



MARPOL AT 50
OUR COMMITMENT GOES ON

IMO's efforts in phasing out GHG emissions from international shipping

February 2023

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IMO Secretariat

International Maritime Organization (IMO): a global regulator for a global industry



United Nations Specialized Agency mandated to define a **global regulatory framework** to ensure safe, secure and efficient shipping on cleaner oceans



Established in 1948. Headquartered in London



175 Member States, 3 associated members, 143 observer organizations (IGOs and NGOs)



IMO regulates > 50,000 ships trading worldwide



IMO's instruments contain **binding obligations**, which are **enforced globally by flag and port States**



**Safe, secure and
efficient shipping on
cleaner oceans**

Climate change impacts



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WMO: Climate change in Africa can destabilize 'countries and entire regions'



IOM/Amanda Nero | Unlike in other parts of the Africa, women constitute the majority of migrants in the East and Horn of Africa Region.



United Nations
Climate Change

27 October 2020

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Article



Credit: WMO/Comel Vermaak

Home / COP25 / Climate Change in Africa

Climate Change in Africa



Africa, despite its low contribution to greenhouse gas emissions, remains the most vulnerable continent.

Africa is the most vulnerable continent to climate change impacts under all climate scenarios above 1.5 degrees Celsius. Despite having contributed the least to global warming and having the lowest emissions, Africa faces exponential collateral damage, posing systemic risks to its economies, infrastructure investments, water and food systems, public health, agriculture, and livelihoods, threatening to undo its modest development gains and slip into higher levels of extreme poverty. The following factors contribute to Africa's vulnerability:

Climate change impacts



UNCTAD Prosperity for all

Climate change impacts on seaports: A growing threat to sustainable trade and development

04 June 2021

Written by Regina Asariotis, Article No. 75 [UNCTAD Transport and Trade Facilitation Newsletter N°90 - Second Quarter 2021]



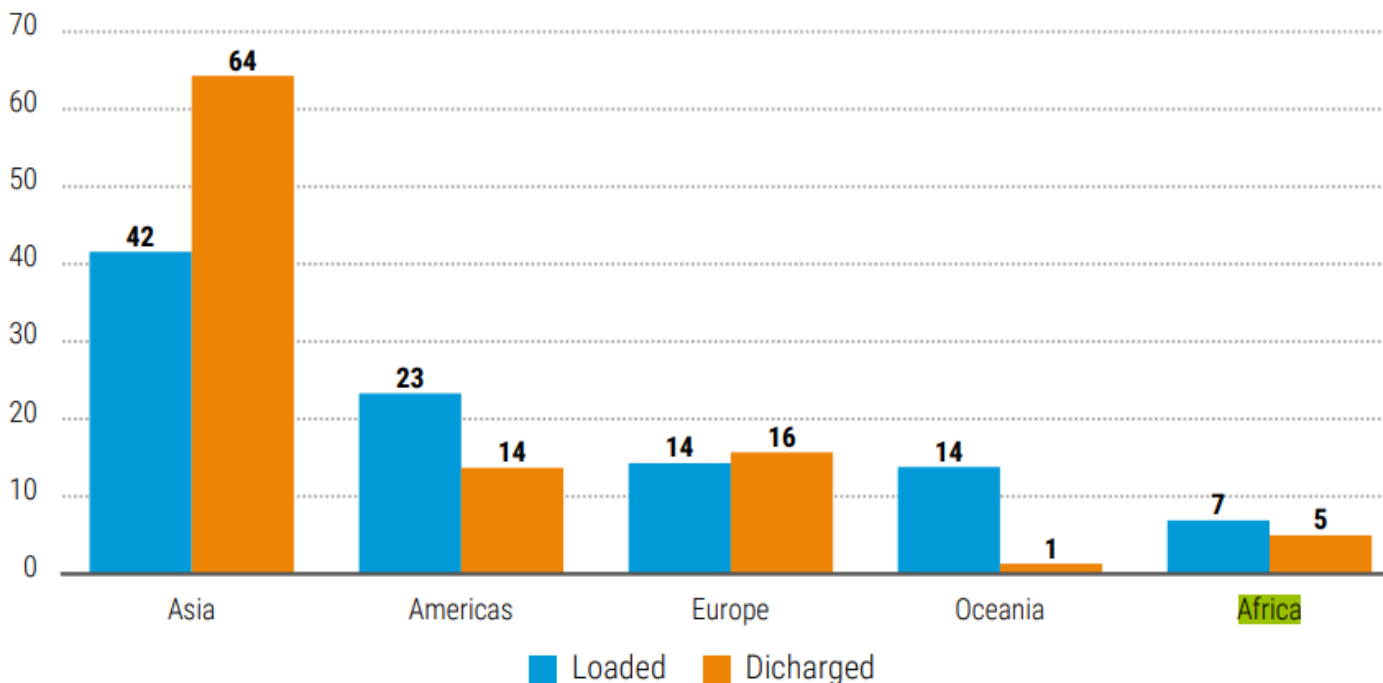
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Maritime outlook



UNCTAD Prosperity for all

Figure 1.4 International maritime trade, by region, 2021
(percentage share in world tonnage)



