The European experience:
Drivers of environmental sustainability in pilotage

José A. Pérez Lorente

EMPA Vice President

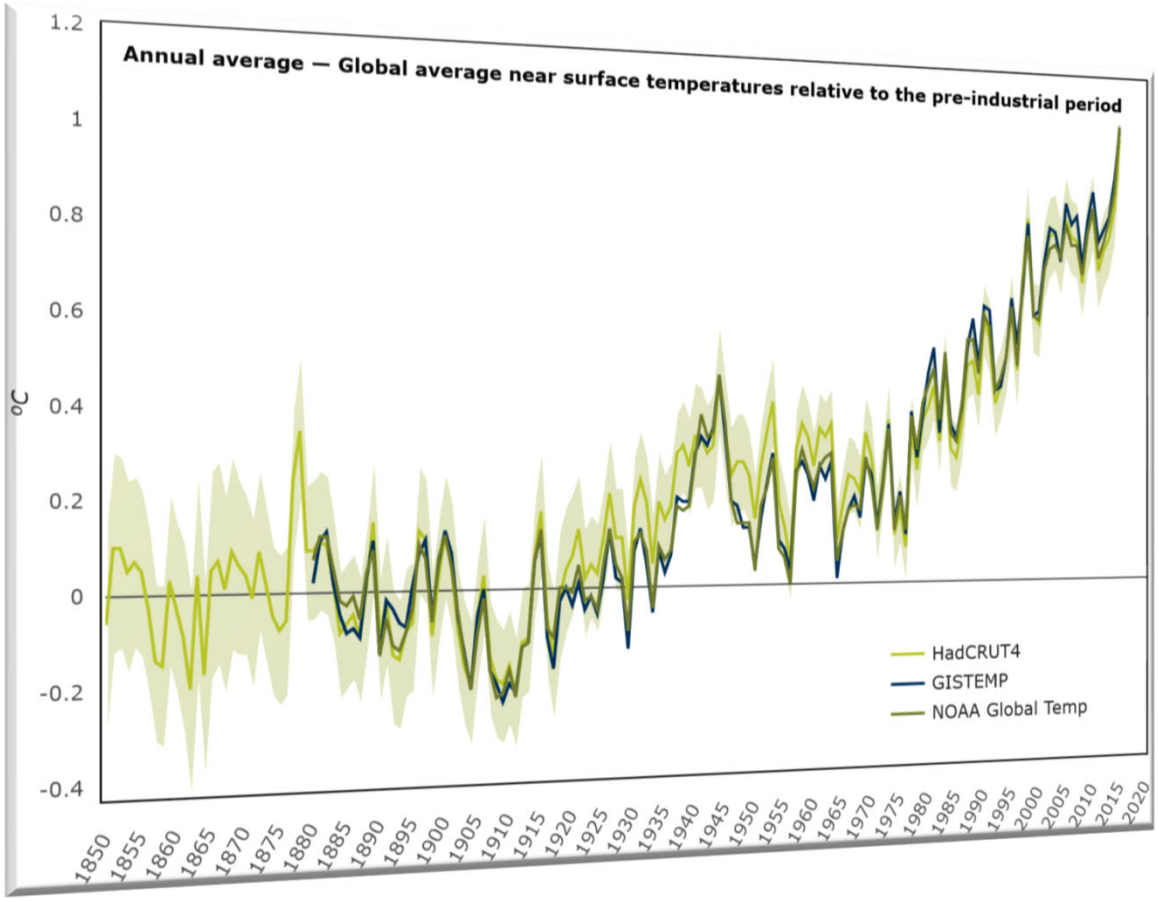
Spanish Pilots' Association Secretary General

