

TALTECH
ESTONIAN MARITIME ACADEMY

KASVIHUONEKAASUPÄÄSTÖJEN VÄHENTÄMINEN KANSAINVÄLISESSÄ MERENKULUSSA

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Tallinn University of Technology

6.4.2022

Inventory of GHG Emissions from International Shipping 2012-2018

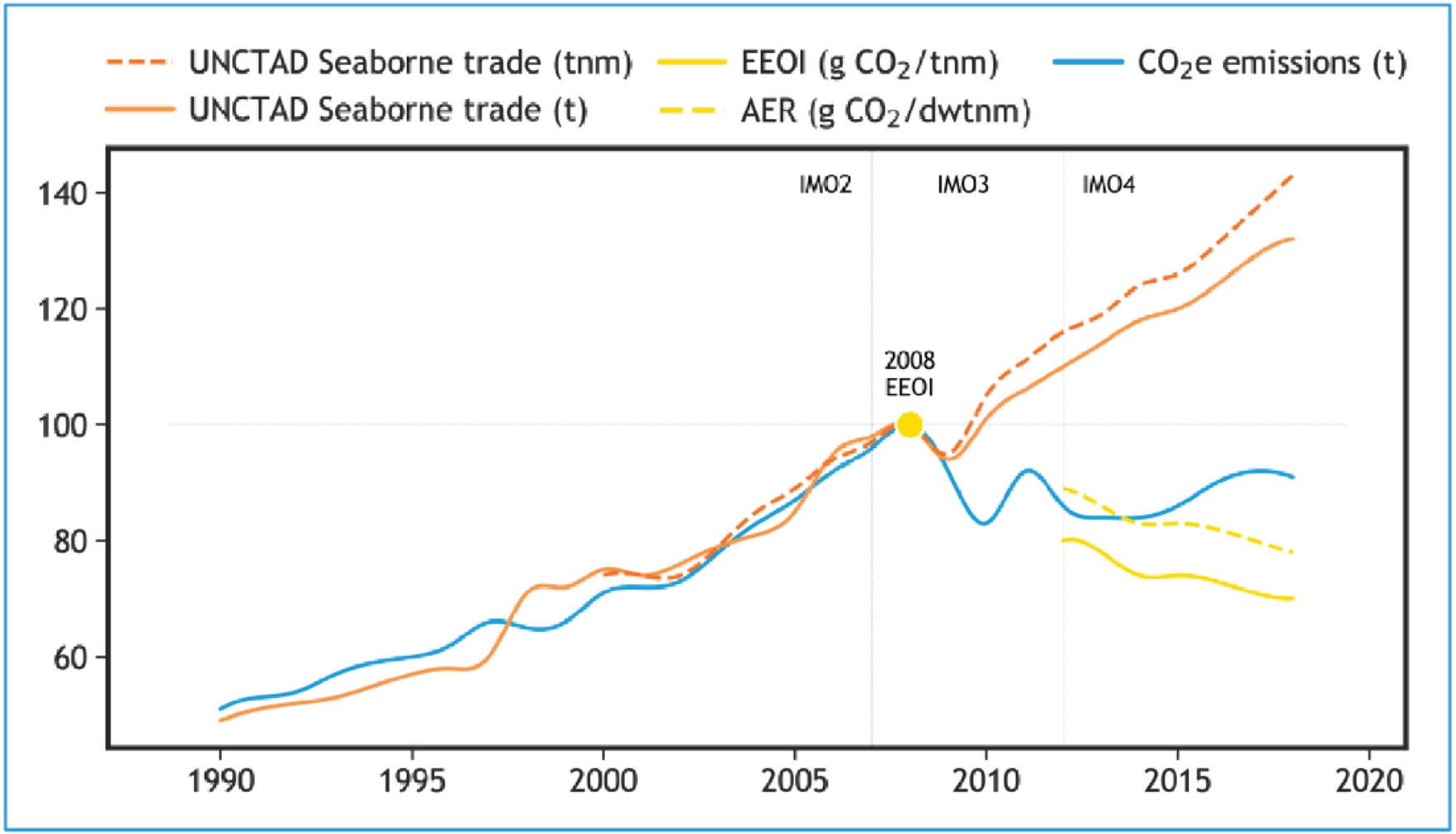


Figure 2 – *International shipping emissions and trade metrics, indexed in 2008, for the period 1990-2018, according to the voyage-based allocation[1] of international emissions[2]*

