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Business Overview and Strategies towards Shipping Decarbonization

TURN UNCERTAINTY



INTO CONFIDENCE

*Developing indicators of Efficiency towards
Sustainability of the Maritime Transport Sector*

Developed by: **J&M GROUP**

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President & Co-founder



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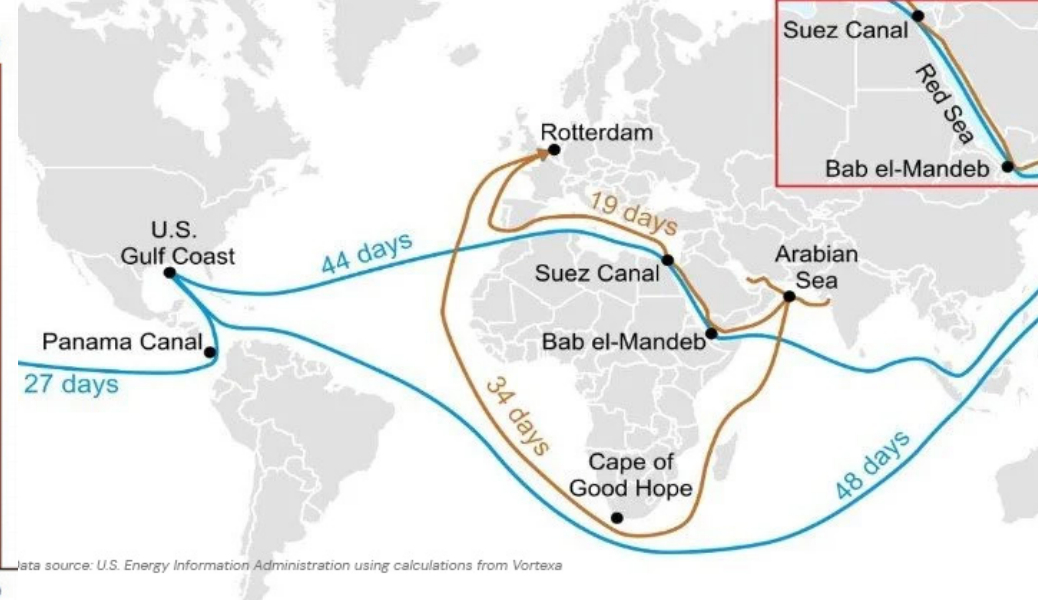
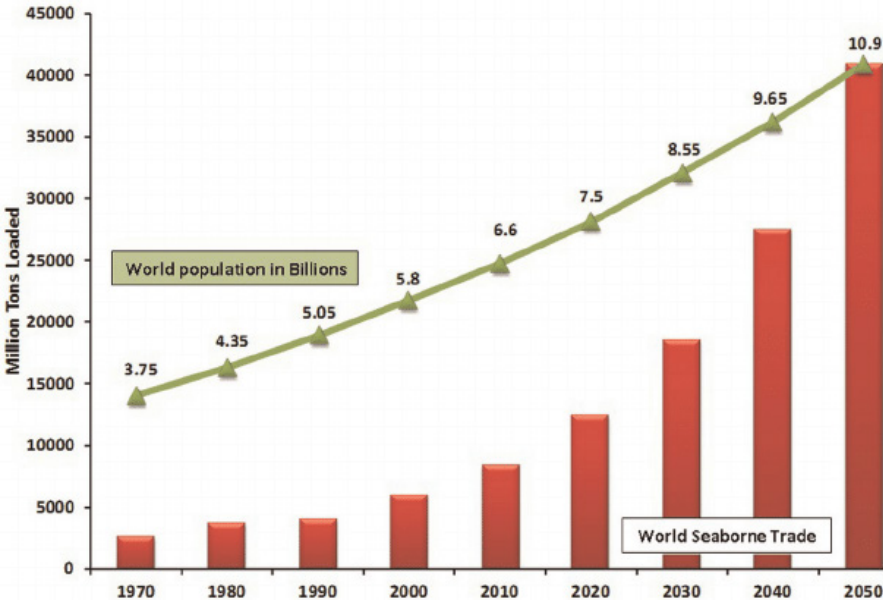


