

**TAL
TECH**

EESTI MEREAKADEEMIA

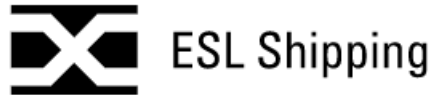
TIUKKENEVAT YMPÄRISTÖMÄÄRÄYKSET MUUTTAVAT RANNIKKO- JA SAARISTOLIIKENNETTÄ

Ulla Pirita Tapaninen, Tenured Associate Professor Maritime Transport

Estonian Maritime Academy
Tallinn University of Technology

4.5.2023

ULLA TAPANINEN



- She has experience in three different fields of expertise related to maritime field: **academic, business and public administration.**
- PhD from **Helsinki University of Technology** (later Aalto University) 1997
- Professor of maritime logistics in **University of Turku** 2005 -2012, Centre for Maritime studies. Adjunct Professor/Docent of maritime economics and logistics of University of Turku since 2010.
- Key positions in two Finnish shipping companies: a development and environmental manager in **Finnlines** (1996-2005) and member of board in **ESL Shipping** (2012 -).
- **City of Helsinki**, various positions related to transport, logistics, port operations, head of unit in city economic development department (2012-2021).
- Tallinn University of Technology, **Estonian Maritime Academy**, tenured associate professor, maritime transport (2021-).
- She has carried out dozens of research projects in academic, business and public administration, published dozens of academic journal articles, written several text books, is keen writer of blogs and invited speaker in seminars.
- She is also particularly well connected to Finnish and European maritime field, European Union, academies and business sector. Member of Finnish Intelligent Transport Society (ITS-Finland), Finnish Association of Purchasing and Logistics LOGY and The Finnish Maritime Society – Meriliitto.
- **Vuoden logistikko 2022** (Logistics professional in Finland).

MERENKULUN HAITALLISET VAIKUTUKSET YMPÄRISTÖÖN

- Onnettomuudet / turvallisuusriskit
- Öljypäästöt ja pilssivesi
- Kiinteät jätteet
- Myrkylliset pohjamaalit
- Nestemäiset jätteet
 - Mustavesi
 - Harmaavesi
 - Ruumien pesuvedet
 - Painolastivesi
- Päästöt ilmaan
 - Freonit
 - Typpipäästöt
 - **Rikkipäästöt**
 - Hiukkaset
 - Kasvihuonekaasupäästöt
- Skrubberijäte
- Melu, pinnan alla ja päällä

WE HAVE A MISSION

“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.”