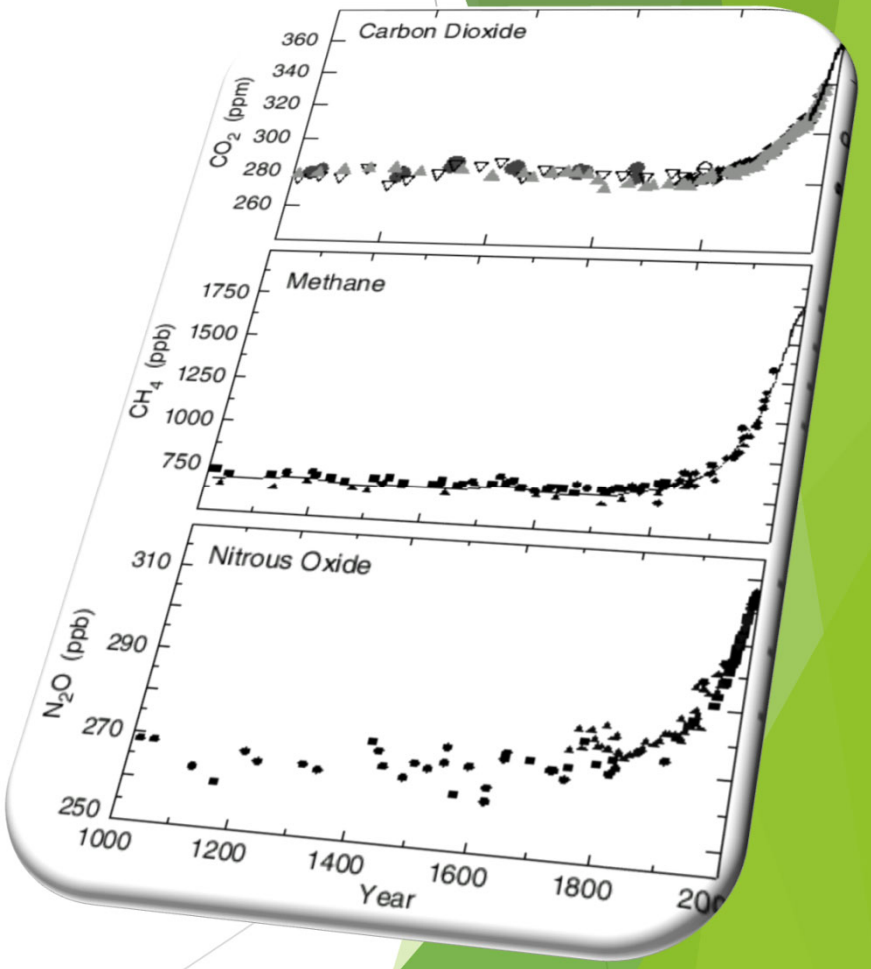
Palma de Mallorca Pilot

Introduction

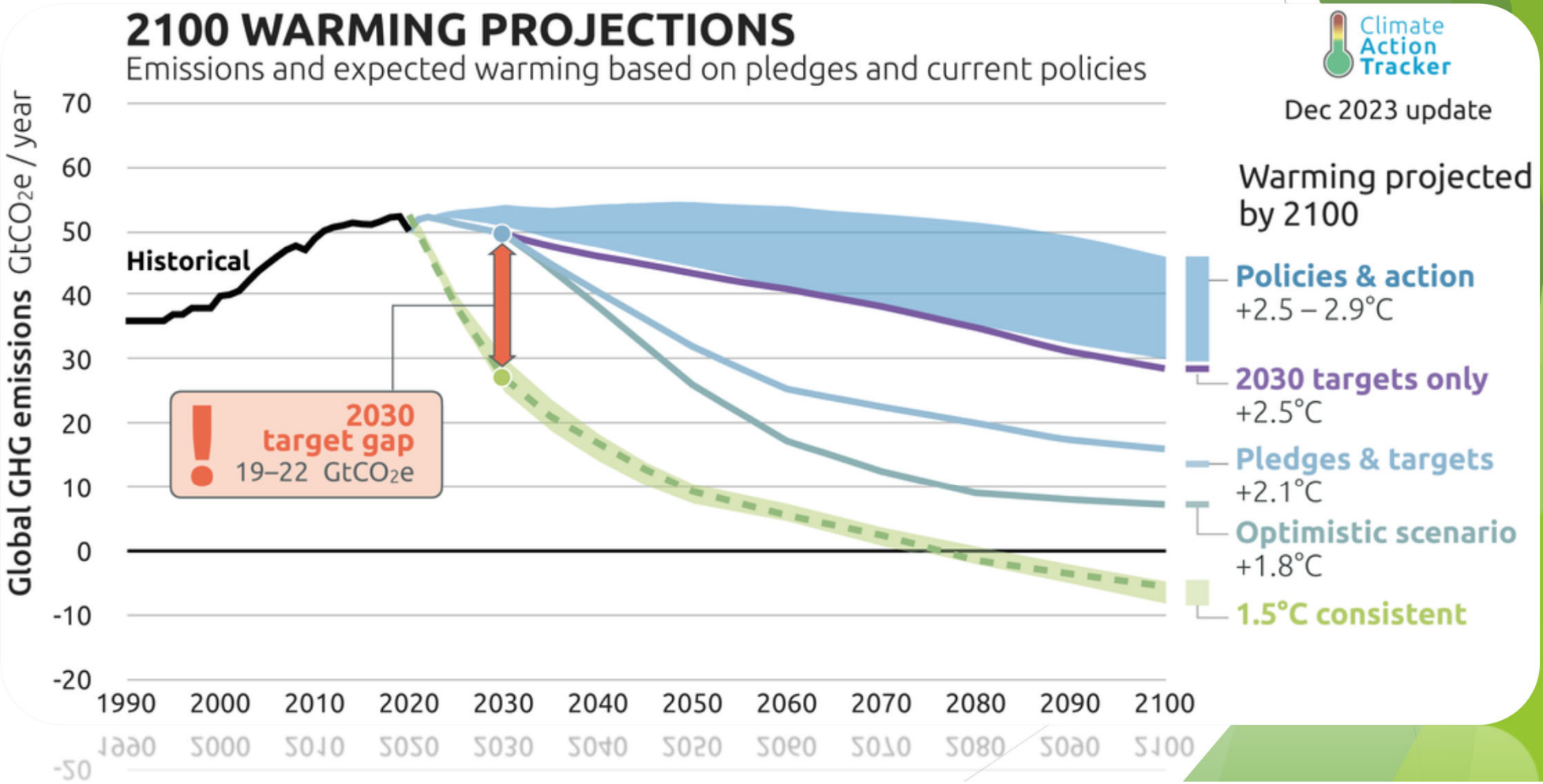
- Pilots play a crucial role in port & maritime operations
- The growing importance of environmental sustainability
- Pilots as protectors of the environment
- Pilots as drivers of real environmental sustainability
- I'm here as a Pilot, not an environmental "expert"

Current Environmental Challenges….