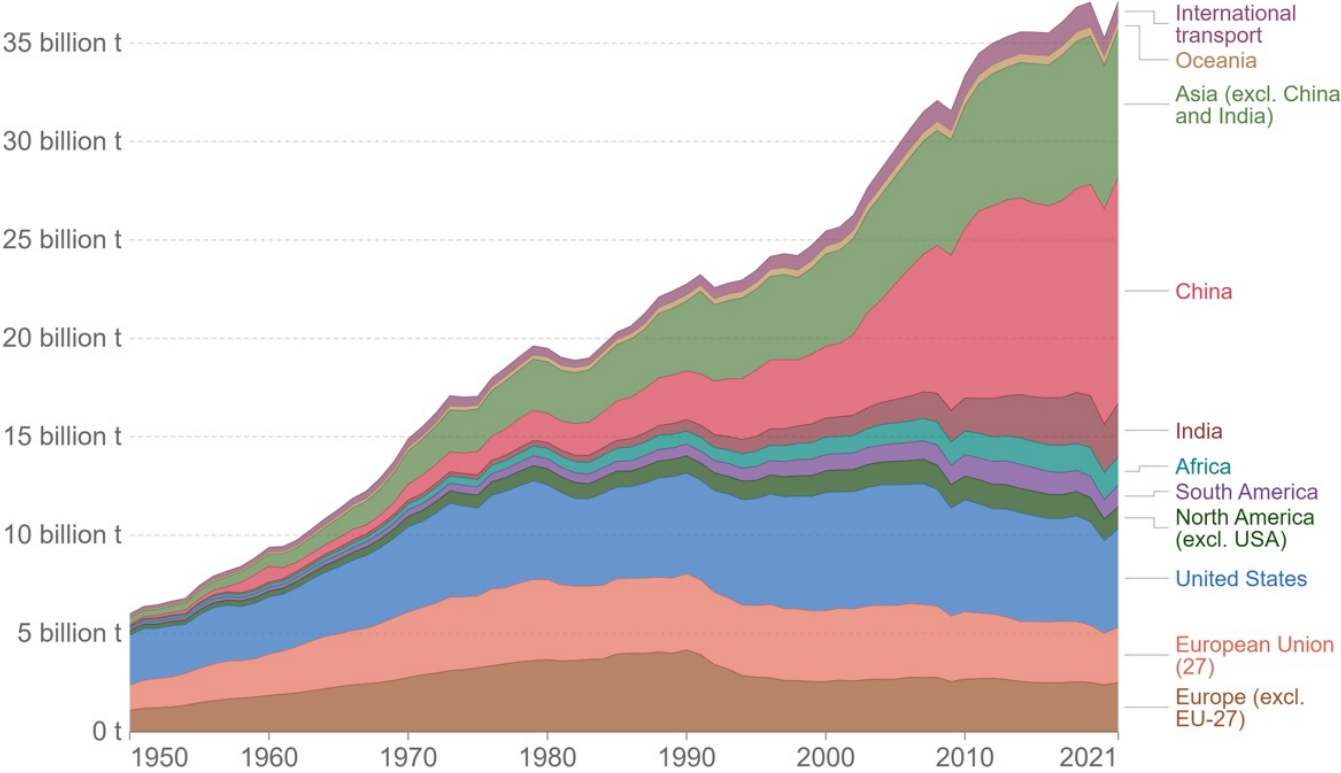
Source: UNCTAD secretariat, based on table 1.2 of this report.

Climate change impacts

Annual CO₂ emissions by world region

This measures fossil fuel and industry emissions¹. Land use change is not included.

Our World
in Data

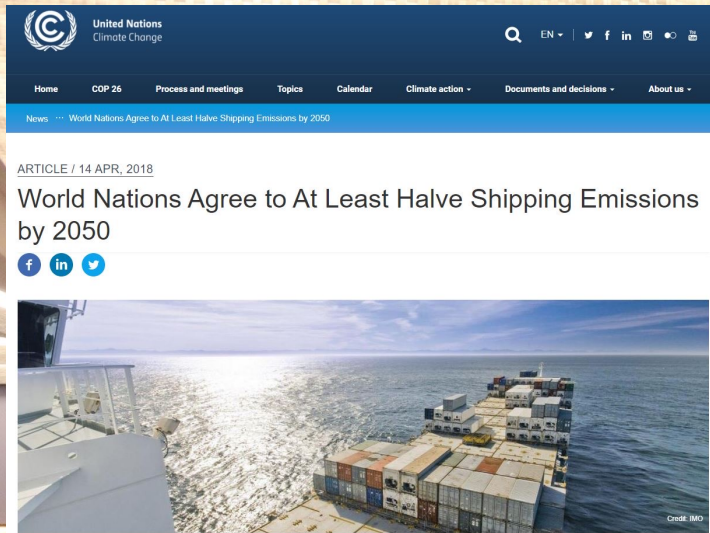


Source: Our World in Data based on the Global Carbon Project (2022)

OurWorldInData.org/co2-and-greenhouse-gas-emissions • CC BY

1. Fossil emissions: Fossil emissions measure the quantity of carbon dioxide (CO₂) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil CO₂ includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.

