, in order to be aligned with society's needs, climate risks & technology development.





## Investments & Optimizations

## Operations & Monitoring

### Investments

#### ECO vessels

Fleet optimization phase,  
2021-2025

6 ECO design vessels acquired in 2021

First NB order of ECO designs in Q1 2022  
4+4 opt vsIs

Ongoing

#### Zero fuel vessels

Study phase completed

Technology maturity for green  
fuels and availability are  
expected

Expected

### Optimizations

#### EEIMs

##### Hull

- Bulbous bow (5%)
- Propeller (4%)
- LF paints (3%)
- Appendages (1%)
- Bow thruster grit opt (0.5%)

##### Machinery

- Engine tuning
- TC cut out
- Combustion improvement
- SOx SCR

##### Energy Management

- SEEMP
- Led lighting
- Water management

Already applied - R&D & Technical

#### New technology

##### FUELSAVE (8-10%)

##### AIRCRAFT (3-6%)

##### ENERGY

##### EMERGE

##### GOATERS

JDP & research - R&D

### Operations

#### Optimum speed

#### Sea routing (2-3%)

#### Trim Optimization (2-5%)

#### Auto pilot tuning (1%)

#### 3Rs

OPS & R&D

### Monitoring

#### ICT

#### WAVEIS

#### WAVEIS

#### WAVEIS

#### WAVEIS

#### WAVEIS

#### WAVEIS

#### WAVEIS

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#### WAVEIS

Carbon Neutrality is an ambitious target and requires consistency and reporting transparency. The power of information in combination with the company's 50 years' experience are the key pillars of our effort in this demanding journey. New culture enhancement, across all company's functions, will affect the mandate of change, both qualitatively and timely.

48%	of vessels need further actions to improve rating and align with "C" rating
36%	of vessels have positive rating "C" or better so no actions required for the time being
15%	of vessels are not considered since they are aged and will be removed the next 5 years

### Investment

An assessment of ships' carbon emissions has been done for all fleet and ships are rated according to new IMO CII rating. Company's plan is to substitute old highly emitted ships with ECO vessels progressively pursuing efforts to meet and exceed IMO targets. ECO vessels are conventional ships with optimized performance by 15-20% vs existing ones with similar sizes, and at same time they are equipped with engines that can be retrofitted at later stage, to enable dual fuel (methanol) use onboard.

Regarding zero fuel vessels, R&D dptm has completed the study of various "green" fuel types, referred to sustainability, availability, maturity and cost, and at same time developed the evaluation tool of new technologies taking also into account ICP. The company is prepared to follow market trends, being well aware on pros and cons of different technologies and is waiting further development on infrastructure and fuels availability.

Danaos monitors closely changes in electricity production since it will be the crucial factor for the production of green fuels.

### Optimizations

Danaos R&D dptm has already studied 37 Energy Improvement Optimization methods.

They refer to hull, engine and energy management solutions, that were applied where considered necessary, after the crisis of 2008 and foreseeing fuel cost increase first and emissions raising issue after 2015.

EEIMs status is recorded in R&D dptm log. Having review the latest IMO CII rating, it resulted that:

- 48% of vessels need further actions to improve rating and align with "C" rating.
- 36% of vessels have positive rating "C" or better so no actions required for the time being.
- 15% of vessels are not considered since they are aged and will be removed the next 5 years.
- R&D dptm is prepared for a new review round of EEIMs based on limited power onboard due to new IMO EEXI regulation.
- In parallel, R&D dptm has re-enforced presence in EU projects and JDPs, being always alerted for new technologies and systems.
- JDPs which are ongoing, are promising and might offer alternative practical solutions in future.



*Statistic was made based on rolling-year results (Jul 2022-Jul 2023) and concern year 2026*

## Operations & Monitoring

Whatever the investment on retrofits and tunings, emissions production is directly affected by the speed, loading and route that are instructed by the clients. Owners are trying to have ships at best possible condition, thus advanced monitoring solution, consisting of IoT, AI, online data collection, big data analysis,

advanced algorithms and most of all proper training and well-educated personnel, is necessary to keep additional power demand to absolute minimum and at same time to validate investment's outcome.