Source: Fourth IMO GHG Study 2020

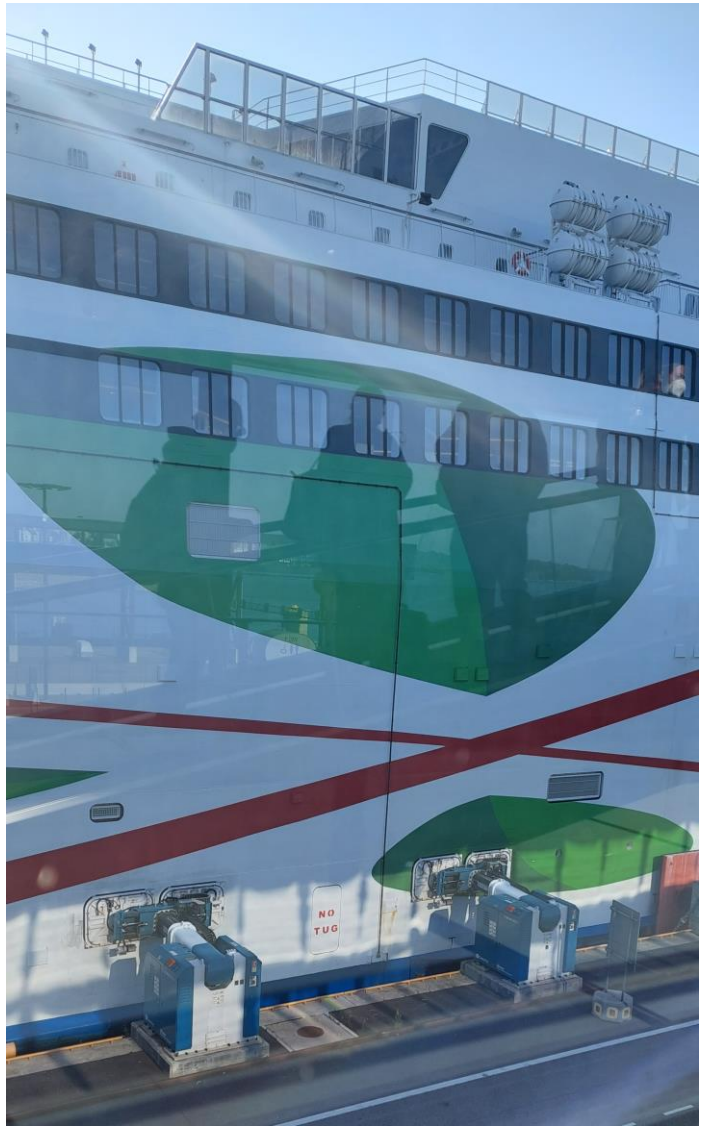
AUTOMOORING SYSTEM IN HELSINKI AND TALLINN

Tallinn's Old City Harbour to introduce automated mooring system

Port of Tallinn has signed contracts with maritime engineering companies Trelleborg and Cavotec for the instalment of automated mooring systems at quays 5, 12 and 13 of the Old City Harbour, which is used by passenger vessels serving the Tallinn-Helsinki route.

According to Peeter Nõgu, head of the infrastructure development division of Port of Tallinn, technological development has greatly contributed to the maritime sector, including the mooring processes of ships. "The new automated mooring equipment installed in the Old City Harbour will fasten our mooring operations while also requiring less man-hours and contributing to environmental sustainability. The new systems are primarily used by the ships sailing on our busiest route between Tallinn and Helsinki, where every extra minute saved either at sea or in port is highly valued."

The shipping industry uses either automated vacuum mooring or automated magnetic mooring systems. According to Peeter Nõgu, Port of Tallinn opted for a vacuum-pad based system, while the magnetic mooring systems are still at an early stage of development and usage. For this reason, the full impact of the electromagnetic waves on either a ship's electronics or the surrounding environment isn't yet fully known.