**TAL
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Dr Martin Stopford |
President Clarkson
Research

Coronavirus, Climate Change & Smart Shipping

THREE MARITIME SCENARIOS

2020 – 2050

IMO:N MÄÄRÄYSET



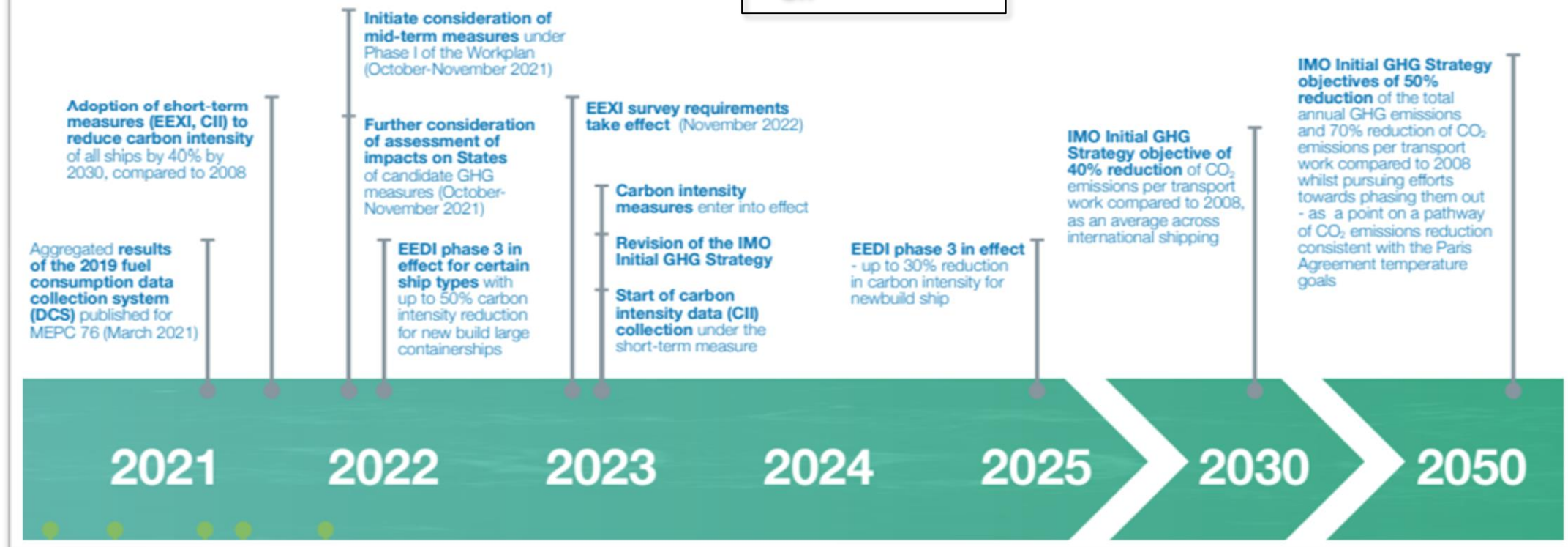
IMO INTERNATIONAL
MARITIME
ORGANIZATION

Rakenteelliset tekijät:

- EEDI
- EEXI
- SEEMP

Vaihtoehtoiset
polttoaineet

Ohjaavat keinot:
- CII



EU: FIT FOR 55

1. FuelEU Maritime, polttoaineen hiilipitoisuuden lasku
2. EU ETS, Merenkulku päästökauppaan > 5000 GT
3. ETCD - Energy Taxation Directive, merenkulun polttoaineitten verotus
4. (AFI) Vaihtoehtoisten polttoaineiden infra ja maasähkö