Operational parameters cannot be optimized with sole efforts; in contrary it is subject to collaboration with clients, consequently, Danaos

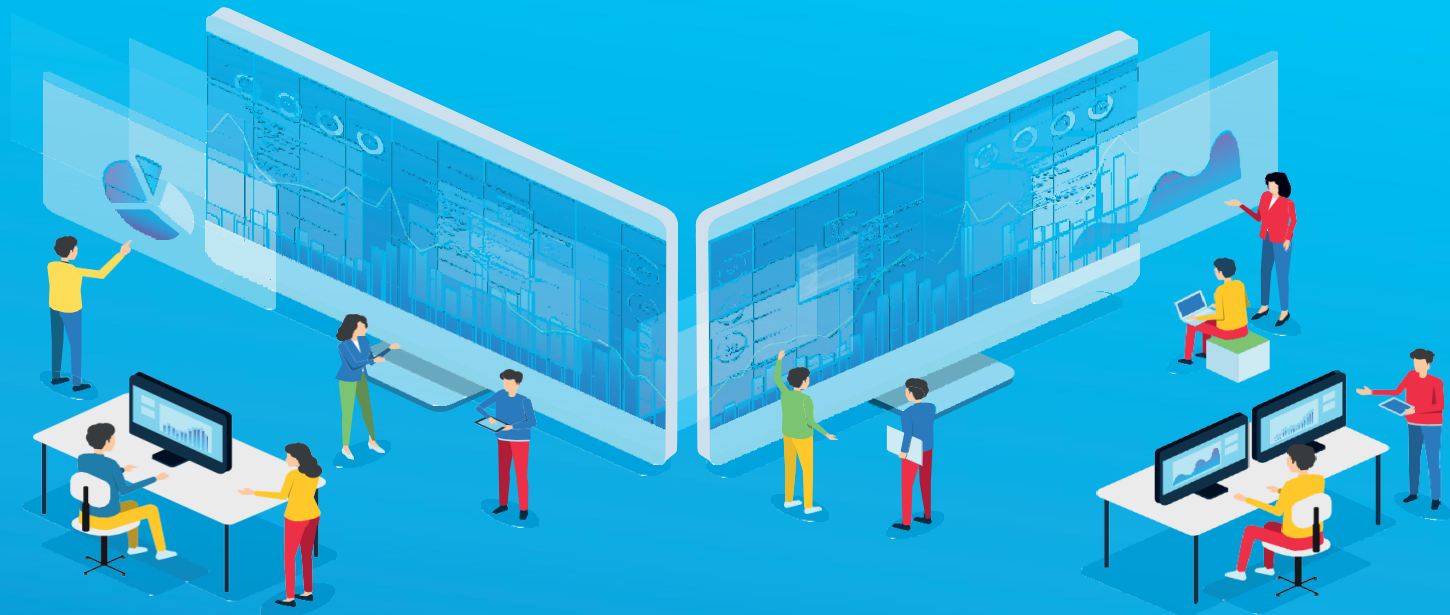
runs rounds of discussion with clients periodically, addressing operation issues, proposing actions and looking for mutual agreed solutions. Among others, speed optimization is the core parameter, whereas sea routing necessitates the development of advanced software solutions accompanied by continuous passage plan and trim

adjustment monitoring.

There are other tunings applied onboard such as the autopilot response, constant power navigation mode, currents use, optimum stow- age etc.

Moreover, nowadays circular economy concept is expanded, covering areas such as maintenance, retrofits, stores and supplies.

Danaos runs rounds of discussion with clients periodically, addressing operation issues, proposing actions and looking for mutual agreed solutions



# Financial Impact & Investment Analysis

Company business risks are analyzed and presented in Business Risks Assessment report which is submitted to BOD annually. BOD ESG committee was formed in 2022, and includes two independent BOD members, for detailed review, assessment and actions planning on environmental related risks. Business risks categories are well known in shipping, and LCTP refers to climate related ones. The management in front of the decarbonization challenge, has to take correct decisions and allocate resources prudently, hence, an assisting tool in estimating and evaluating carbon emissions impact is invaluable.

LCTP assists decision making, through the provision of a quantitative and qualitative analysis. Proper recording and reporting of carbon emissions together with thorough analysis of various operational profiles and climate scenarios, create the working framework which is used for the impact to business activities deep understanding.



There are two basic reasons for the company to consider further actions and revisit the current LCTP:

In other words:

- New regulations or initiatives, could change the trajectories of carbon emissions in time and the company might stand in front of new challenges, incompliance and deviation from environmental targets set. In such case, investment ideas that were abandoned in the past might be re-examined, new ones be reviewed and existing ones be adjusted and re-tuned. The company cannot neglect its commitments and stay aligned with targets set in LCTP and sustainability report.
- IMO has set a benchmarking with CI rating and new EU ETS and FuelEU are taken into account in strategic planning. Through the tough field of decarbonization battle, the company has to remain competitive and survive commercially, thus, benchmarking refer to quality of service, cost and carbon footprint impact, plays a dominant role in management decisions.