05.11.2021 | **Rahtiliikenne**

HansaLink to take environmental measures

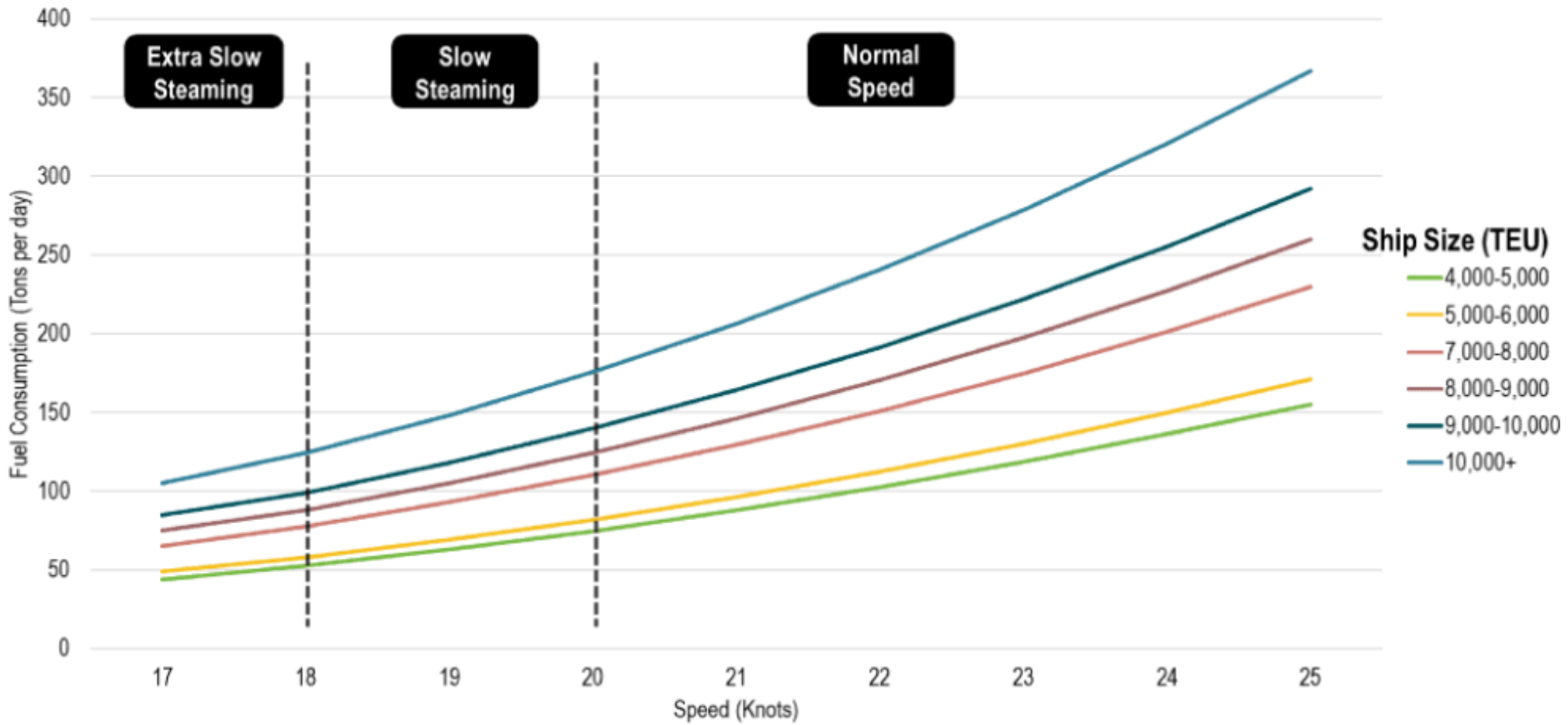
HansaLink to take environmental measures

Grimaldi as a corporate group is determined to continue the fight against climate change. In this battle the environmental performance of the vessels is gaining more and more importance.

One of the effective measures shipping companies can do in order to contribute to actual climate crisis is to slow down the speed. Already a small adjustment helps us and our customers to decrease the CO2 emissions.

That in mind and trying keep our service level as unaffected as possible the schedule of the HansaLink Service will be altered as follows.

Fuel Consumption by Containership Size and Speed

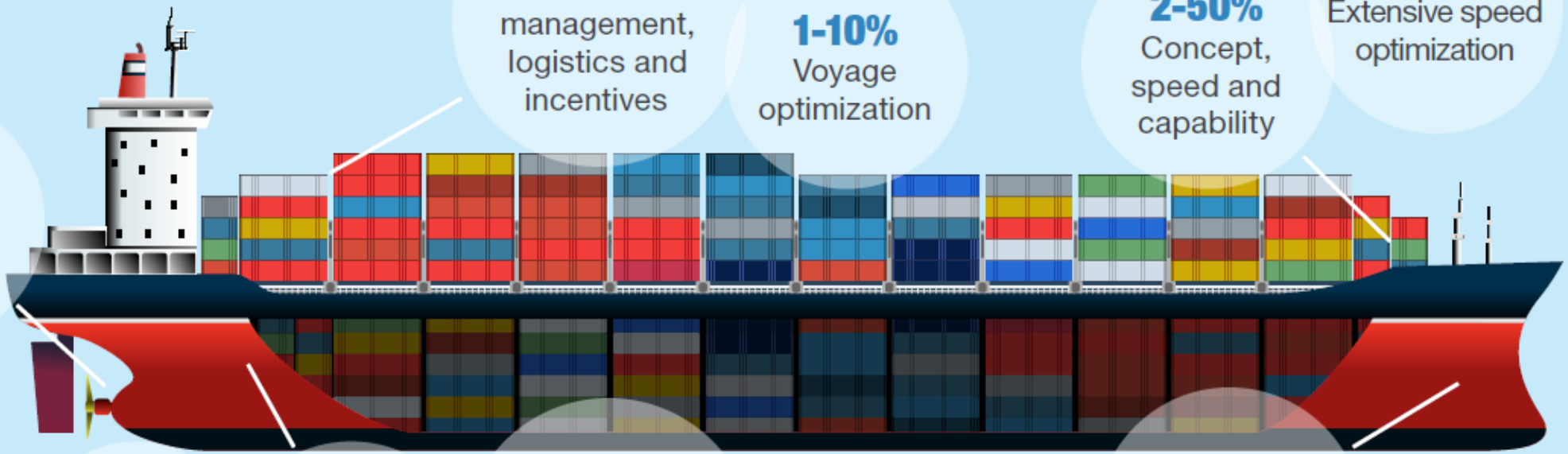


Fuel Consumption by Containership Size and Speed

The Geography of Transport Systems
Jean-Paul Rodrigue (2020)