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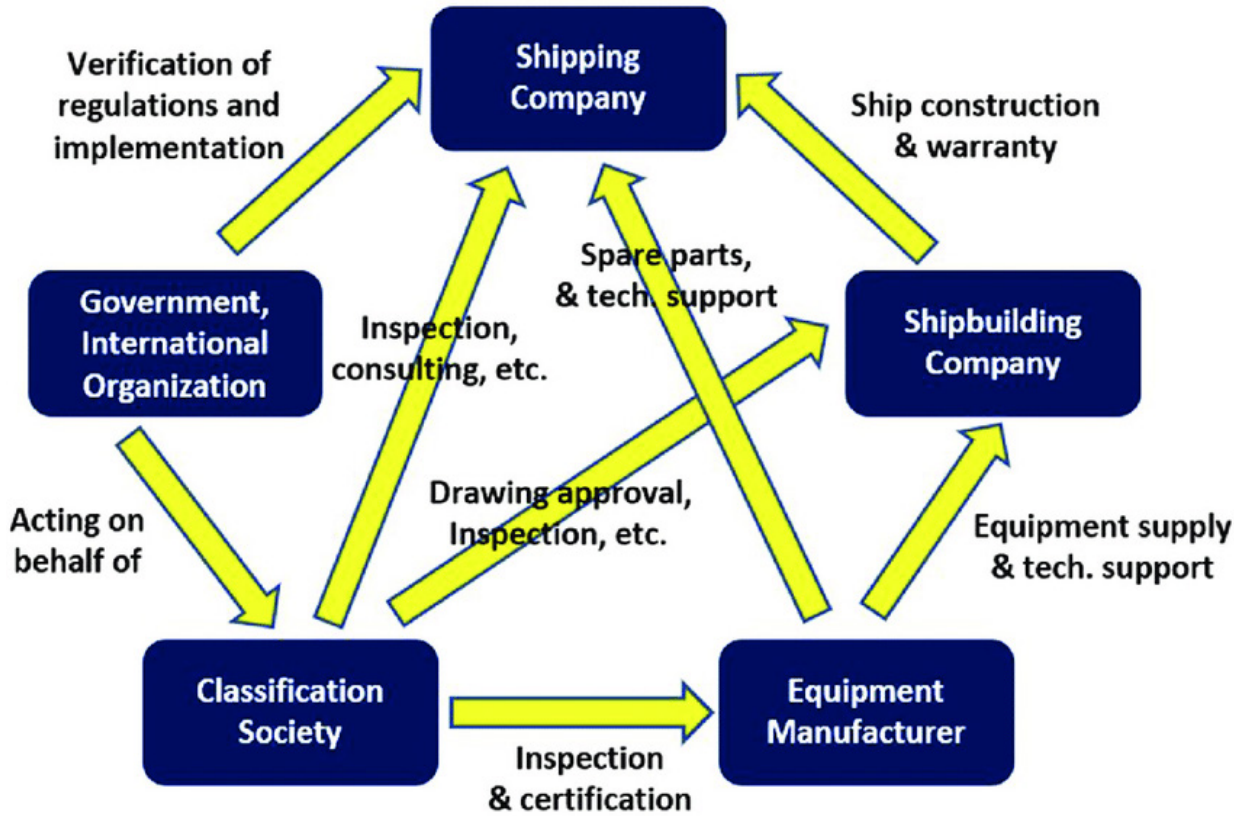
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Background

1



- Some **11 billion tons of goods** are transported by ship each year.
- Shipping accounts for over **80%** of total exports and imports by volume globally.