Compliance  
with regulations  
and company's  
commitments

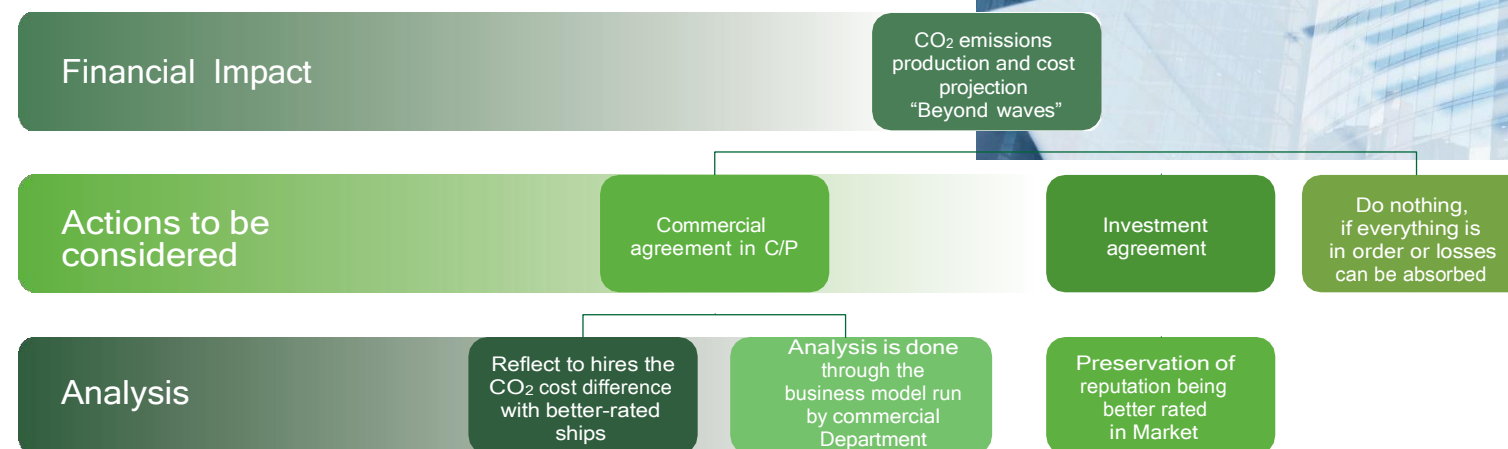


Preservation  
of competitive  
advantage

## The evaluation process of financial impact:

As mentioned in ICP section, R&D dptm's system called "Beyond WAVES", records and analyzes carbon emissions and calculates carbon emissions volume in  $\text{tnCO}_2\text{e}$ . Based on operational profiles and taken into consideration ICP and market's condition, the corresponding to  $\text{CO}_2$  emissions cost is used in company's business model. Commercially, the company has to agree viable hires, defend reputation and preserve the long-term relationships with clients. Thus, the business model examines the effect on financial projections, directly in both short and long terms, considering the tangible balance of incomes and costs, and indirectly, estimating the loss of business in case the company loses her reputation and credibility to the clients.