Current Environmental Challenges….



Current Environmental Challenges....
let's focus in

Emission Reduction

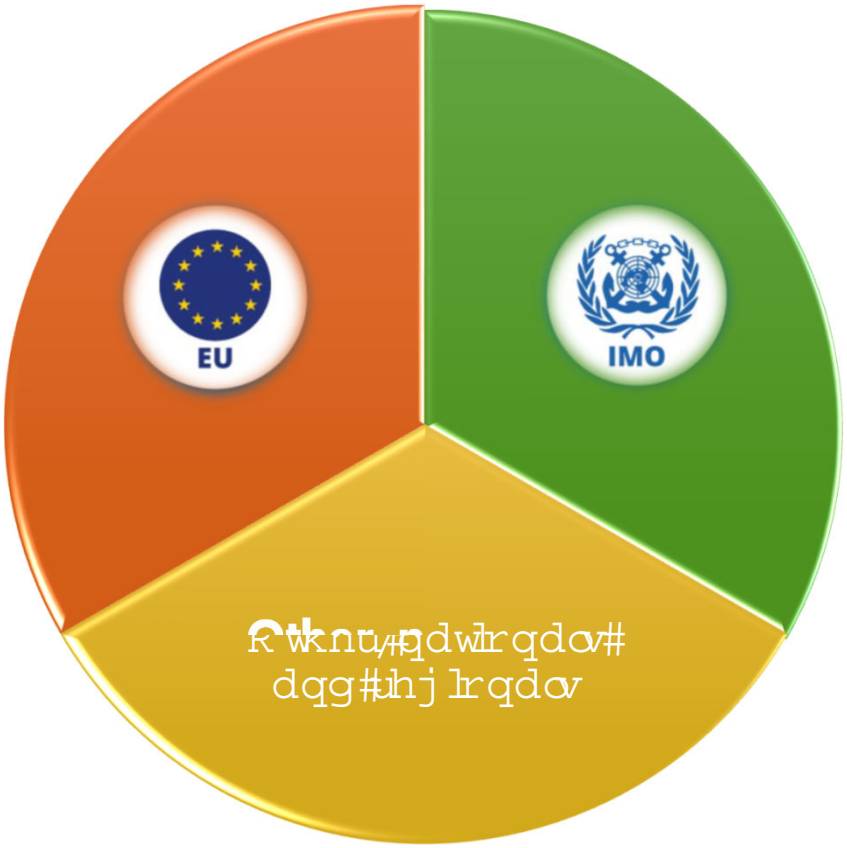
Biodiversity Loss

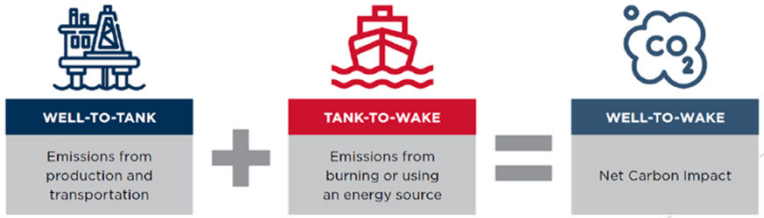
Ocean Pollution

Compliance with Environmental Regulations

Climate Change Impact

Regulatory Framework





Regulatory Framework

International Maritime Organzation shows pathway to net-zero 2050

2023
Enforcement of first set of GHG rules, CII and EEXI.

2027
Global GHG standards and a carbon pricing mechanism for marine fuels in effect.

2030
Target: 20%-30% GHG cut vs. 2008; 5%-10% low-emission fuels in gloal bunker supplies.

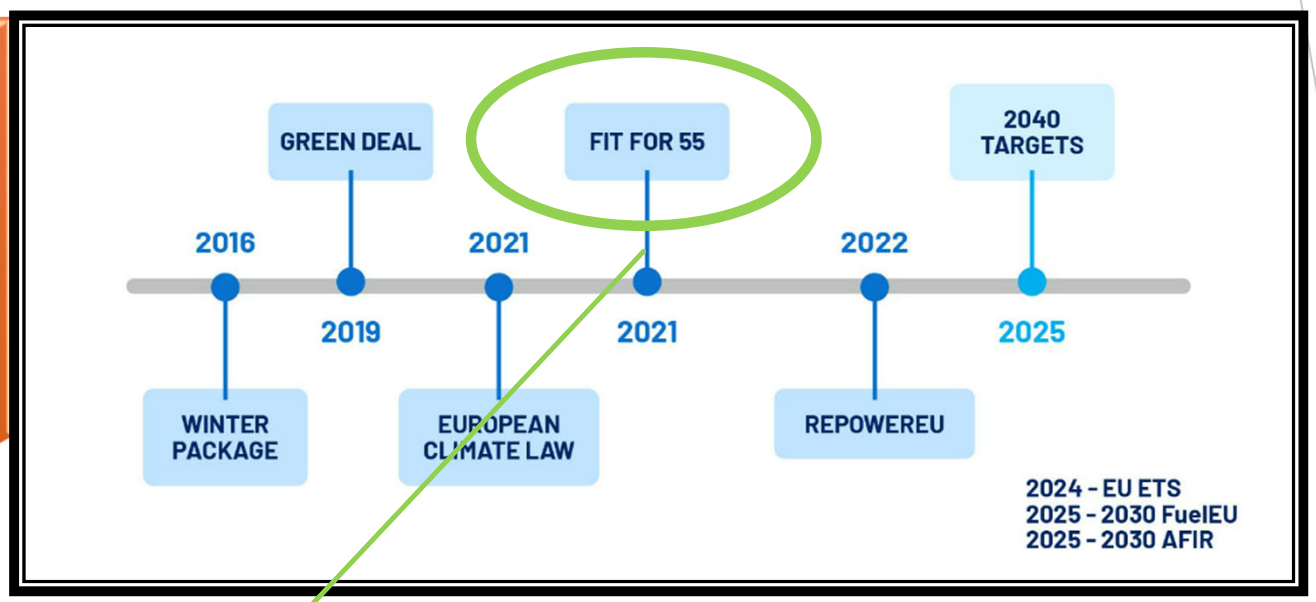
2040
Target: 70%-80% GHG cut vs. 2008.