**KEY
STAKEHOLDERS**





**SHALL WE ACCEPT
THE CHALLENGE?**



CHALLENGE ACCEPTED



GREEN POLICIES

GREEN FINANCING

NEW TECHNOLOGIES



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**The Big Picture:
Global Maritime GHG
Emissions**

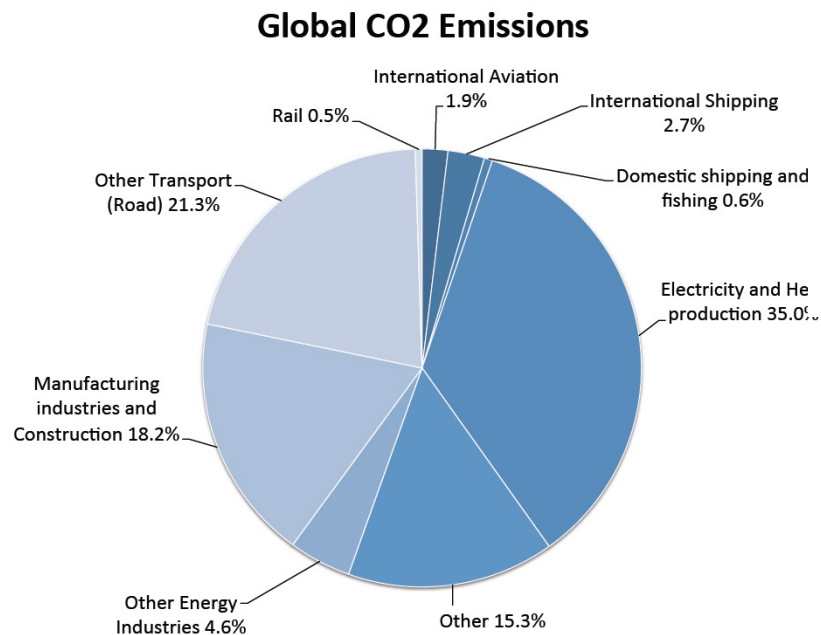
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The Big Picture: Global Maritime GHG Emissions

GHGs:

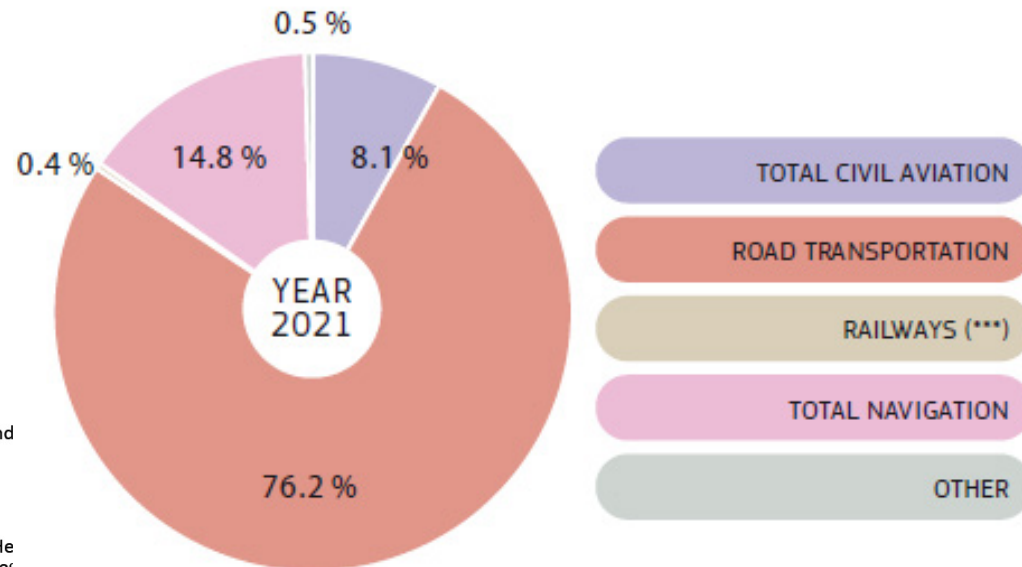
- CO₂ → Carbon Dioxide
- CH₄ → Methane
- N₂O → Nitrous Oxide