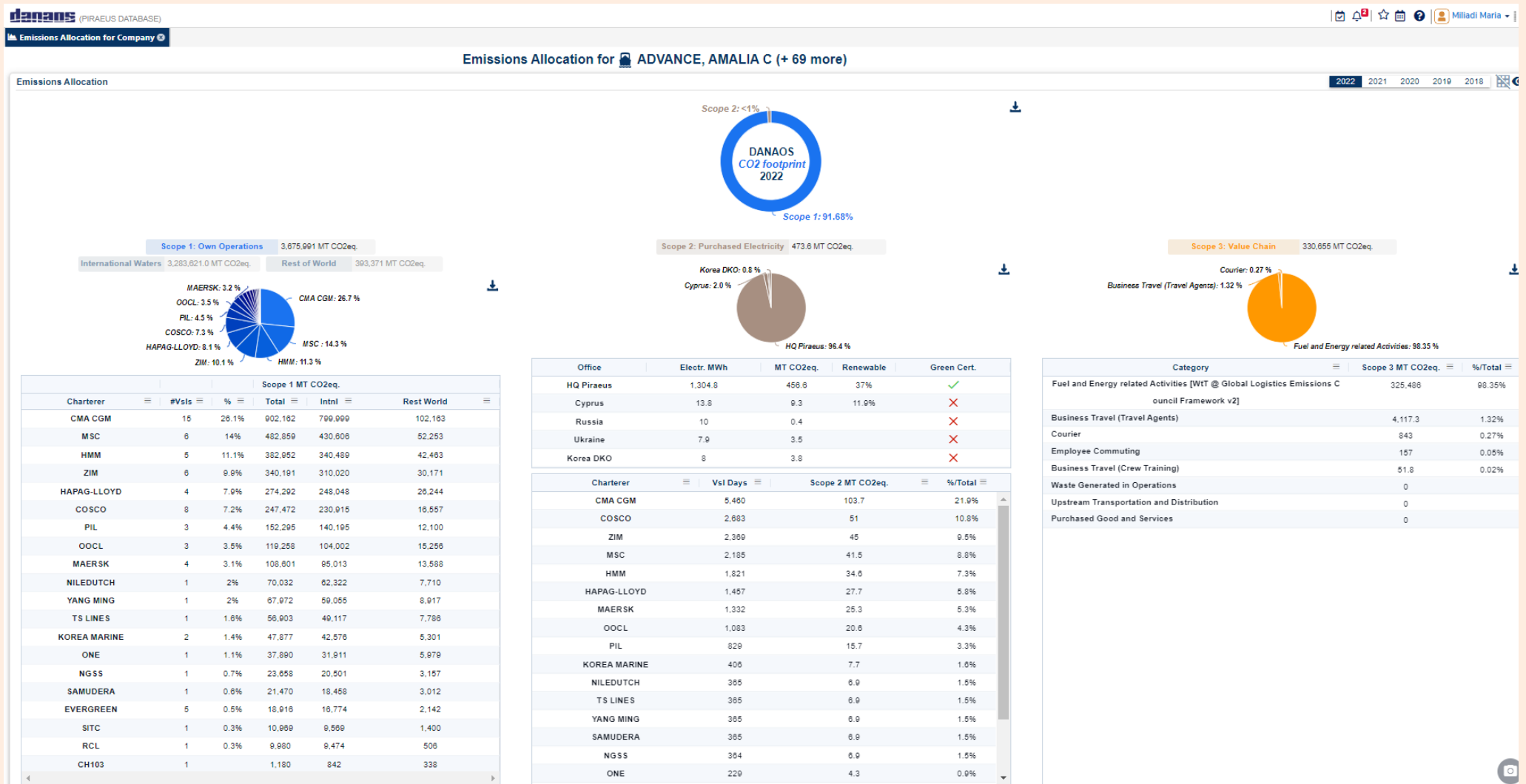
Main ideas could be summarized in the following chart:



In conclusion, ultimate decisions are taken based on financial impact and sustainability. Business model has been built using the environmental company's commitment as the foundation of analysis. Deviation from basic principles and external forces applied to the shipping industry and

moreover, to the company, cause re-running of the business model with new assumptions, necessities and angles of view. LCTP is the key tool in adding to the business equation the cost of carbon emissions, especially when deviating from fundamental projections.

# How Are We Performing? Metrics & KPIs



# Annual Investment Snapshot

In 2022, the company, following the Low carbon transition plan, proceeded with the following actions:

Category	Description	Impact	Investment cost
Divestment	2x6500 teu vessels sold	These vessels were 20 years old, and their removal contributes to CII improvement	
Acquisition NB orders	4x8000 teu and 2x7100 teu New building vessels ordered in 2022	These vessels are of ECO design, Methanol Ready, equipped with Cold Ironing plants	More than USD 500 mil
Optimization	18 Vessels painted with LF paints	Significant reduction in power demand (3-5%)	More than USD 5.5 mil
Optimization	Propellers and BTF orders for 5x6500 teu vessels	Significant reduction in power demand (5-8%)	More than USD 1.5 mil
Optimization	Auto tuning of vessels' steering (All Fleets)	Fine tuning of steering with 1-2% power savings	More than 550 K
Optimization	Trim optimization systems onboard all vessels	Fine tuning in ship's loading with 3-5% power savings	40 K
Research programs	Company invests in Carbon Capture systems study & experimentation	Alternative way to decarbonization than "green" fuels use	More than USD 2 mil
JDP	Company runs programs with clients, covering data sharing and bio diesels testing	An effort to optimize ship's operation speed and fuel blends	More than USD 100K in RnD resources

# Progress Assessment Process

A realistic and effective Low Carbon Transition Plan, same as any development program, needs to be assessed regularly, tuned and updated as necessary, to remain active and aligned with targets and commitments. Therefore, the introduction of an internal assessment process, of LCTP progress, including KPI's, program's strengths, weaknesses, opportunities and threats, was re-formed in 2021 and fine-tuned in 2022.