2050
Target: Net-zero international shipping.

GHG = greenhouse gas; CII = Carbon Intensity Indicator;
EEXI = Energy Efficiency Existing Ship Index.

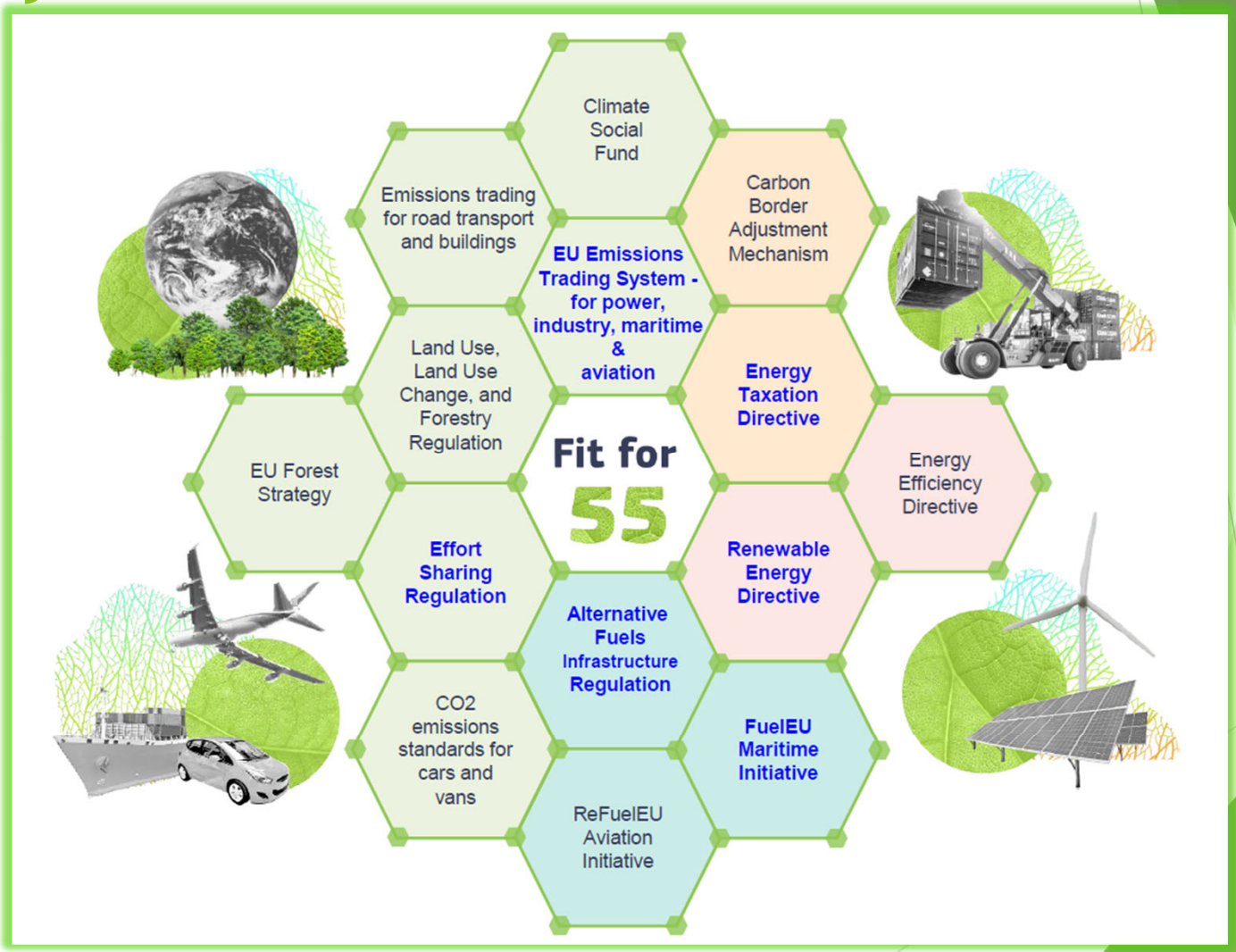
Source: International Maritime Organization; 2023 IMO Strategy on Reduction of GHG Emissions from Ships.