- ~ 1 billion tonnes a year



Source: various IMO GHG studies

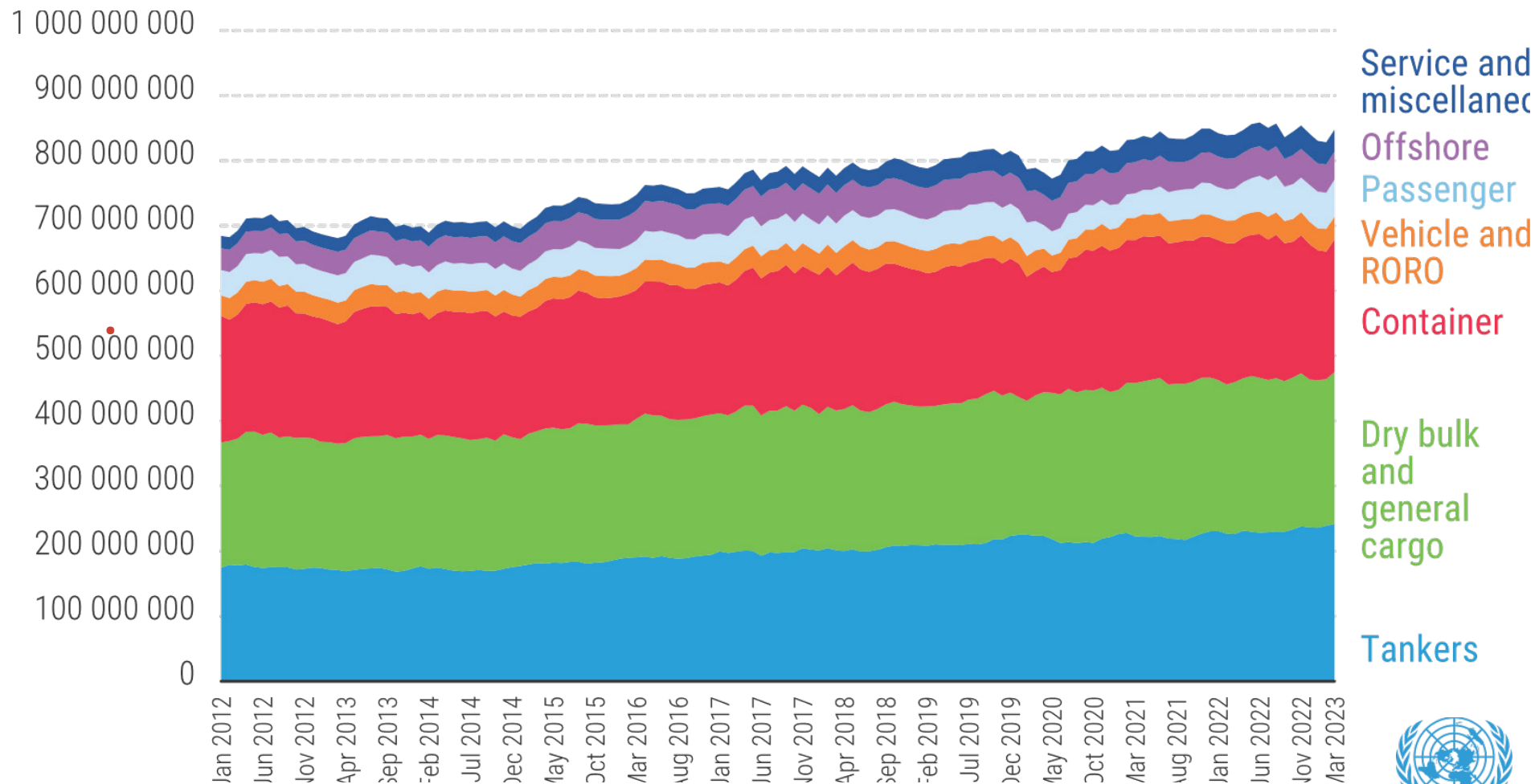
GHG Emissions from Transport Sector



Source: EU Statistical Pocketbook 2022

The Big Picture: Global Maritime GHG Emissions

Total CO2 emissions by vessel types, tons, January 2012— March 2023



The Big Picture: Global Maritime GHG Emissions

IMO Action



- EEDI - **2011**
- MBMs - In between: **2010 to 2013**
- Initial IMO GHG Strategy - **2018**
- Revised IMO GHG Strategy - **2023**