The LCTP assessment process's first step, refers to alignment with:

- Company's decarbonization commitments
- IMO requirements
- Initiatives such as Poseidon Principles
- SBTi, where applied

Internal assessment is applied in three different authority levels:

- At front line, followed up by technical department's fleets, daily.
- On a Control level, RnD analyses results ESG Working Committee reviews progress.
- On a management & BOD level, for final decisions. Specifically:



## Continuous monitoring of decarbonization progress

Fleets' engineers monitor emissions production, Year To Date (YTD) through Beyond WAVES

Upon RnD Dptm's SEEMP review and annual LCTP progress analysis, Fleets implement corrective actions & retrofits/optimizations decided

### ESG working Committee (ESGWC)

ESGWC reviews YTD decarbonization results on quarterly basis

ESGWC checks alignment of sustainability requirements with investments required and reports to the management

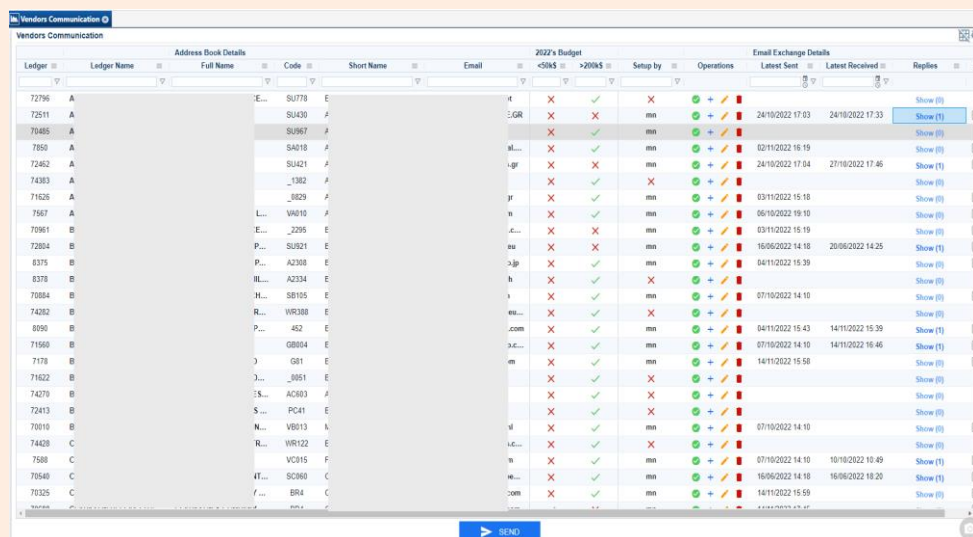
### High level monitoring

RnD reviews decarbonization results and LCTP status, on a quarterly basis and reports emissions to IMO DCS and EU MRV annually. Final results are published through ESG report and disclosed in CDP

BOD ESG committee reviews annually decarbonization progress and business risk assessments and approved key investment plan

# Engagement of suppliers

The company follows up closely the LCTP, through serious planning and professionalism. However, despite the strong efforts applied to achieve decarbonization results soonest, Scope 3 emissions' reduction could not be neglected, since they extend company's efforts not only, inhouse and within her activities, but to those partners working the company too. It is not an easy task, since decarbonization awareness, varies among people, countries, and companies worldwide. It is company's duty to promote awareness, incentivize and engage her partners in this demanding journey.