Inventory of GHG Emissions from International Shipping 2012-2018

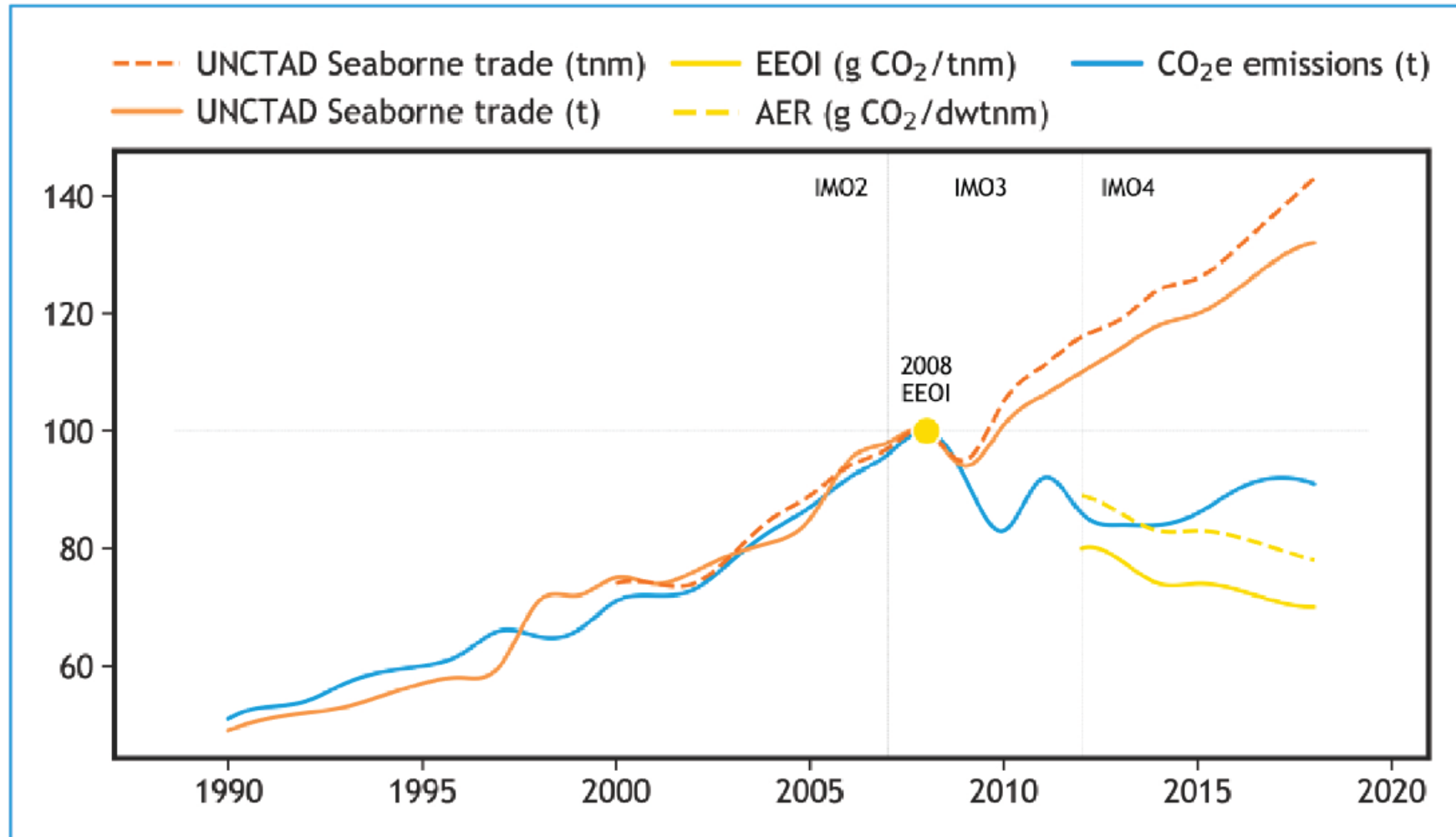
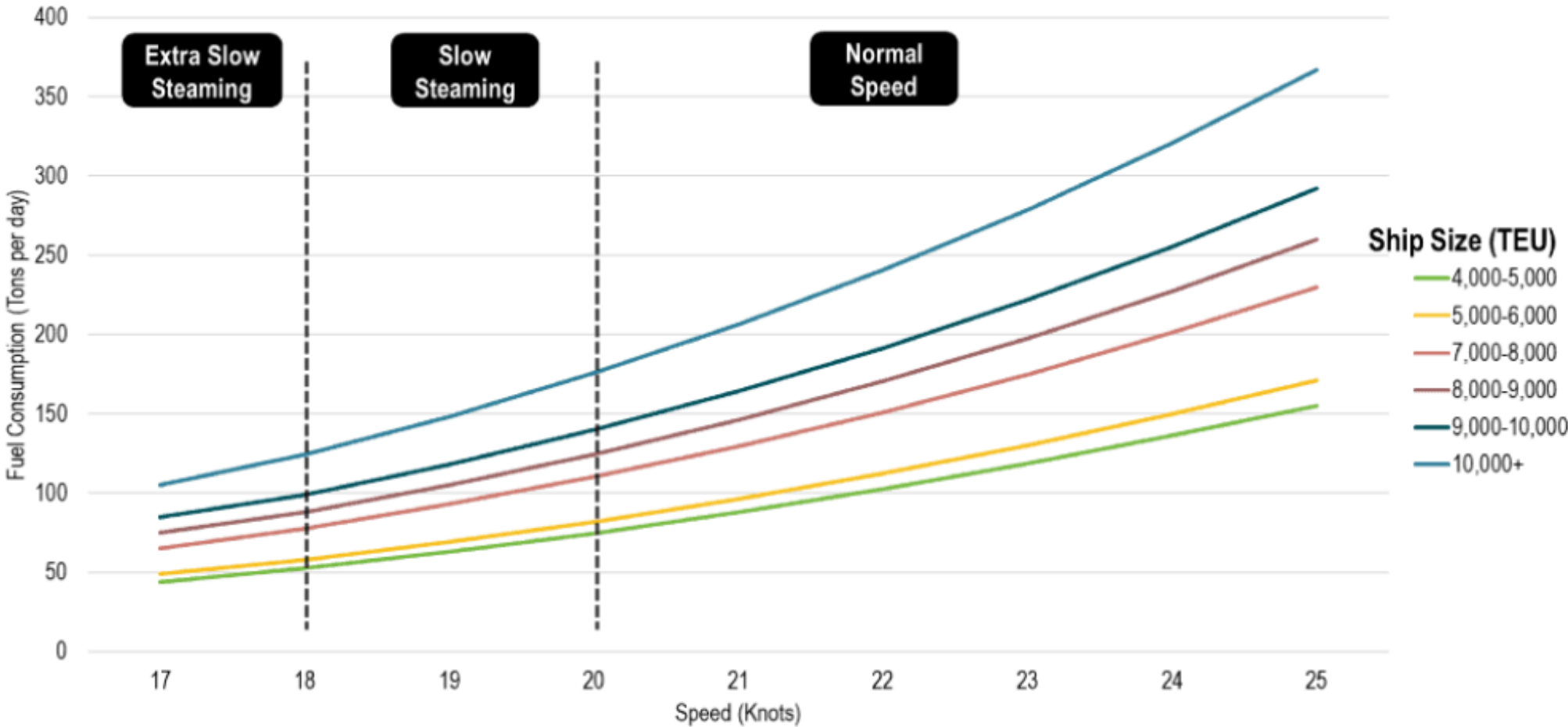