E

INTERSESSIONAL MEETING OF THE
WORKING GROUP ON REDUCTION OF
GHG EMISSIONS FROM SHIPS
7th session
Agenda item 2

ISWG-GHG 7/2/20
7 February 2020
ENGLISH ONLY

FURTHER CONSIDERATION OF CONCRETE PROPOSALS TO IMPROVE THE OPERATIONAL ENERGY EFFICIENCY OF EXISTING SHIPS, WITH A VIEW TO DEVELOPING DRAFT AMENDMENTS TO CHAPTER 4 OF MARPOL ANNEX VI AND ASSOCIATED GUIDELINES, AS APPROPRIATE

Detailed impact assessment of the mandatory operational goal-based short-term measure

Submitted by Denmark, France and Germany



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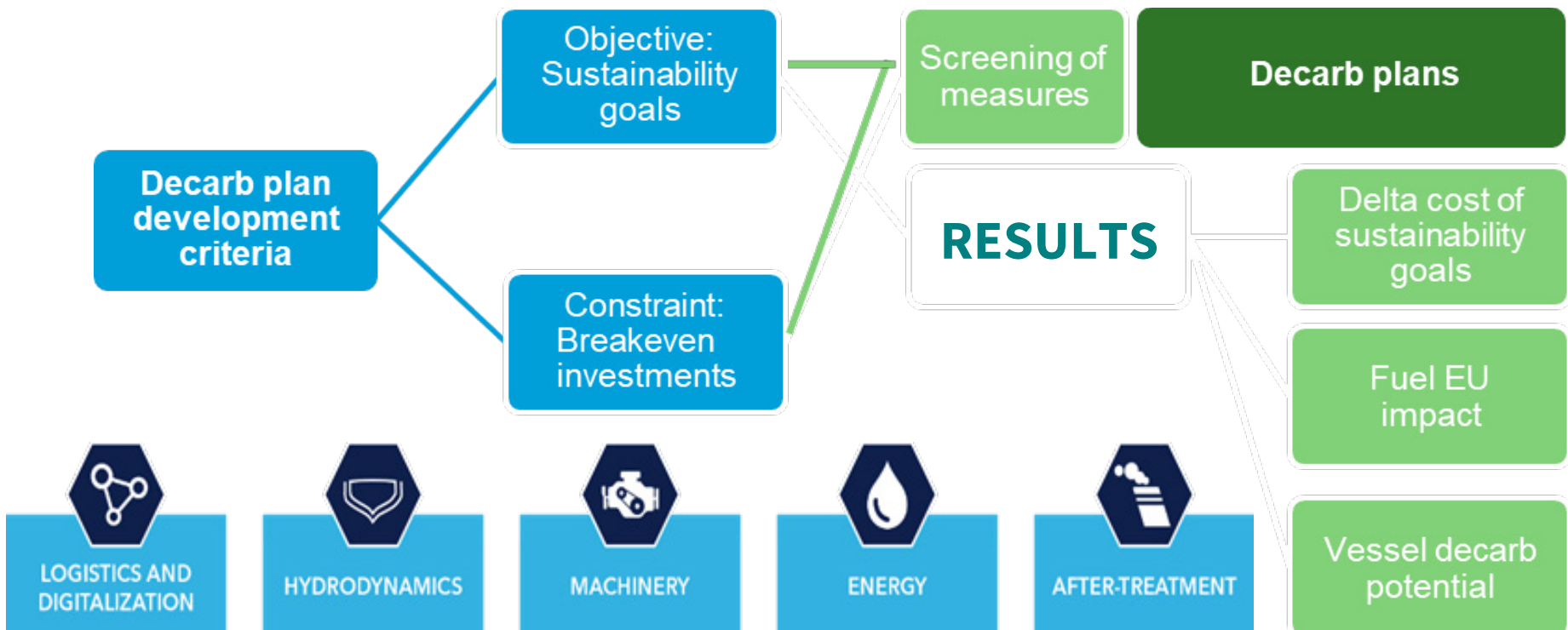