Action to reduce GHG emissions from international shipping: 2018 IMO Initial GHG Strategy



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News World Nations Agree to At Least Halve Shipping Emissions by 2050

ARTICLE / 14 APR, 2018

World Nations Agree to At Least Halve Shipping Emissions by 2050

f in t



MEPC 72/17/Add.1
Annex 11, page 1

ANNEX 11
RESOLUTION MEPC.304(72)
(adopted on 13 April 2018)

INITIAL IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE

RECALLING Article 38(e) of the Convention on the International Maritime Organization (the Organization) concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

ACKNOWLEDGING that work to address greenhouse gas (GHG) emissions from ships has been undertaken by the Organization continuously since 1997, in particular, through adopting global mandatory technical and operational energy efficiency measures for ships under MARPOL Annex VI,

ACKNOWLEDGING ALSO the decision of the thirtieth session of the Assembly in December 2017 that adopted for the Organization a strategic direction entitled "Respond to Climate Change",

RECALLING the United Nations 2030 Agenda for Sustainable Development,

1. ADOPTS the Initial IMO Strategy on Reduction of GHG Emissions from Ships (hereinafter the Initial Strategy) as set out in the annex to the present resolution;
2. INVITES the Secretary-General of the Organization to make adequate provisions in the Integrated Technical Cooperation Programme (ITCP) to support relevant follow-up actions of the Initial Strategy, that may be further decided by the Committee and undertaken by developing countries, particularly least developed countries (LDCs) and small island developing States (SIDS);
3. AGREES to keep the Initial Strategy under review, with a view to adoption of a Revised IMO Strategy on reduction of GHG emissions from ships in 2023.

adopted

1\MEPC\72\MEPC 72-17-ADD.1.docx

IMO's existing strategic objectives in reducing GHG emissions from international shipping

2018 Initial IMO GHG Strategy

Vision

- **To phase out GHG emissions from international shipping** as soon as possible in this century

Levels of ambitions

- Further **strengthen energy efficiency design requirements** for ships
- **2030**: reduce **carbon intensity by at least 40%**, compared to 2008
- **2050**: reduce **total GHG emissions by at least 50%**, compared to 2008

Other key elements

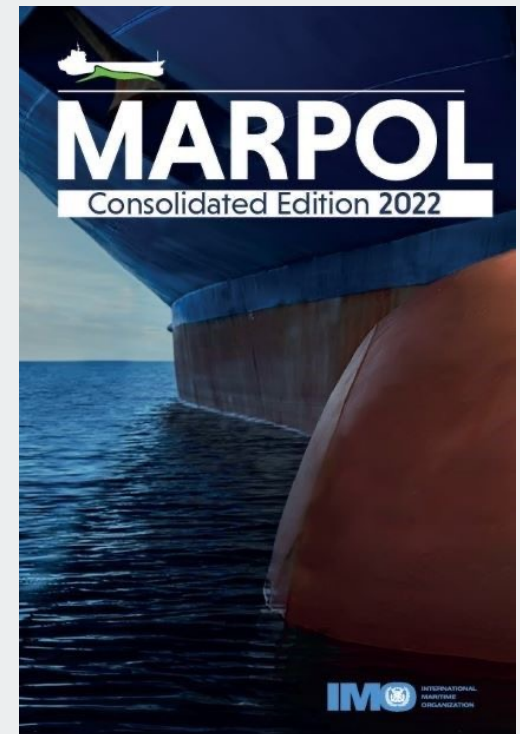
- **Impacts on States** of candidate GHG reduction measures to be assessed before adoption
- Initial Strategy to be **revised by 2023**

MARPOL Annex VI: IMO's binding regulations to reduce air pollution from ships

MARPOL is the International Convention for the Prevention of Pollution from Ships, adopted in 1973

MARPOL Annex VI on Air Pollution from Ships:

- adopted in 1997
- ratified by **105 States - 97% of world tonnage**
- converts strategic objectives (GHG Strategy) into **binding requirements**
- **Chapter 3** regulates **air pollution**: sulphur content of bunker fuels (“IMO2020”) – emission control areas (ECAs), NOx emissions from engines, etc.
- **Chapter 4** regulates **carbon intensity of ships** (GHG emissions)



GHG reduction: Over 10-years of mandatory IMO energy-efficiency requirements in MARPOL Annex VI

MARPOL Annex VI regulations

Ship Energy Efficiency Management Plan (SEEMP)

Since 2013: Each ship shall have a **ship-specific SEEMP** on board

Energy Efficiency Design Index (EEDI)

Since 2015: Gradually **more stringent energy efficiency performance of new build ships** under subsequent EEDI phases

IMO's Fuel Consumption Data Collection System (DCS)

Since 2019: Ships over 5,000 gt to report **annual fuel consumption data** to their Administration; forwarded to IMO

2021: 109 Administrations - ≥ 28,000 ships - 212 million tonnes of fuel

Implementing the Initial GHG Strategy: IMO short-term GHG reduction measure

New regulations in MARPOL Annex VI on 'EEXI' and 'CII'

- **Entry-into-force November 2022 – review/strengthening by 2026**
- Designed to attain 2030 target in IMO GHG Strategy: reduce **40% carbon intensity reduction of global fleet**
- Each ship to achieve an **annually carbon intensity reduction factor**
- Based on annual fuel consumption, ships are **rated** against peers (ship type/size)
- **First annual CII rating (A – E)** to be based on **2023 fuel consumption**
- CII rating to be issued by Flag Administration: **“statement of compliance”**