Figure 2 – International shipping emissions and trade metrics, indexed in 2008, for the period 1990-2018, according to the voyage-based allocation¹ of international emissions²

Source: Fourth IMO GHG Study 2020

Fuel Consumption by Containership Size and Speed

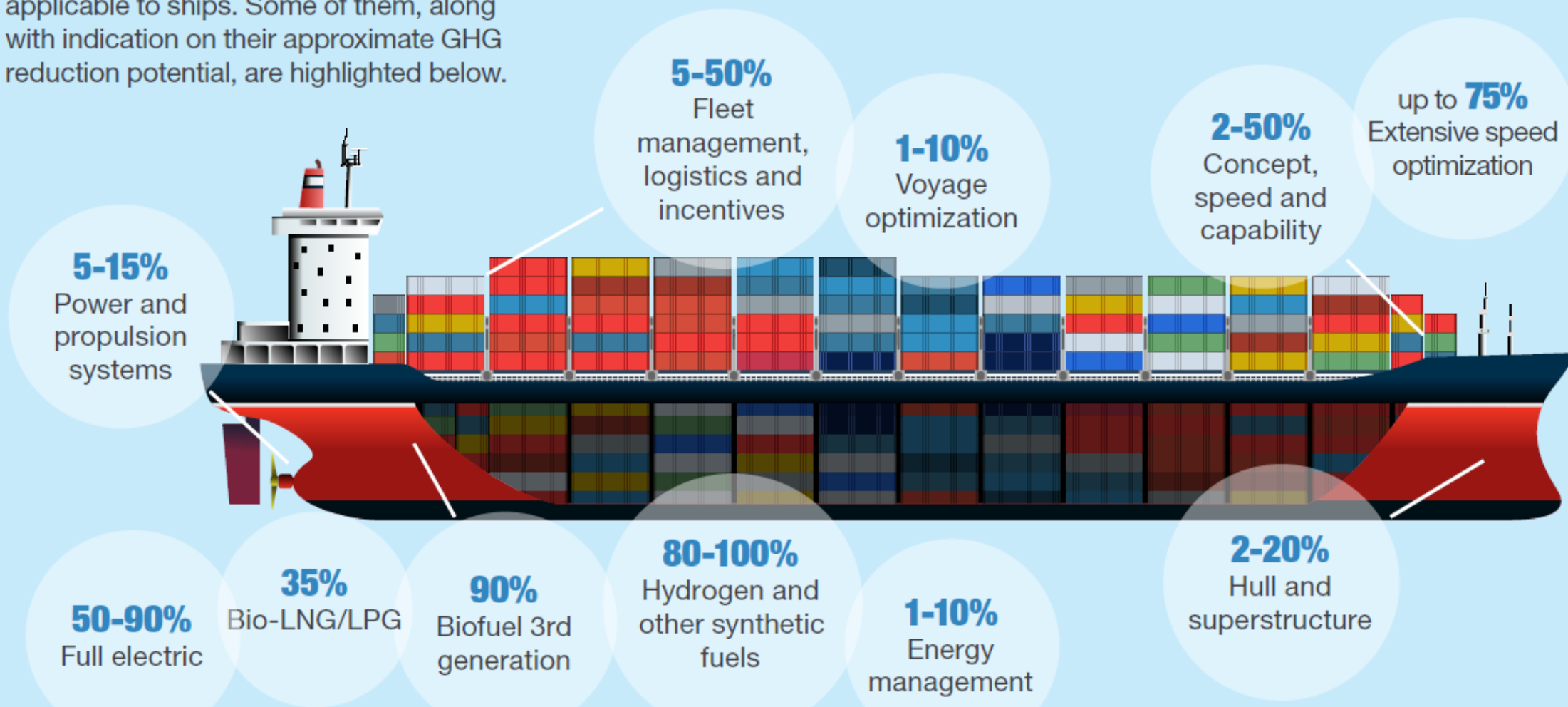


Fuel Consumption by Containership Size and Speed

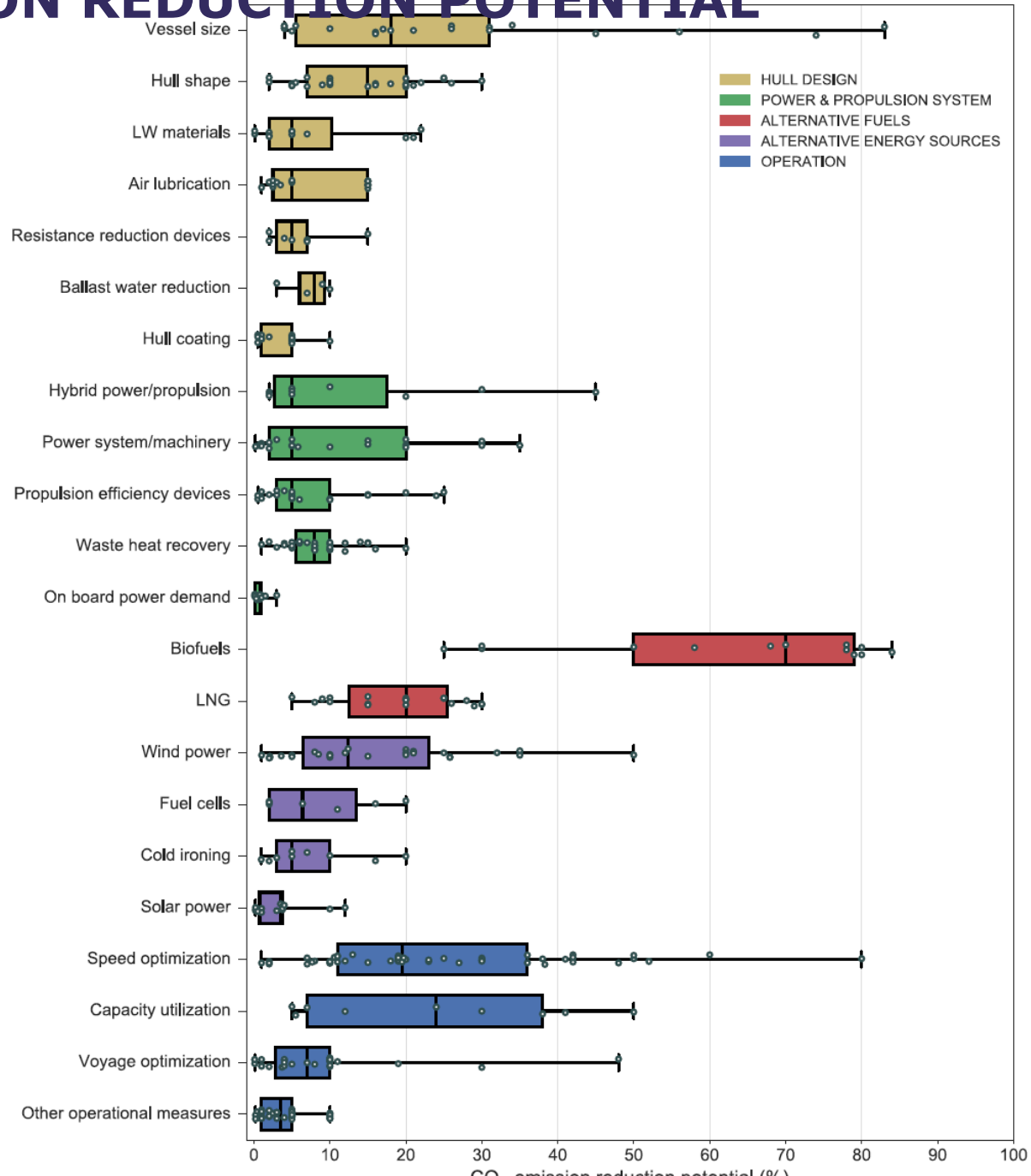
The Geography of Transport Systems
Jean-Paul Rodrigue (2020)