Ledger	Ledger Name	Full Name	Code	Short Name	Email	2022's Budget	Setup by	Operations	Latest Sent	Latest Received	Replies
72796	A	E...	SU778	E	it	X	X	X	24/10/2022 17:03	24/10/2022 17:33	Show (1)
72511	A	SU430	F		GR	X	X	mn			Show (1)
70485	A	SU967	F			X	X	mn			Show (1)
7850	A	SA018	F		il...	X	X	mn	02/11/2022 16:19		Show (1)
72462	A	SU421	F		gr	X	X	mn	24/10/2022 17:04	27/10/2022 17:46	Show (1)
74383	A	_1382	F			X	X	mn			Show (1)
71626	A	_0829	F		fr	X	X	mn	03/11/2022 15:18		Show (1)
7567	A	VA010	F		n	X	X	mn	06/10/2022 19:10		Show (1)
70961	B	E...	_2295	E	e...	X	X	mn	03/11/2022 15:19		Show (1)
72804	B	P...	SU921	E	su	X	X	mn	16/06/2022 14:18	20/06/2022 14:25	Show (1)
6376	B	P...	A2308	E	>je	X	X	mn	04/11/2022 15:39		Show (1)
6378	B	il...	A2334	E	h	X	X	mn			Show (1)
70884	B	H...	SR105	E	i	X	X	mn	07/10/2022 14:10		Show (1)
74282	B	R...	VR388	E	en...	X	X	mn			Show (1)
6990	B	P...	452	E	.com	X	X	mn	04/11/2022 15:43	14/11/2022 15:39	Show (1)
71568	B		GR004	E	>e...	X	X	mn	07/10/2022 14:10	14/11/2022 16:46	Show (1)
7178	B	O	GR1	E	m	X	X	mn	14/11/2022 15:50		Show (1)
71622	B	J...	_0951	E		X	X	mn			Show (1)
74270	B	S...	AC803	F		X	X	mn			Show (1)
72413	B	S...	PC41	E		X	X	mn			Show (1)
70910	B	N...	VB013	L	if	X	X	mn	07/10/2022 14:10		Show (1)
74428	C	R...	WR122	E	id...	X	X	mn	07/10/2022 14:10	10/10/2022 10:49	Show (1)
7588	C		VC015	F	n	X	X	mn	16/06/2022 14:18	16/06/2022 18:29	Show (1)
70948	C	if...	SC980	C	n...	X	X	mn	14/11/2022 15:59		Show (1)
70325	C	f...	BR4	C	.com	X	X	mn			Show (1)

Danaos ESG Assessment Questionnaire link:

<https://vq.danaosshipping.gr/>

RnD department in cooperation with Procurement department, has created an Emissions Recording platform in Beyond WAVES environment, where partners are requested to report not only their Scope 1 and 2 emissions related to Danaos involvement and activities, but all ESG aspects that are considered important for sustainable business.

The company has set prerequisite and mandatory criteria, mainly related to people, and secondary ones related to GHG emissions.

Suppliers are reviewed according to quality, service, suitability, delivery time. Additionally, Key Suppliers are reviewed according to ESG criteria as set in questionnaire sent to them based on our procedure\*. Suppliers of this category that do not comply with mandatory criteria as set out in the questionnaire are removed from the list (or their status is changed to black-listed).

It is quite difficult for the time being to acquire Scope 3 emissions from all partners, thus, there is not any exclusion, unless prerequisite criteria are not met. However, environmental targets are placed gradually and will be strengthened in the following years.

A number of KPIs has been introduced in order to follow up partners engagement status. Carbon emissions recording is done in Beyond WAVES platform.

\*Each year, to Key Suppliers (above \$200k business and more than 20 p personnel) a questionnaire with our ESG criteria according to UN COMPACT and GRI standards is sent electronically with a unique link. It contains our mandatory ESG requirements as well as additional ones. The replies are assessed and decisions, if needed, are made for the continuation of our between business.

# Repairs & Workshops

A modern Repair-Log Web application has been applied to Danaos ERP system.

This software aims to incorporate all Danaos repair process and repair workshops networking.

Each workshop and its specialty are registered and presented on a map. When a Fleet engineer will plan a repair, the geographical area of interest will be selected on the map, the type of repair required will be entered and the application will provide the appropriate workshops to work with, showing the rating of each workshop basis the quality and effectiveness of the previous works carried out. If a workshop is blacklisted an alert will show up, if the workshop has not been used yet, an extra warning will pop up.