Regulatory Framework



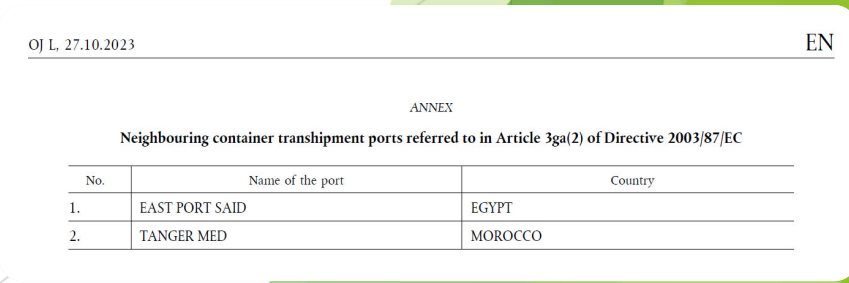
- **The Paris Agreement** (2015), aims to limit global warming to well below 2º C above pre-industrial levels, with efforts to further limit the temperature increase to 1.5º C
- The **European Green Deal** (2019) sets the goal of becoming climate neutral by 2050
- The **EU Climate Law** writes this goal into law
- The 2030 **Climate Target Plan** proposes to cut EU GHG emissions by at least 55% in 2030
- **Fit for 55** is part of the strategy outlined in the European Green Deal to reduce GHG emissions by at least 55% by 2030 compared to 1990 levels

Regulatory Framework



Regulatory Framework

- **EU Emissions Trading System (EU ETS):** Implemented since 2005, aims to reduce greenhouse gas (GHG) emissions by placing a cap on emissions and issuing tradable allowances
- **Extension to Maritime Sector (May 2023):** about 2.5% of global GHG emissions
- **Coverage:** All ships calling at EU ports must obtain allowances covering their emissions. Applies to shipping companies operating vessels over 5,000 gross tonnages, regardless of flag or ownership
- **Scope:** Covers emissions from voyages within EU territorial waters and between EU and third countries. Potential future extension to include vessels between 400 and 5,000 gross tonnage
- **Allocation and Surrender Requirements for Maritime Transport Activities:**
  - **Intra-EU Maritime Voyages:** 100% of emissions allocated; full surrender requirements apply
  - **Ships at Berth in EU Ports:** 100% of emissions allocated; full surrender requirements apply
  - **Voyages Starting or Ending at EU Ports:** 50% of emissions allocated; partial surrender requirements apply
- **List of neighbouring container transhipment ports**