**Scope of our Work
on Shipping
Decarbonization**

3

58 Decarbonization Plans for Breakeven Investment & Benchmarking against **Cost** vs **Compliance**

The scope of this study was to develop decarbonization plans for the entire fleet of a Shipping Company, considering investment balance, company's 2030 and 2040 CO2 intensity goals and CII compliance status based on the revised IMO GHG strategy to reach net-zero GHG emissions from international shipping by or around, i.e. close to 2050. The key steps implementing this scope, are shown below:



IMPACT OF PROPOSED DECARBONIZATION PLANS

DECARB PLANS

Reduction in fleet CO₂ emissions by 2030*

31%

Total discounted expenditure for ESDs

128 million USD

Total discounted expenditure for biofuel

202 MUSD
8% of total FOPEX

Total discounted expenditure for methanol

209 MUSD
9% of total FOPEX

Total discounted expenditure for LNG

129 MUSD
5% of total FOPEX

- In 2030, 12 out of the 58 vessels of the Decarbonization Plan study, will have already been scrapped
- In 2040, 10 vessels out of the 58 mentioned above, will still be in operation, from which none of them existed in 2019
- Vessels' lifetime (agreed with client) is to be considered 20 years, for the scope of this study.



ALTERNATIVE FUEL UPTAKE

BIOFUELS, LNG & METHANOL

1st Year of implementation

2027

Total discounted expenditure for biofuel

202 MUSD

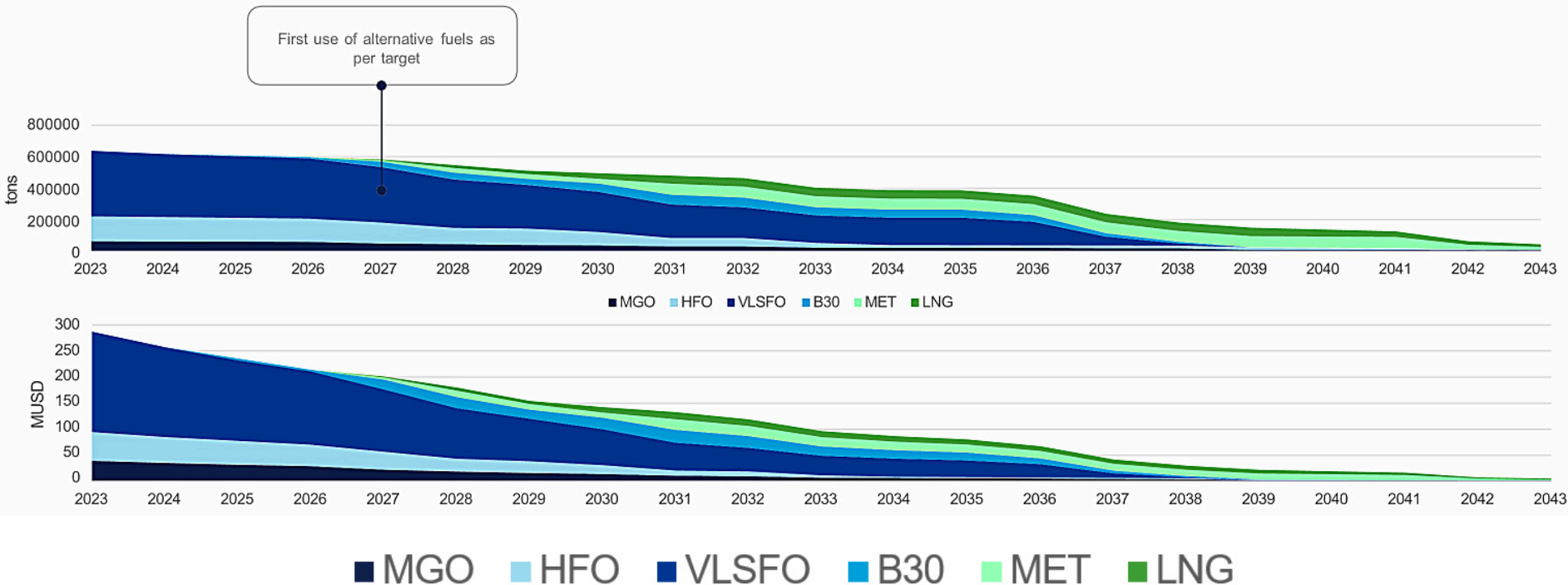
Total discounted expenditure for methanol