**Repairs & Workshops**

Filtering Options: 01/01/2022 - 20/09/2023, Workshop Name/Code, Serving Countries

Workshop Code	Workshop Name	Repairs No	Repairs Cost	Rating
IS1		721	\$2,545,479.3	★★★★
SU821		125	\$355,009.1	★★★★
WR276		66	\$370,656.6	★★★★
S251		253	\$216,000.0	★★★★
PC194		600	\$666,000.0	★★★★
y199		193	\$560,007	★★★★
WR277		27	\$16,000	★★★★
SR58		40	\$550,000.7	★★★★
OT335		451	\$470,000.0	★★★★
SU500		67	\$100,000.0	★★★★
S2156		119	\$200,000.0	★★★★
AC467		75	\$250,000.0	★★★★
AC790		77	\$500,000.0	★★★★
OT503		265	\$800,000.0	★★★★
WR349		14	\$200,000.0	★★★★
SU343		485	\$700,000.0	★★★★
SU779		52	\$300,000.0	★★★★
ST040		100	\$100,000.0	★★★★
It 62		32	\$100,000.0	★★★★
SW015		19	\$100,000.0	★★★★
SN034		14	\$100,000.0	★★★★
WR150		13	\$100,000.0	★★★★

Search... Workshop Code, Workshop Name, Repairs No, Rating



## DaYaMa

New Criteria have been set to provide more efficient dry docks at the Chinese shipyards, where the majority of scheduled dry docks of Danaos are performed. Danaos Yard Mapping (DAYAMA acronym) has been developed to enhance shipyard selection approach and repair planning. In addition to the common criteria, the extra features under analysis are as follows:

- PESTEL Analysis is one of the fundamental tools utilized to complete the analysis; Technical, operational, demographic, political, environmental, geographical issues and restrictions affect final outcome.
- Qualitative evaluation of yards and ranking, layering the shipyards into groups based on the 5-point system.
- Specific project ranking and validation. The analysis tools propose the most suitable shipyards for the specific project & ship's particulars.
- The initial assessment is carried out once, followed by periodical reviews and specific project evaluations.

# Metrics & KPIs

**42.6%**

Reduction in CO<sub>2</sub> emissions per ton miles compared with the IMO' 2030 carbon intensity targets

**20%**

Of fleet complying with the Poseidon Principles

**100%**

Of key suppliers accessed in 2022  
One third has been assessed in 2022

Company's EEOI value 2022  
15.68 gr/tn\*nm

Company's AER value 2022  
8.46 gr/DWT\*nm

**1.6%**

Reduction in total CO<sub>2</sub> emissions in 2022 vs 2021

**3,675,991**

Scope 1 Emissions (MT CO<sub>2</sub>eq.)

**12%**

Deviation from relevant SBTi target value for 2025

# Training

Decarbonization is not a simple process and requires joint efforts not only internally, but externally engaging other stakeholders too. LCTP produces results that affect relationship with clients and company's performance.

Interaction with clients is mainly management's and commercial department's task, and the front line operational departments support the commercial approaches. LCTP results are

communicated through the appropriate channels to the clients and key issues are addressed on a business-commercial basis.

Nowadays, a company's reputation, even in the traditional shipping industry, is supported by those involved with daily business activities and interacting with stakeholders. Therefore, although tangible business agreements are carried out by a small commercial team, the

intangible task of reputation support and promotion is carried out by a numerous team of people who have to be well trained and aware with company's performance, policy and objectives, goals and metrics used etc. Training has to be wide, open and dynamic. It has to be materialized with various means, such as remote equipment and facilities, advanced software and systems, intelligent knowledge sharing, goodwill and culture enhancement, but most of all provision of clear answers to Why, How, When, What, Who.

Training is to be provided to both shore and sea personnel.



Shore personnel	Seafarers
<ul style="list-style-type: none"> <li>• ESG committee meetings and guidance</li> <li>• Training Express (Tr-Ex) program run in Tech-supplies-R&amp;D-electric dptms</li> <li>• Access to Beyond WAVES</li> <li>• Presentations</li> <li>• Teams' agility &amp; projects running</li> <li>• Social media</li> </ul>	<ul style="list-style-type: none"> <li>• Remote training sessions</li> <li>• Remote briefing and familiarization</li> <li>• Participation in workgroups</li> <li>• Knowledge sharing onboard through company's representatives</li> <li>• Local training in manning offices</li> <li>• Social media</li> </ul>