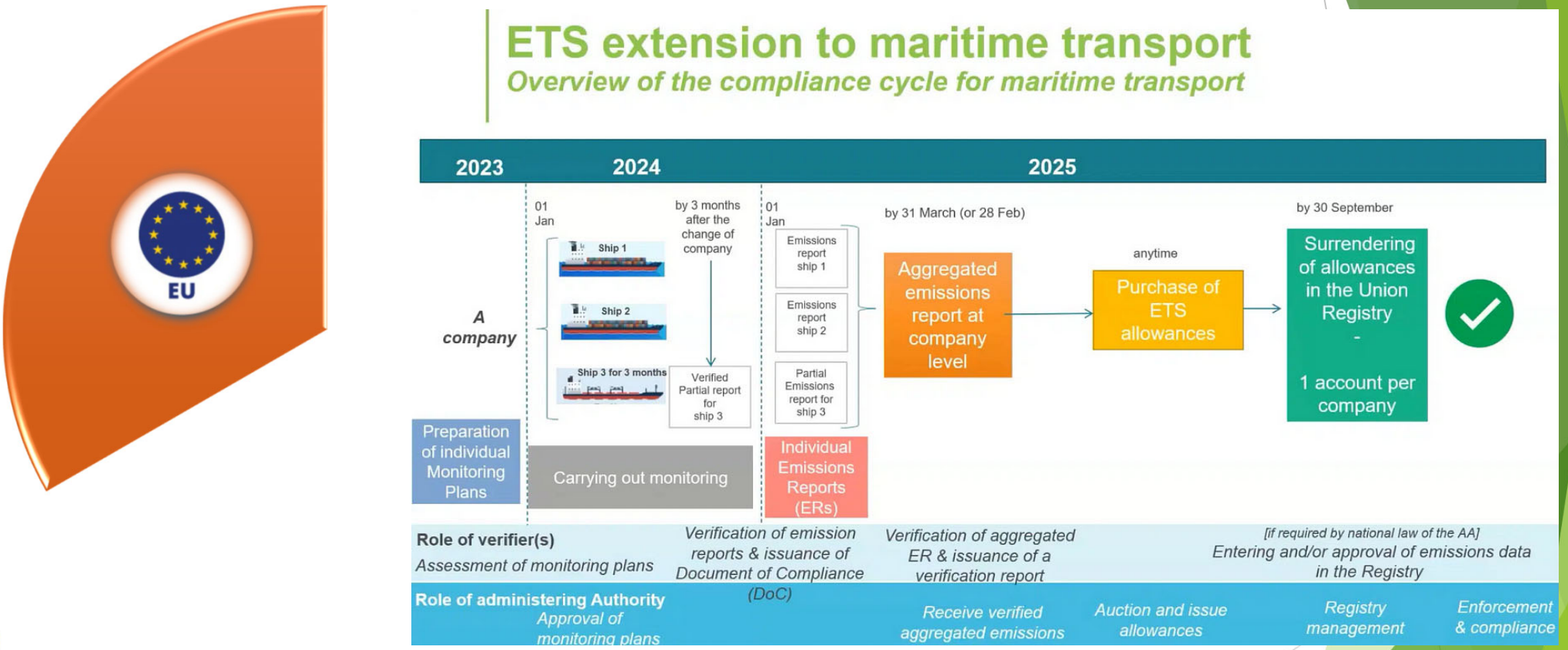
OJ L, 27.10.2023 EN

ANNEX

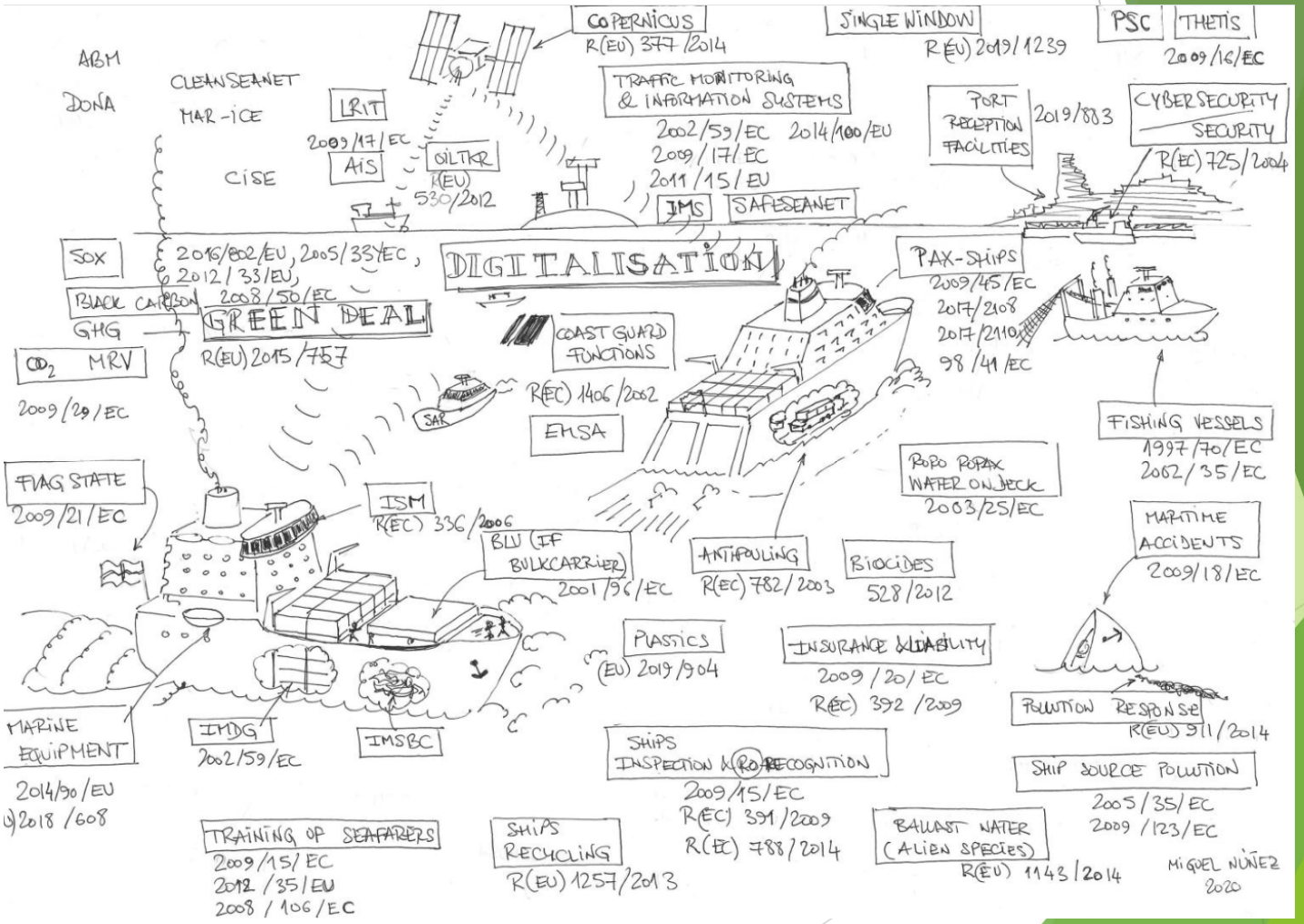
Neighbouring container transhipment ports referred to in Article 3ga(2) of Directive 2003/87/EC