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.



CO2 EMISSION REDUCTION POTENTIAL



Source: Bouman, E. A., Lindstad, E., Riiland, 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.

KUUSI ASKELTÄ PÄÄSTÖTTÖMÄÄN MERIKULJETUKSEEN

1. Uudisrakennusten energiatehokkuus
2. Teknisiä ratkaisuja: purjeet, roottorit, moottorin energiatehokkuus ja polttoainen optimointi, vesikuplat, sähköhybridit, ym.
3. Kehitä satamatoimintoja ja vähennä ajonopeutta
4. Valmistaudu uusiin polttoaineisiin
5. Lastinantajat: käy koko kuljetusketju läpi ja vaadi kuljetustoimittajilta päästöttömyyttä ja energiatehokkuutta. Varaudu maksamaan oma osasi.
6. Julkinen valta: ohjaa merisektoria tehokkaaseen ja markkinaehtoiseen päästöttömyyteen. Älä pysäytä kehitystä tukemalla vanhoja järjestelmiä tai rakenteita.



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.

KHK-PÄÄSTÖT VESI LIIKENTEeseen

- Päätetty

- IMO

- EEXI (Energy Efficiency Existing Ship Index) > 400 GT
 - EEDI (Energy Efficiency Design Index) > 400 GT
 - SEEMP(Ship Energy Efficiency Management Plan) > 400 GT
 - CII (Carbon Intensity Indicator) > 5000GT