01 November 2022

**Rules on ship
carbon intensity
and rating system
enter into force**



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Implementing the Initial GHG Strategy: IMO short-term GHG reduction measure

New regulations in MARPOL Annex VI on 'EEXI' and 'CII'

CARBON INTENSITY INDICATOR (CII RATING)



IMPROVING THE OPERATIONAL PERFORMANCE OF EXISTING SHIPS

Each year, ships of 5,000 gross tonnage and above **collect and report fuel consumption data.**

On the basis of this data,

A CARBON INTENSITY RATING IS ASSIGNED TO THE SHIP, FROM A TO E



There are a variety of operational means to **IMPROVE THE CARBON INTENSITY OF EXISTING SHIPS**

and achieve the Required CII, e.g.:

- Ship speed optimization
- Weather routing
- Just-in-time arrival
- Trim, draft, and ballast optimization



Poorly rated ships **have to implement**

A PLAN OF CORRECTIVE ACTIONS,

and the company is regularly audited incentives may be provided to best rated (A/B) ships



The requirements for CII rating ENTERED INTO EFFECT on 1 January 2023

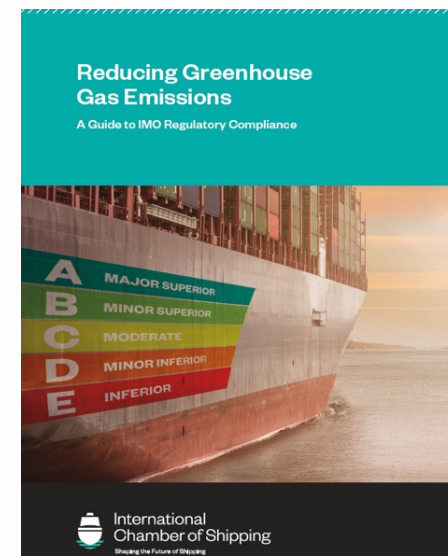


Implementing the Initial GHG Strategy: IMO short-term GHG reduction measure

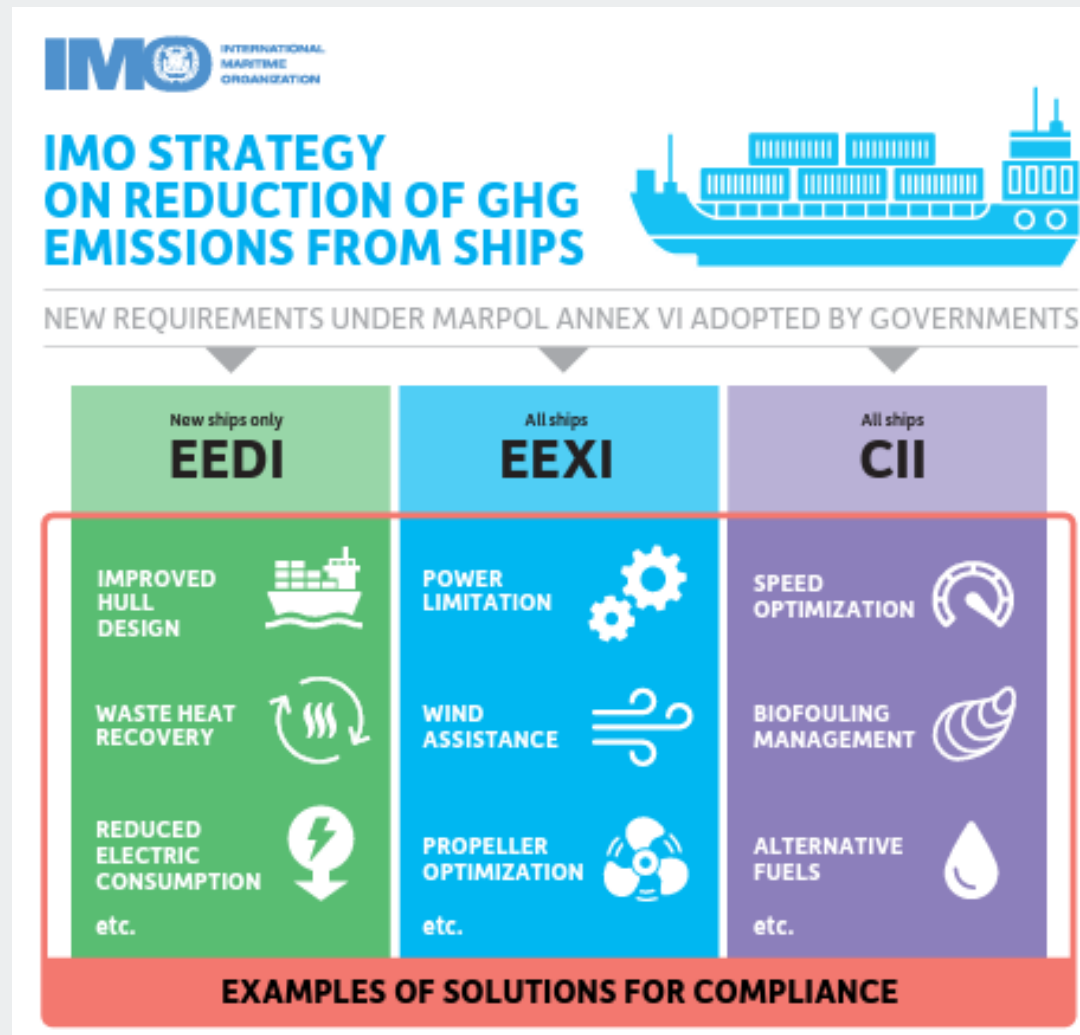
New regulations in MARPOL Annex VI on 'EEXI' and 'CII'