No.	Name of the port	Country
1.	EAST PORT SAID	EGYPT
2.	TANGER MED	MOROCCO

Regulatory Framework



Regulatory Framework



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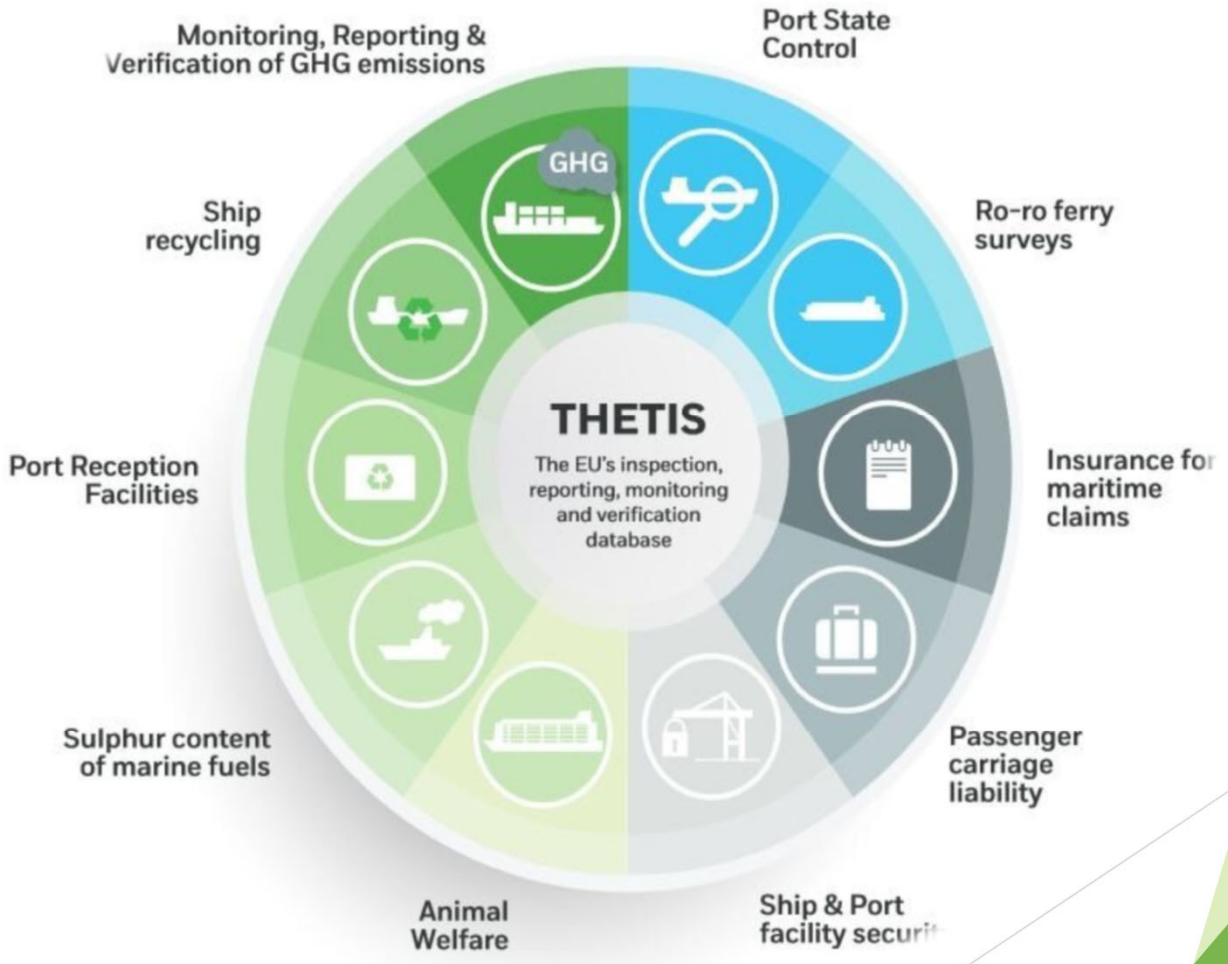
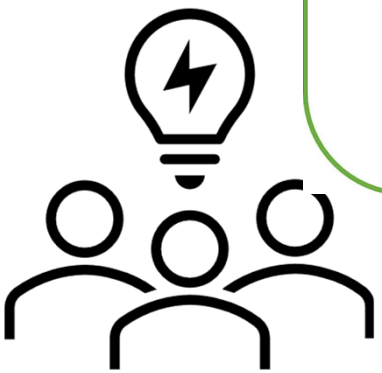
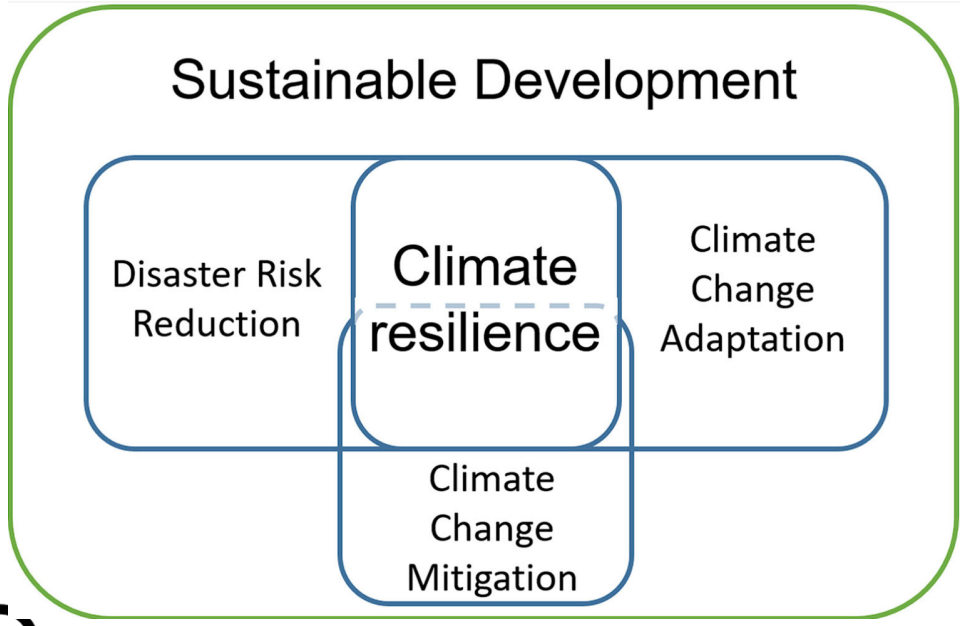


What can we do?