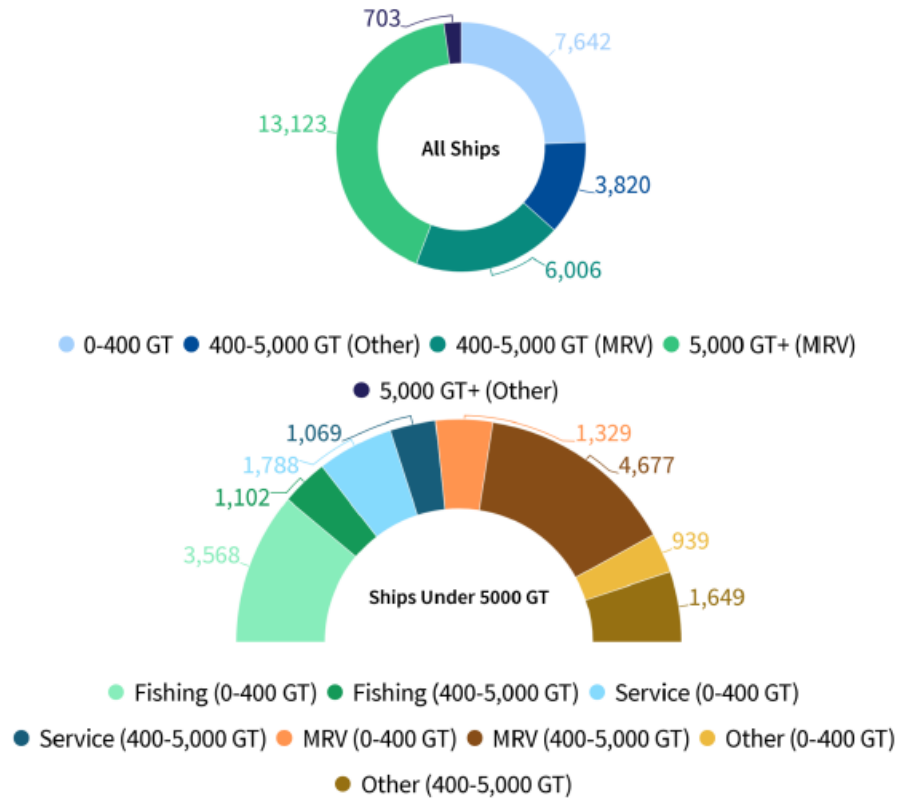
- EU

- MRV(Monitoring, Reporting, and Verification) >5000 GT, later > 400 GT
 - ETS (Emissions Trading System) >5000 GT, later > 400 GT
 - FuelEU Maritime >5000 GT



KHK-MÄÄRÄYSTEN ULKOPUOLELLA OLEVIEN ALUSTEN PÄÄSTÖT

Number of ships per size and type



Note: "MRV" indicates the ship types (containerships, bulk carriers, tankers, ro-ro, cruise...) regulated under the EU MRV.

Figure 6: Number of ships per size and type

Exempted emissions: small number of offshore vessels emit large amounts

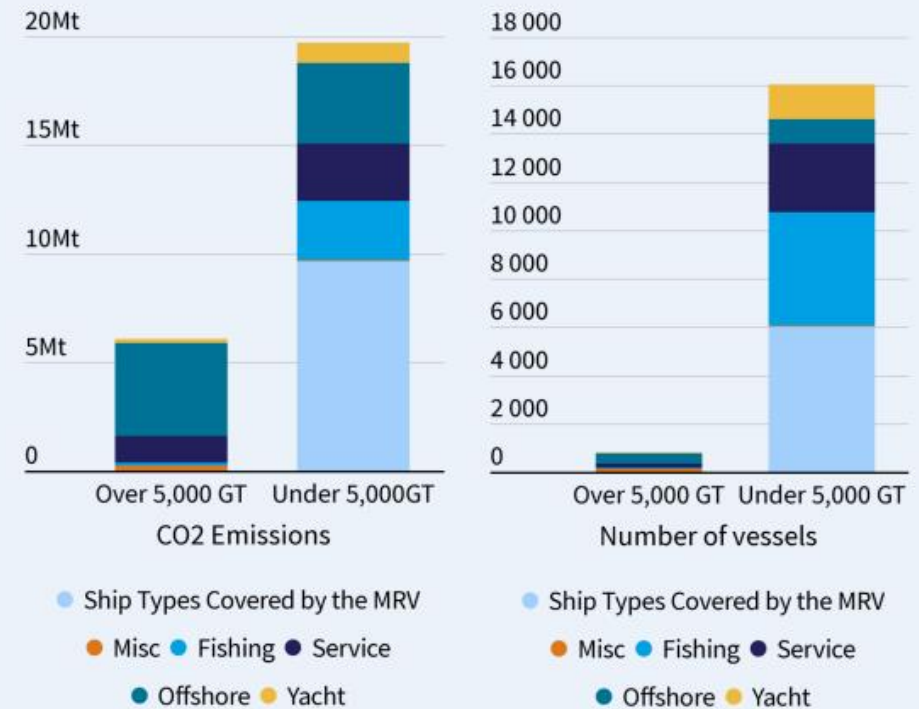


Figure E.2: Amount of exempted emissions and vessels on either side of the 5,000 GT threshold

PÄÄSTÖTTÖMÄN LIIKENTEN RATKAISUT PIENEMMILLE ALUKSILLE

- Pienet alukset ovat edelläkävijöitä kasvihuonekaasujen vähentämisessä
 - Nopea kehitys määräyksistä riippumatta
- Potentiaalisia teknologisia ratkaisuja:
 - Plug-in hybrid (diesel-electric, maasähkö)
 - Hybrid (diesel-electric)
 - Täyssähköinen

Muita kehitystoimia:

- Slow speeding
- Energiapihit moottorit
- Lämmöntalteenotto
- Ajoreitit ym operaatiiviset toimet, satama-aika
- Automaatio

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KIITOS !

Lisää blogissa: ullatapaninen.net