CII to enhance transparency and involvement of the maritime value chain:

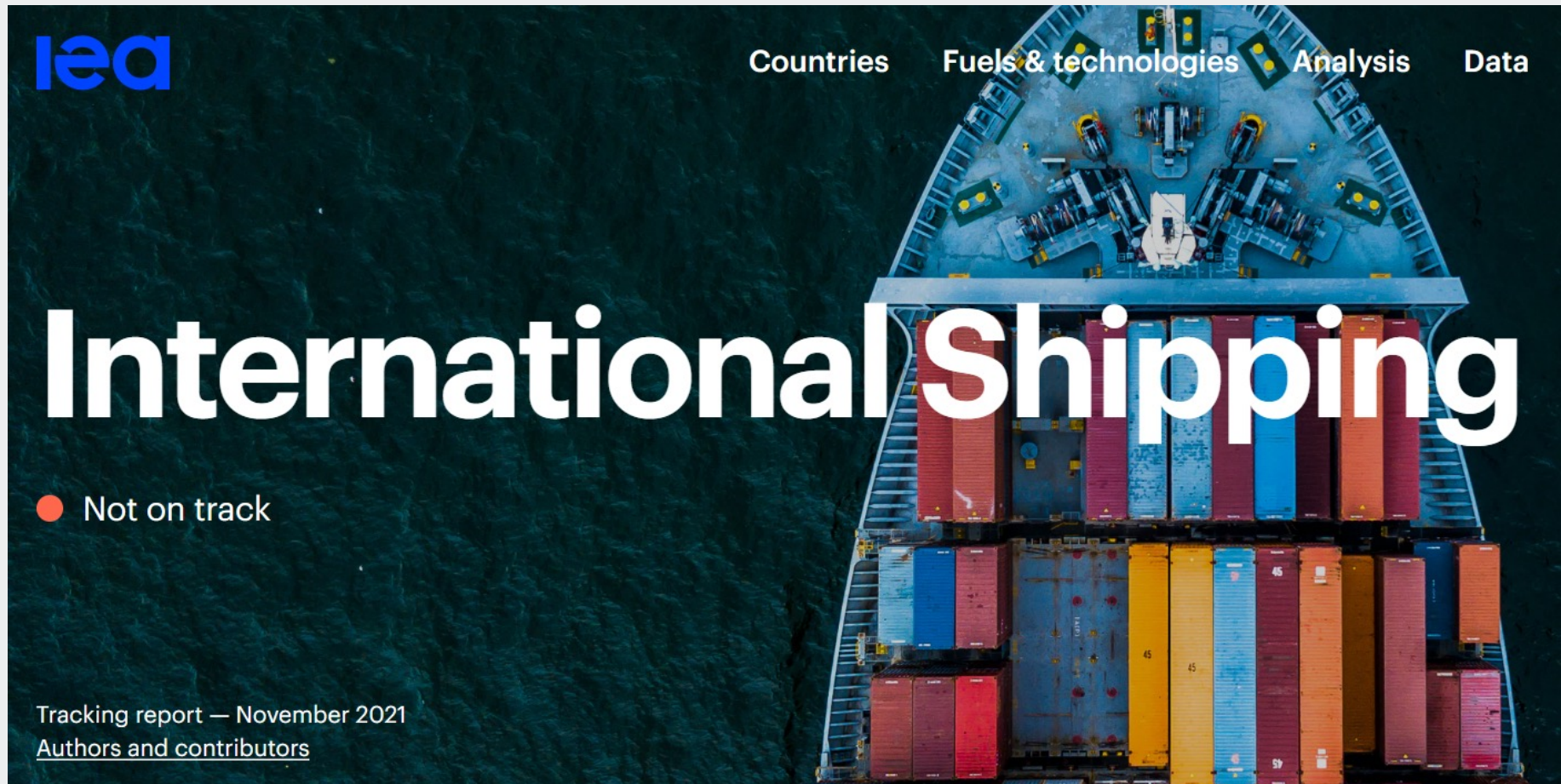
- **easy comparison tool** enhancing awareness of energy efficiency at all corporate/policy levels
- **valuable tool** for ports, charterers, financial sector, insurers, cargo owners, manufacturers to provide **incentives** to most energy efficient ships
- **increased** insight in **“Scope-3” emissions**
- continuous energy efficiency improvements will **reduce the world’s fleet overall energy needs**
- provides **building blocks** for future IMO GHG reduction measures



IMO goal-based regulations drive innovation and reduced fuel demand: carbon intensity compliance options



Towards the decarbonization of shipping: need to accelerate climate action



Source: International Energy Agency (IEA)