A wide variety of design, operational and economic solutions

Achieving the goals of the Initial IMO GHG Strategy will require a mix of technical, operational and innovative solutions applicable to ships. Some of them, along with indication on their approximate GHG reduction potential, are highlighted below.



5-50% Fleet management, logistics and incentives

1-10% Voyage optimization

2-50% Concept, speed and capability

up to **75%** Extensive speed optimization

5-15% Power and propulsion systems

50-90% Full electric

35% Bio-LNG/LPG

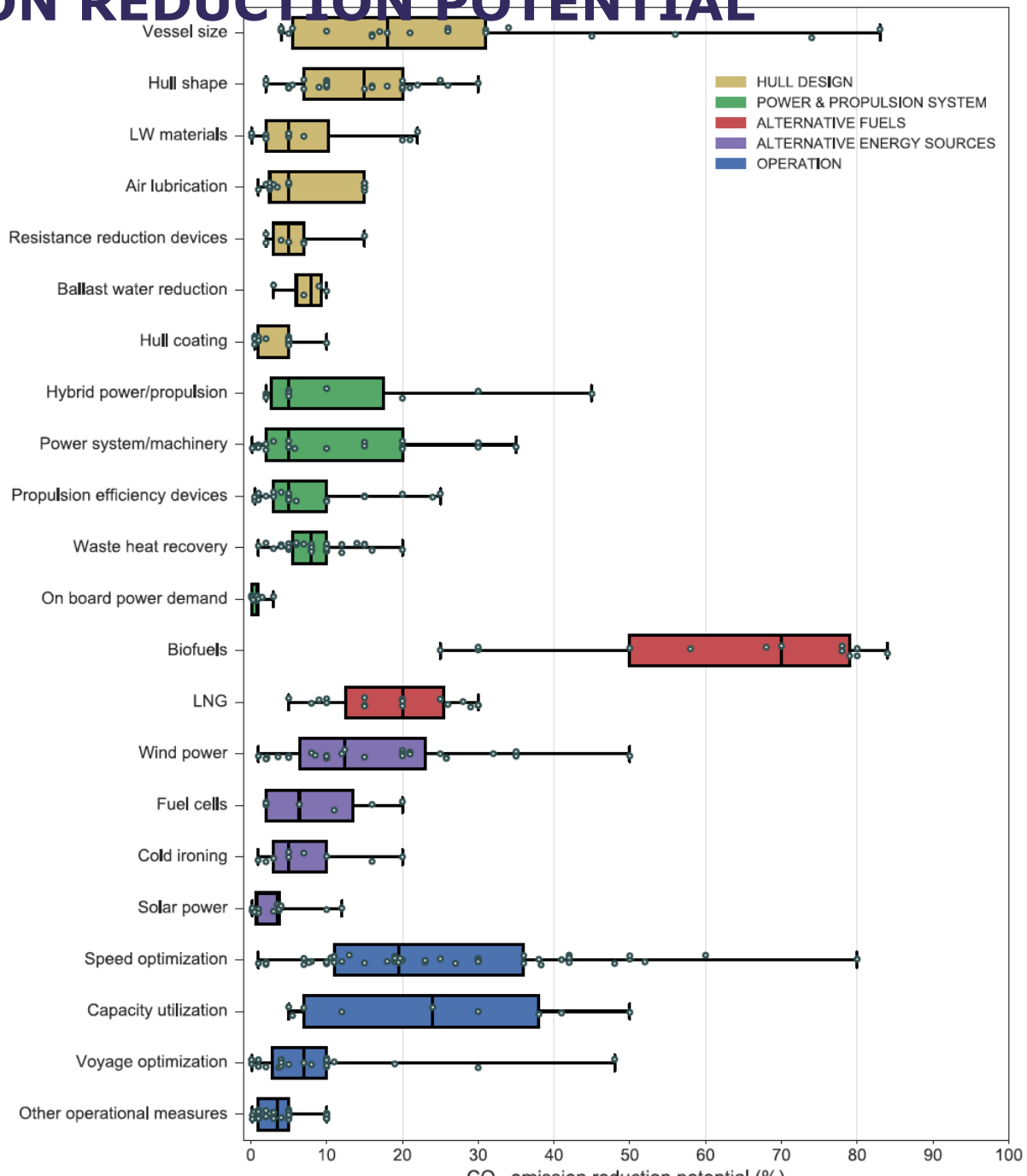
90% Biofuel 3rd generation

80-100% Hydrogen and other synthetic fuels

1-10% Energy management

2-20% Hull and superstructure

CO2 EMISSION REDUCTION POTENTIAL



Source: Bouman, E. A., Lindstad, E., Rialland, A. I. and Strømman, A. H. (2017). State-of-the-art technologies, measures, and potential for reducing GHG emissions from shipping – A review. *Transportation Research Part D: Transport and Environment.* 52. pp. 408-421.