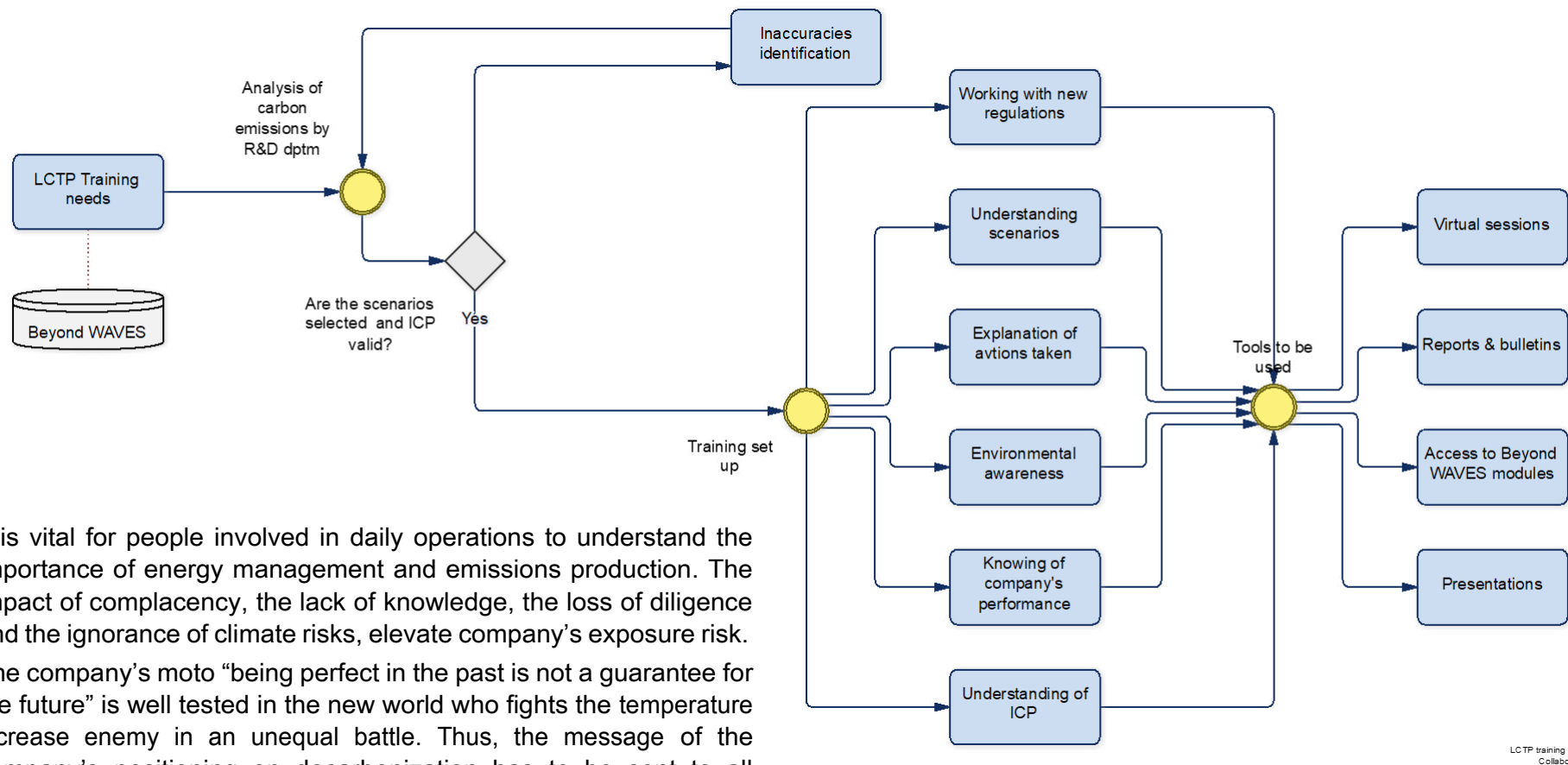
Training is usually carried out by:

- CSO
- ESG Committee
- R&D dptm
- Training dptm
- Manning offices
- Others when assigned by CSO

# LCTP Training Chart

Following chart refers to key topics and main tools used in order to address whatever necessary to decarbonization.

CSO is the supervisor of the LCTP's proper implementation and follow up.



It is vital for people involved in daily operations to understand the importance of energy management and emissions production. The impact of complacency, the lack of knowledge, the loss of diligence and the ignorance of climate risks, elevate company's exposure risk. The company's moto "being perfect in the past is not a guarantee for the future" is well tested in the new world who fights the temperature increase enemy in an unequal battle. Thus, the message of the company's positioning on decarbonization has to be sent to all parties involved, onboard and ashore, internally and externally to stakeholders.

Everybody who is in the front line of operations, and not only, has to be

well aware of company's environmental policy, objectives, performance and ultimate goals, in order to be able to embrace the corporate efforts and preserve reputation at the highest standards.



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