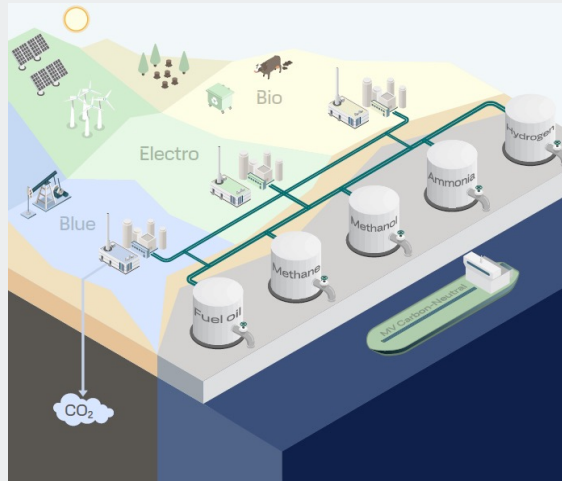
Towards the decarbonization of shipping: energy efficiency measures alone will not be enough



RECHARGE
Global news and intelligence for the Energy Transition

Liquid hydrogen as shipping fuel | Pioneering intercontinental H2 carrier gets technical green light

Kawasaki Heavy-designed vessel engineered to store 100 times more hydrogen than shipbuilder's Suiso Frontier, which delivered world's first liquefied H2 cargo in early 2022



Shipping giant Maersk to become major green hydrogen consumer as it embraces methanol fuel

Danish company has ordered 12 methanol-powered container vessels from shipbuilder Hyundai Heavy Industries

11 January 2022 19:17 GMT | UPDATED 13 January 2022 5:00 GMT

By Leigh Collins

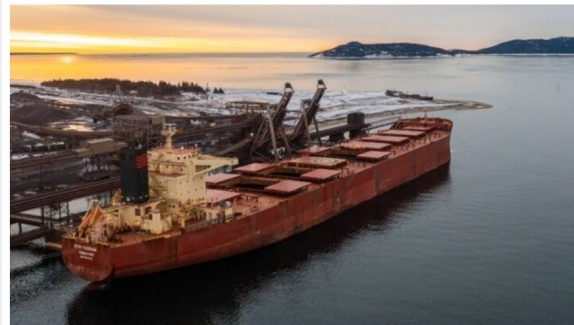
Op-Ed: Putting Bio-LNG and Synthetic LNG Into Focus



Image courtesy CMA CGM

PUBLISHED JUN 15, 2021 1:23 PM BY PETER KELLER

Rio Tinto and BP Starting Year-Long Sustain Trial of Biofuels



RTM Tasman loading at Iron Ore Company of Canada's Sept-Îles port in Quebec, during the first trial voyage using biofuel

PUBLISHED MAY 23, 2022 2:55 PM BY THE MARITIME EXECUTIVE

Shipbuilders Make Progress with Designs for Ammonia-Fueled Ships



Mitsubishi completed designs for a LPG-fueled gas carrier that it says will be simple to convert to ammonia (Mitsubishi Shipbuilding)

PUBLISHED JUN 9, 2022 6:37 PM BY THE MARITIME EXECUTIVE

Developing the global regulatory framework aimed at decarbonizing international shipping and ensuring a global level-playing-field

IMO's ongoing work on 5 key-pillars:

**.1
Revision
of the
Initial IMO
GHG
Strategy
(2023)**

.2 Lifecycle GHG emission guidelines

.3 Safety regulations for low-carbon marine fuels

.4 Further enhancement of the IMO Mandatory Fuel Consumption Reporting (MRV)

.5 Development of mid-term GHG reduction measures – including possible economic measures

Revision of the 2018 IMO GHG Strategy

MEPC 79 (Dec. 2022) reaffirmed its commitment to:

- adopt a revised IMO GHG Strategy by **MEPC 80** (July 2023)
- revise the IMO GHG Strategy in **all its elements**
- including a **strengthened level of ambition**

Main outstanding issues:

- **2050** level of GHG reduction; and possible **intermediate targets**
- How to ensure a “**just and equitable**” transition which leaves nobody behind
- **Life-cycle approach** to defining reduction targets (upstream vs. downstream emissions / well-to-wake vs. tank-to-wake)
- Supporting **1st movers** whilst ensuring a **global level-playing-field**



Developing the next set of mandatory GHG reduction regulations to enable the global fuel transition

MEPC 79 (Dec. 2022) reaffirmed its commitment to develop a ‘basket of mid-term GHG reduction measures’

- The ‘basket’ to contain both **technical and economic elements**
- Proposals for **technical measures**: e.g. ‘command-and-control measures’ based on a global GHG fuel standard
- Proposals for **economic measures**: e.g. carbon pricing based on a “levy”, “feebate”, “reward/incentive scheme”
- **Assessing impacts** of proposed measures on States
- Ensuring a **fair and equitable transition**



CARBON REVENUES FROM INTERNATIONAL SHIPPING:

ENABLING AN EFFECTIVE AND
EQUITABLE ENERGY TRANSITION



POLICY BRIEF
No. 103

JULY 2022

Climate-resilience of seaports: Adequate finance is critical for developing countries but remains a major challenge*

Climate change impacts on seaports can result in significant and costly damage, operational disruption and delay across global supply chains, with important implications for international trade and the sustainable development prospects of the most vulnerable countries. Timely and effective action on adaptation is a matter of growing urgency. Major scaling up of capacity-building and finance will be critical for developing countries, and time is of the essence.