TAVOITE: MERENKULUN HIILINEUTRAALIUS VUONNA 2050

Askeleet varustamoissa:

1. *Uudisrakennusten energiatehokkuus*
2. *Kasvihuonekaasupäästöjä vähentävät avustavat järjestelmät: tuuliroottorit, aurinkosähkö, purjeet, koneiston etäseuranta, navigointi ja ohjaus (laivan digitalisaatio)*
3. *Laivan nopeuden laskeminen, satamatoimintojen tehostaminen*
4. *Hiilineutraalit polttoaineet*

Lastinantajat:

5. *Oikea kuljetusmuoto oikealle lastille (maa/meri, irto/kontti/rekka)*

Viranomaiset ja regulaatorit:

6. *Määräykset ja tukijärjestelmät. Kilpailu.*

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Lähde: Tapaninen U. (2021). Six steps to reach carbon-free shipping. in K. Liuhto (ed.) Baltic Rim Economies, Centrum Balticum Foundation, 5/2021.

Virtual arrival

In shipping, vessels are usually scheduled to meet certain arrival times at a port in order to start time counting whether the berth is actually free on arrival or not. If the assigned berth is not free, the vessel will drop anchor on arrival and tender notice from the roads. In other words, the vessel will sail the whole passage with normal speed even though it is known that there will be delays at berthing.

With the close cooperation with core customers, we are now testing Virtual arrival which means that together with the Charterer we can agree to reduce the vessel's speed to meet a revised arrival time when there is a known delay at the port. By reducing the vessel's speed, it is also possible to reduce the consumption and consequently CO2-emissions and congestion in the port and anchorage area when the vessel is able to enter the port directly on arrival.

Afterwards the difference between the consumption on normal speed and actual consumption as a result of Virtual Arrival is compared and the savings are shared between us and the customer.

"In the next 20 years the maritime industry must rebuild its cargo fleet. ***If this is done with the radical technologies now available, it will lead to the biggest change in ship design since steam replaced sail in the 19th century****."*



Coronavirus, Climate Change & Smart Shipping

THREE MARITIME SCENARIOS

2020 – 2050

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TECHNOLOGY

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Shipping needs $3.4trn investment to meet 2050 decarbonisation target, Stopford says

Renowned economist says shipowners should work with charterers to finance new types of vessels

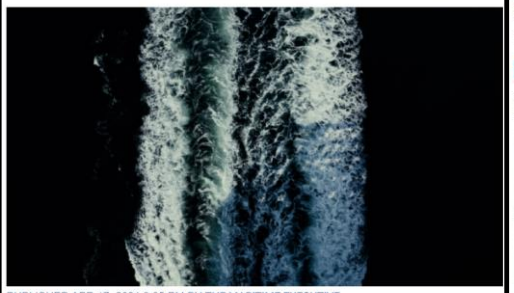
15 April 2021 13:34 GMT *UPDATED 16 April 2021 15:07 GMT*

By **Max Tingyao Lin** in **London**

The shipping industry will need to invest more than $3trn in low-emission vessels over

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Industry Leaders Collaborate to Develop Ammonia Shipping Fuel Guidance



PUBLISHED APR 17, 2021 3:05 PM BY THE MARITIME EXECUTIVE

This week, Lloyd's Register's Decarbonization Hub, A.P. Moller-Maersk, MAN Energy Solutions, Mitsubishi Heavy Industries, NYK Line, Total and the Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping are joining forces in a new project with the purpose of guiding safe use of ammonia as a fuel for shipping.

marine insight

[65% OFF Limited-Time Offer] 4 New Marine Electrical Maintenance and Trouble

World's First Liquid Hydrogen-Power Ship Delivered

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Engineering and design services provider LMG Marin has confirmed that HYDRA, the wor liquefied hydrogen-powered ship, has been delivered to Norway's ferry operator Norled.