209 MUSD

Total discounted expenditure for LNG

129 MUSD

The fuel use for the fleet is presented in the below graphs, both as total consumption in tons and expenditure in MUSD considering each vessel's lifetime.



Carbon Intensity Indicator (CII)

V-SAM1 Decarbonization plans

Ships rated by CII: **A B C D E**

2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
	OPM, APSW, UPA	OPM	OPM	BIO					◆											
C	C	C	C	C	C	C	D	D	D											

2030

40 % lower CO₂ intensity at fleet level vs. 2008



By 2030, have commercially viable, zero-emission vessels operating in our fleet

First zero-emission newbuild delivered depending on market availability — first retrofits to zero-emission vessels

2040

At least 80 % less CO₂ intensity at fleet level vs. 2008 and net zero in sight



We aim to 80 % lower CO₂ intensity per ship vs 2008

80 % of our fleet capable of running on competitively priced zero-emission fuels (e.g. carbon tax in place)

- MEW Mewis duct
- APSW Autopilot SW upgrade
- PO Port optimization
- WR Weather routeing
- HCL Hull cleaning
- LFP Low friction paint (Hull coating)
- UPA Ultrasound propeller antifouling
- AEU Auxiliary engine utilization
- EAT Electronic auto-tuning
- OPM Operating measures
- SR Speed reduction
- BIO Use of biofuel blend
- MET Methanol
- LNGR LNG retrofit

◆ End of life



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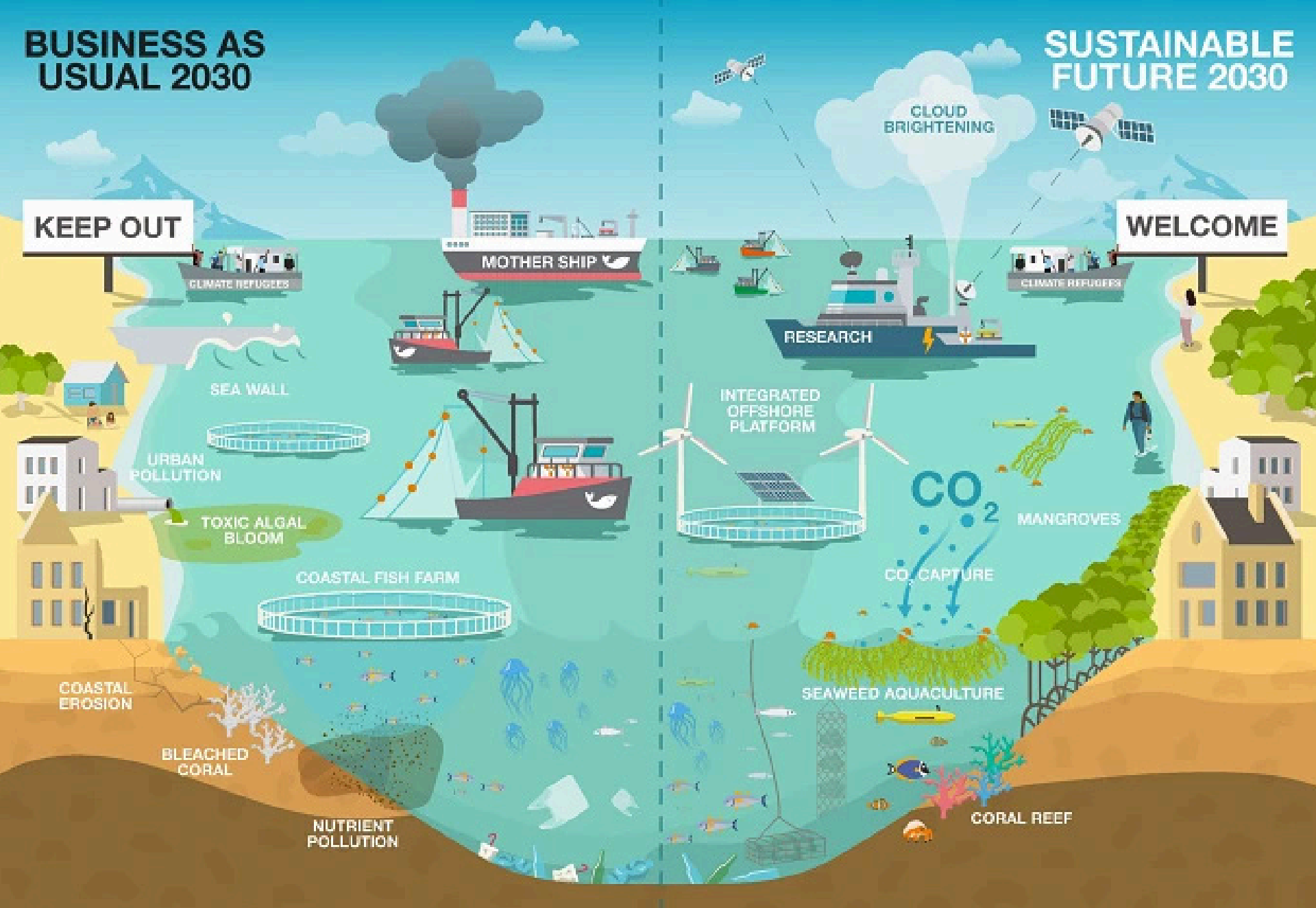
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**Strategic
Approach**