Climate-resilient seaports are critical for sustainable trade development

With over 80% of global trade in goods carried by sea, seaports are key nodes in the network of global supply chains and critical for access to global markets, as well as the ocean economy. At the same time, these complex infrastructure assets, often integrated within large urban agglomerations, are at the frontline of climate change. Rising mean and extreme sea levels and extreme weather can result in significant damage, as well as costly disruption and delay across supply chains, with potentially far-reaching consequences for international trade and the sustainable development prospects of the most vulnerable nations.

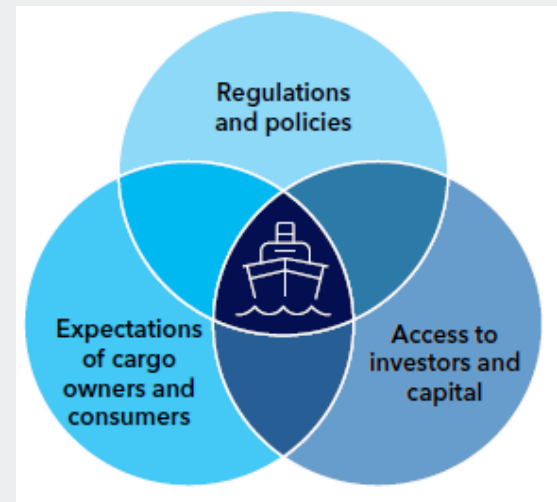
* This document has not been formally edited.

Towards 2050: ensuring a “just and equitable transition” in the revised IMO GHG Strategy and IMO’s next GHG reduction measures

“Leaving nobody behind”

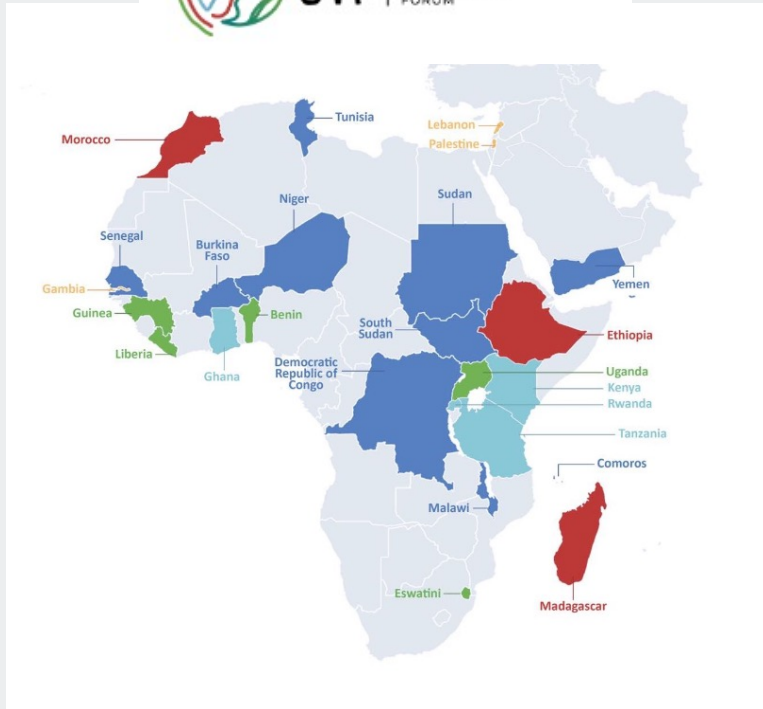
Possible building blocks:

- An IMO **2050** reduction **target for international shipping** would not prejudice **national** GHG reduction targets
- Assess potential impacts on States: e.g. **GDP**, **imports of carbon price on trade/imports of essential goods** before adoption of a future IMO measure
- **Use carbon revenues** to support developing States mitigating negative impacts of an IMO measure (e.g. port infrastructure, re-skilling, yard/retrofitting capacity)
- Increased **capacity building and technology cooperation** by IMO: ITCP, IMO GHG Trust Fund, Projects
- Climate crisis requires **urgent action** by all sectors



Key drivers influencing ship decarbonization
Source: DNV

Call for accelerated climate action in the maritime sector by various States and industry leaders



At COP 26 (Glasgow - Nov. 2021), the Climate Vulnerable Forum (CVF) expressed support for a global marine fuel levy



Vulnerable countries need help to adjust to carbon cuts in maritime transport

05 July 2021

Technical and financial assistance to poorer nations will help alleviate the costs of a planned transition to low-carbon shipping.