Image Credits: LMG Marin

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Norsepower will fit Vale's VLOC charter with rotor sails



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SECTOR REGION MARITIME CEO CONTRIBUTIONS PUBLICATIONS EVENTS JOBS

Bill Gates joins nuclear-powered shipping push



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SECTOR REGION MARITIME CEO CONTRIBUTIONS PUBLICATIONS EVENTS JOBS

Maersk orders up to twelve methanol-fuelled 16,000 teu ships at Hyundai Heavy



VESSEL PERFORMANCE OPTIMISATION

New concept design for ammonia-fuel ready LNG-fuelled ship

SHIP DESIGN SEPTEMBER 9, 2021



Check out the Netherlands' first electric – and it's got swappable batteries



The electric inland ship Alphenaar today sailed its maiden voyage, from Alphen aan den Rijn to Moerdijk in the Netherlands, for Dutch beer giant Heineken. The Alphenaar is the first electric inland shipping vessel in the Netherlands to launch – and it uses swappable batteries.

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SECTOR REGION MARITIME CEO CONTRIBUTIONS PUBLICATIONS

Norwegian duo set out to build ammonia bunkering terminals



Copenhagen, 26 November 2020

Partnership aims to develop hydrogen ferry for Oslo-Copenhagen

DFDS and its partners have applied for EU support for development of a ferry powered by electricity from a hydrogen fuel cell which only emits water.



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SECTOR REGION MARITIME CEO CONTRIBUTIONS PUBLICATIONS EVENTS JOBS

World's first hydrogen cargo vessel set for Paris debut



The European innovation project Flagships will deploy the world's first commercial cargo transp operating on hydrogen later this year, plying the river Seine in Paris, gliding passed the Eiffel To

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STENA ELEKTRA © Stena Line

Stena´s pathway to decarbonise its shipping operations

The scale of shipping's challenge to transition from fossil-based fuels to renewables must not be underestimated. We are a global industry, and ships must be able to serve all ports. There is still no easy answer on which technology to use and vessels built today could operate for up

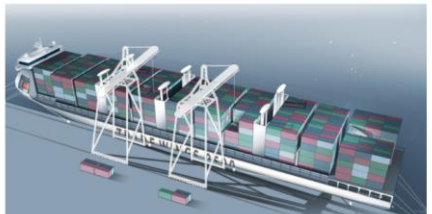
Wind-assisted, LNG-electric containership Trade Wings 2,500 wins BV's AiP

BUSINESS DEVELOPMENTS & PROJECTS

May 17, 2021, by Fatima Bahtić

The 2,500 TEU vessel, which has been designed jointly by VPLP Design, Alwena Shipping, SDARI and AYRO, received an Approval in Principle (AiP) from the classification society Bureau Veritas.

With an overall length of 197 meters and a breadth of 32 meters, Trade Wings 2,500 features six Oceanwings wingsails installed on a vertical sliding mechanism so that they can be retracted partially while the vessel is in port, thus minimising the impact on cargo operations.



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19 Aug 2021

The world's first commercial vessel powered 100% by hydrogen fuel cell has been launched.

Sea Change is a 7oft, zero-emissions, hydrogen fuel cell-powered, electric-drive ferry that will operate in the California Bay Area. Built by All American Marine, Inc. (AAMI) and owned by SWITCH Maritime (SWITCH), the ferry will be the first hydrogen fuel cell vessel in the US.

"Hydrogen-fuel cell technology will prove to be a robust alternative to conventional powertrain technologies," said Ron Wille, AAM president & COO. "AAM is continuing our tradition of building vessels on the leading edge of technology using advanced propulsion methods, which is why we are so proud to have to completed construction on such a revolutionary vessel."

How does it work?

Now undergoing operational trials, the ferry is equipped with a hydrogen fuel cell power package provided by Zero Emissions Industries (formerly Golden