4

BUSINESS AS USUAL 2030

SUSTAINABLE FUTURE 2030



Business-as-usual vs. Optimistic but technically achievable futures for ocean social-ecological systems (Chung et al. 2011; Duarte et al. 2017; Froehlich et al. 2019)

Strategic Approach



Capacity
Building



R+D+I



Multisector
Partnership



Interdisciplinary
Approach

Green Financing → Sustainable Investment

Uptake of
Emerging
Technologies

**Technical
Support
by SME**

Efficient
Infrastructure
Solutions





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The Way Forward

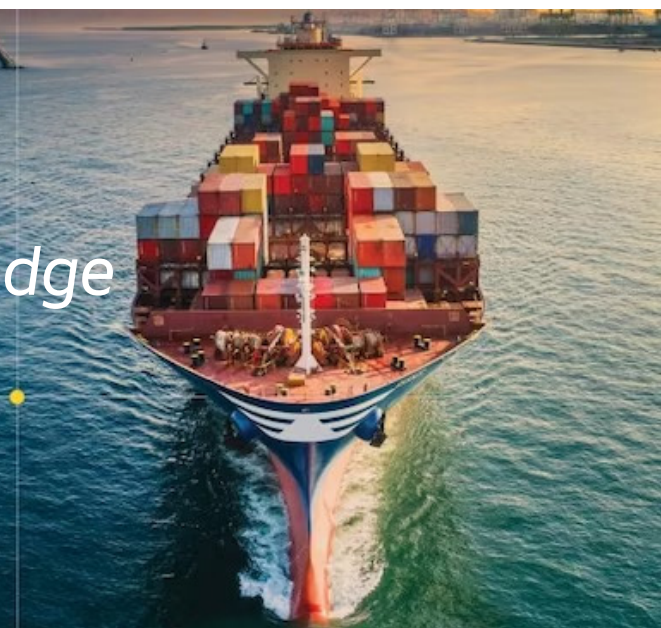
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The Way Forward...



Green Environmental Policies

... requires Joint Efforts, Expertise, Knowledge Transfer and **Financial Support**





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THANK YOU

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