More countries back net-zero target at IMO

July 2023 is the next MEPC meeting to watch as countries decide which carbon-pricing plans to support

13 Jun 2022 | NEWS

Opportunities in the decarbonization of international shipping

Exploring opportunities in renewable fuel production for shipping in developing States

- Shipping is both the **'enabler'** of the global energy transition and a **'consumer'** of renewable marine fuels
- A global regulatory framework set by IMO will provide **certainty and predictability** which can **unlock investments** and **reduce freight rate fluctuations**
- IMO supports **renewable energy production initiatives in developing countries**

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6 African countries launch the Green Hydrogen Alliance

by The Exchange — May 24, 2022 in Africa, Energy Reading Time: 5 mins read 945 71

Six African nations have formally launched the Africa Green Hydrogen Alliance. They include South Africa, Kenya, Egypt, Morocco, Namibia and Mauritania

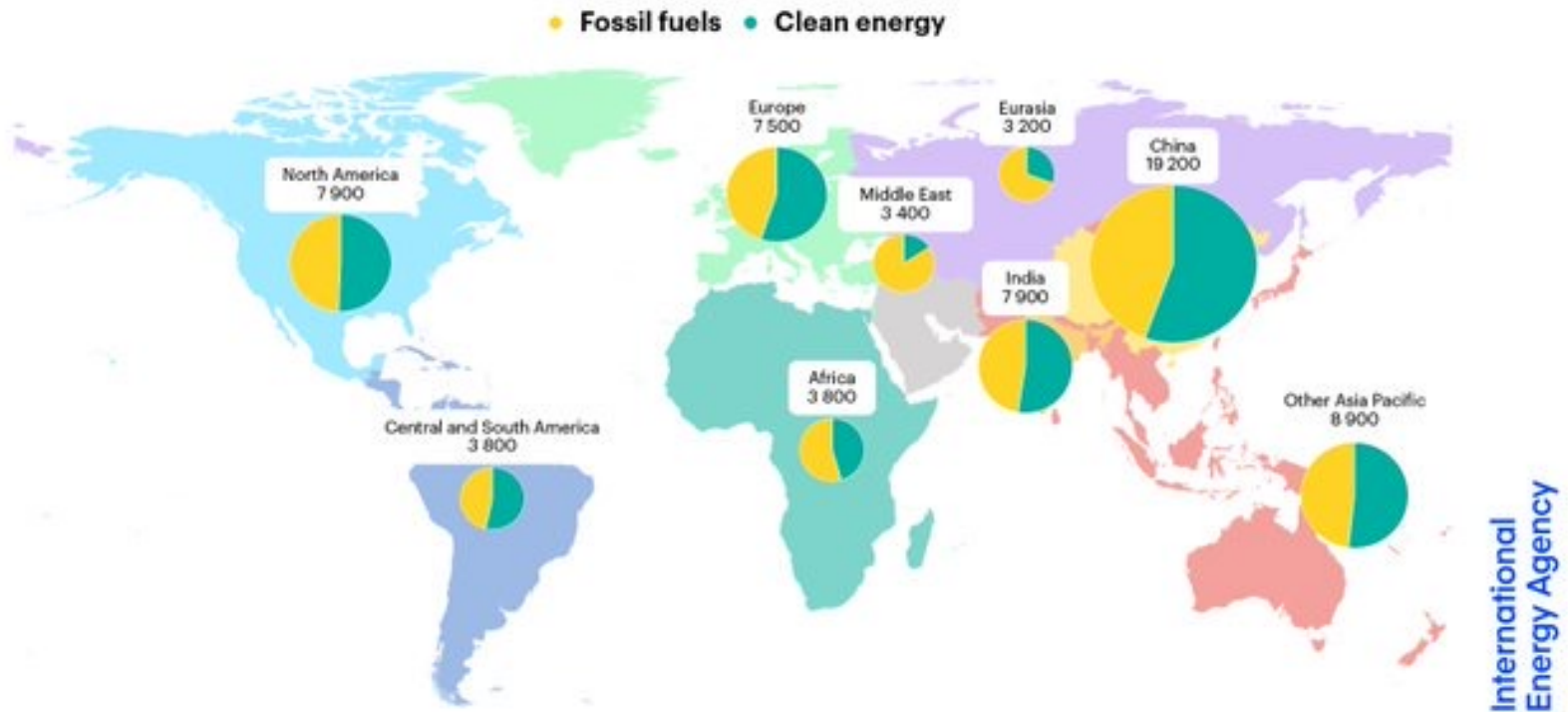
- The Africa Green Hydrogen Alliance targets accelerating the transition from fossil fuels overreliance that has made the continent reluctant, as fossil fuels drive most economies in the continent
- Green hydrogen could provide Africans with new access to cleaner energy sources, employment opportunities, public health benefits due to cleaner air, GDP creation and export revenues outside Africa



Supporting developing States in renewable fuel production for the shipping industry

Energy employment in fossil fuel and clean energy sectors by region, 2019

World Energy Employment



Source: International Energy Agency (IEA) – World Energy Employment report

IMO's GHG regulatory agenda

Next steps

- **Main focus of two Intersessional Working Group meetings (March and June 2023):**
 - revision of the Initial GHG Strategy
 - further consideration of proposals for future technical and economic GHG reduction measures
 - consideration of draft IMO GHG Life-cycle guidelines
- **Expected deliverables at MEPC 80 (3-7 July 2023):**
 - adoption of a Revised IMO GHG Strategy
 - agreement on the outline of a “basket” of next GHG reduction measures with technical and economic elements to be developed as a priority
 - Initiate a high-level analysis of possible impacts of the basket?
 - adoption of 1st version of IMO GHG Life-cycle intensity guidelines