Sea Change will operate in the California Bay Area. Photo: All American

World's First Zero-Emission Wind and Hydrogen Power Cargo Ship

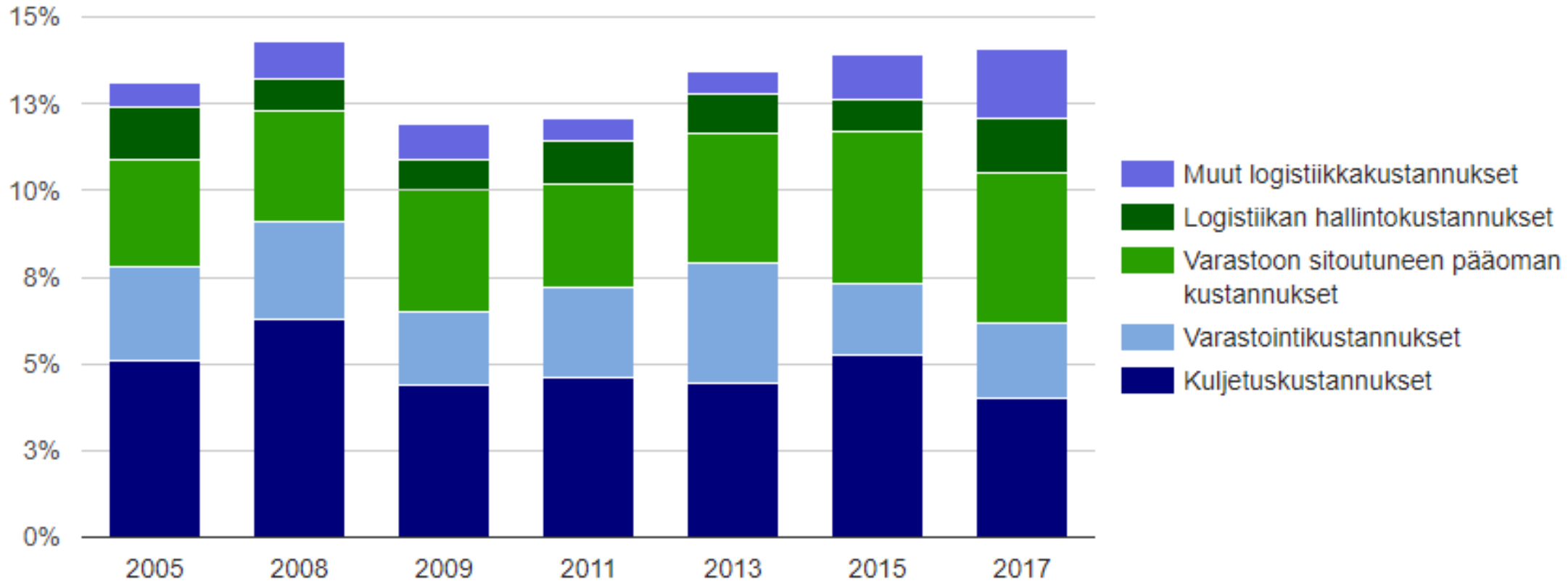


Concept design for the zero-emission buler (Egil Ulvan Reden)

PUBLISHED MAR 26, 2021 7:44 PM BY THE MARITIME EXECUTIVE

A Norwegian partnership is moving forward with the development of what they are calling the world's first zero-emission cargo ship. After a six-month competition, with more than 31 ship owners bidding on the project, the contract for the construction has been awarded. The team expected to complete the design this year so that the vessel can enter service by 2024.

TEOLLISUUDEN JA KAUPAN LOGISTIIKKAKUSTANNUKSET % LIIKEVAIHDOSTA



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Lähde: Solakivi, T. ja kumpp (2018)
Kansallinen logistiikkaselvitys

Splash 247.com

DNV
TURN UNCERTAINTY





Amazon, Ikea, Unilever and Michelin are among nine multinational companies that have committed to switching all of their ocean freight to vessels powered by zero-carbon fuels by 2040.

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15 FINANCIAL INSTITUTIONS DISCLOSE THE CLIMATE ALIGNMENT OF THEIR SHIP FINANCE PORTFOLIOS

In a first-of-a-kind climate finance report, 15 Signatories of the Poseidon Principles disclose the climate alignment score of their ship finance portfolios. The Poseidon Principles Annual Disclosure Report 2020 shows that 3 banks' ship finance portfolios are aligned with UN decarbonization targets while 12 banks' portfolios are not. The climate assessment offers banks new insight into their lending decisions and provides opportunity to work with their shipping clients to meet society's goals.

International ship finance confirms its leadership role in global climate finance. Announced in June 2019, the Poseidon Principles became the first sector-specific climate alignment agreement for financial institutions. Today, Signatories deliver on their commitment and publish the Poseidon Principles Annual Disclosure Report 2020 – the first sector-specific climate alignment report of its kind.The Poseidon Principles establish a global framework to quantitatively assess and disclose whether financial institutions' lending portfolios are in line with climate goals set by UN maritime agency, the International Maritime Organization (IMO). The IMO's initial GHG strategy prescribes that international shipping must reduce its total annual greenhouse gas emissions by at least 50% of 2008 levels by 2050, whilst pursuing efforts towards phasing them out as soon as possible in this century.

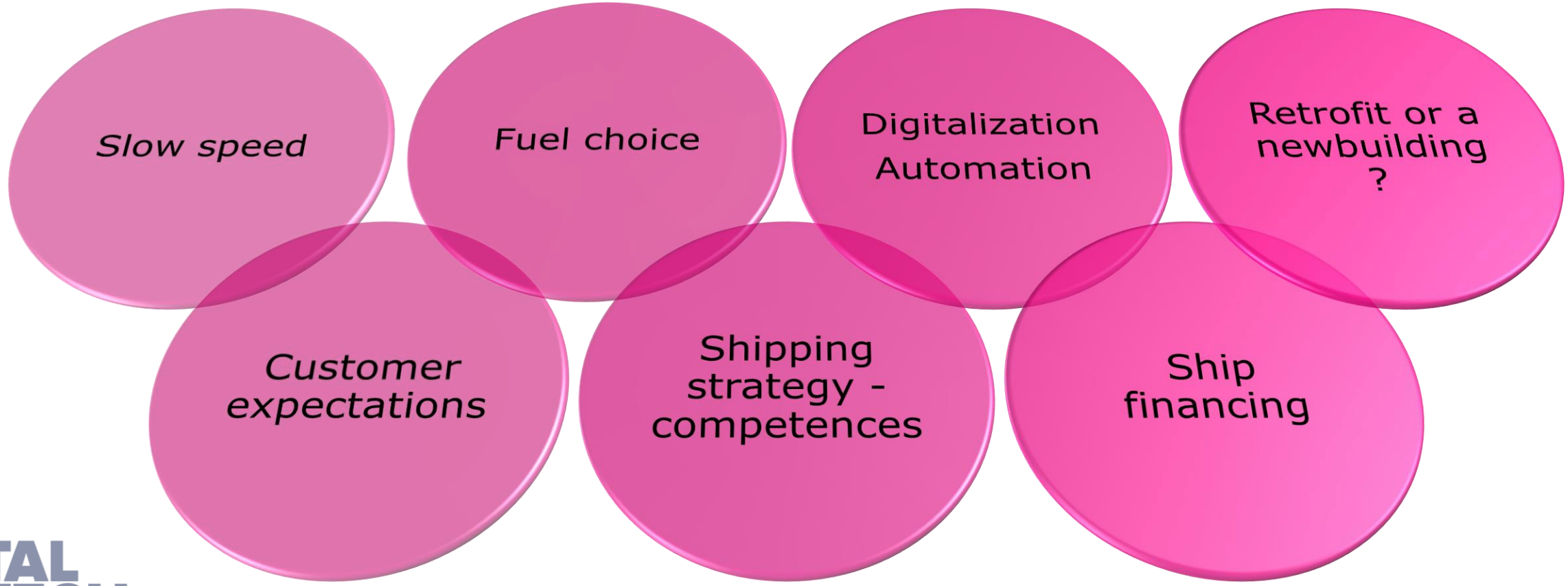
"This report marks a significant milestone for global ship finance and for climate finance reporting as a whole. I commend my fellow Signatories for their pioneering efforts to be transparent and accountable for their role in promoting responsible environmental behavior. I encourage other serious banks and export credit agencies to join us in supporting global seaborne trade in a sustainable manner," says **Michael Parker, Chairman, Global Shipping, Logistics and Offshore, Citi, and Chair of the Poseidon Principles Association.**

Climate assessment will inform future decision-making

The Poseidon Principles Annual Disclosure Report 2020 includes climate alignment reporting from 15 financial institutions, most of which became Signatories in 2019, including **ABN Amro, Amsterdam Trade Bank, BNP Paribas, Bpifrance Assurance Export, CIC, Citi, Credit Agricole Corporate and Investment Bank, Danish Ship Finance, Danske Bank, DNB, Eksportkreditt Norge, ING, Nordea, Sparbanken Vest,** and **Societe Generale**. Financial institutions that joined the Poseidon Principles in 2020 are not required to report before 2021. The assessment by each Signatory includes emissions data collected from clients and the portfolio information from 2019, compared to a decarbonization trajectory for the same year. It shows that 3 financial institutions' ship finance portfolios are aligned with the IMO's initial GHG strategy while 12 banks' portfolios are not. More importantly, the report includes commentary from financial institutions on key takeaways from their climate assessment, and reflections on how it will inform their business activities and decision-making in the future.

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THIS IS NOT A (ONLY) A TECNOLOGICAL PROBLEM BUT REORGANISING THE STRATEGY OF THE SHIPPING CLUSTER



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17 June 2021

Further shipping GHG emission reduction measures adopted



Press release | 14 July 2021 | Brussels

European Green Deal: Commission proposes transformation of EU economy and society to meet climate ambitions

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Today, the European Commission adopted a package of proposals to make the EU's climate, energy, land use, transport and taxation **policies fit for reducing net greenhouse gas emissions by at least 55% by 2030**, compared to 1990 levels. Achieving these emission reductions in the next decade is crucial to Europe becoming the world's first climate-neutral continent by 2050 and making the European Green Deal a reality. With today's proposals, the Commission is presenting the legislative tools to **deliver on the targets agreed in the European Climate Law** and fundamentally transform our economy and society for a fair, green and prosperous future.

TÄRKEIMMÄT ONGELMAT IMO:N JA EU:N EHDOTUKSISSA:

- Riski hiilivuodosta. Lasteja voidaan reitittää pidempiä matkoja, jotta vältetään EU:n satamia.
- Raja 5000 GT, joka voi johtaa lastien siirtymiseen tehokkuuden/päästöjen kannalta liian pieniin aluksiin.

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Tänän!



Finnjet – financial catastrophy already when built.

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