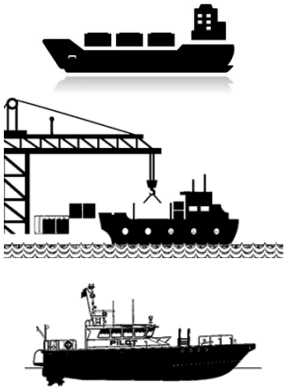
- Shipping
- Ports
- ….
- Pilots





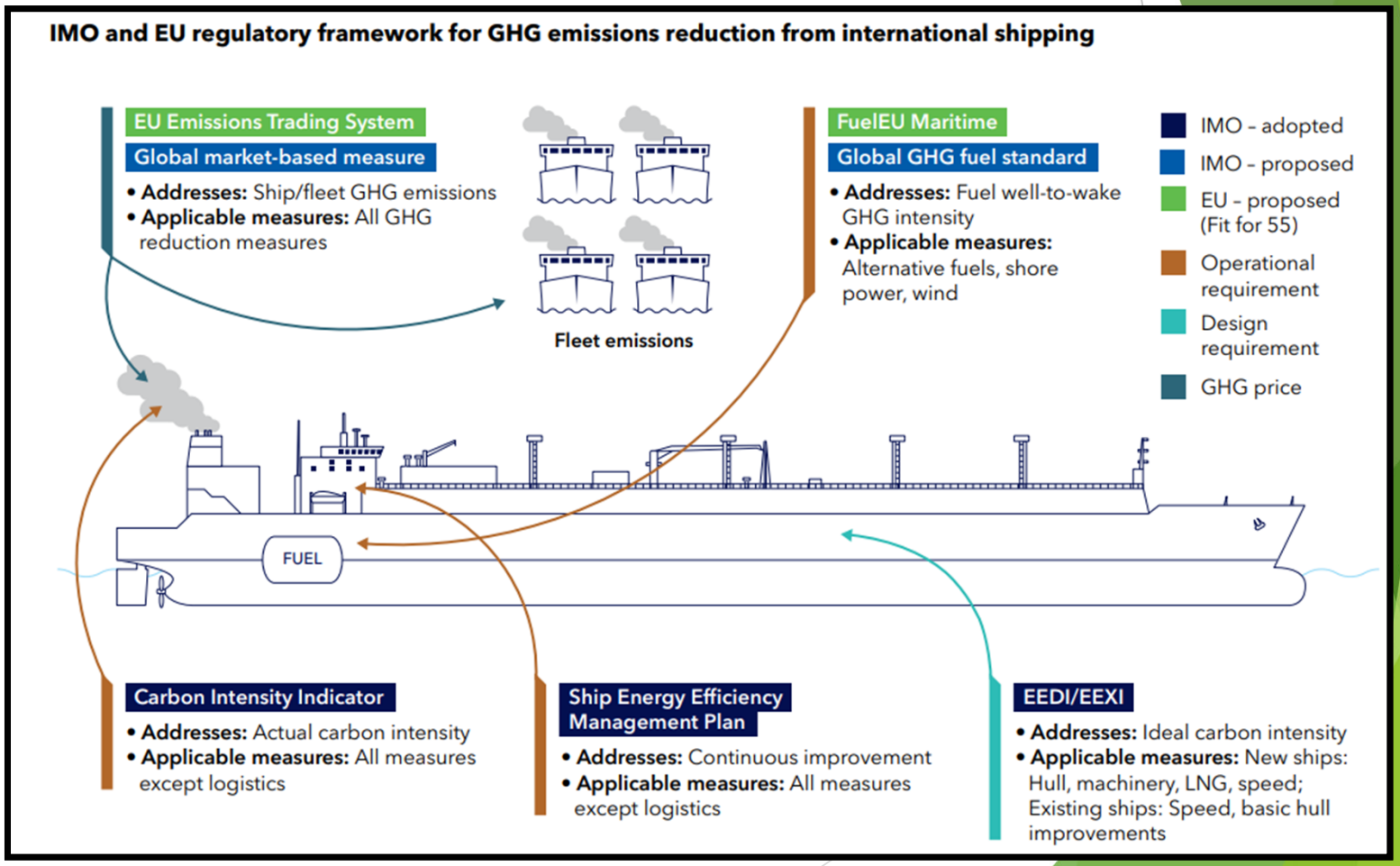
Time to take actions

- Shipping
- Ports
- Pilots



Time to take actions

- Shipping



Time to take actions

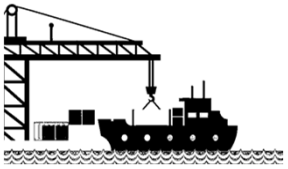
- Shipping

Solutions that can contribute to decarbonize shipping, and their GHG reduction potential

LOGISTICS AND DIGITALIZATION	HYDRODYNAMICS	MACHINERY	ENERGY	AFTER TREATMENT
Speed reduction	Hull coating	Machinery efficiency improvements	LNG, LPG	Carbon capture and storage
Vessel utilization	Hull-form optimization	Waste-heat recovery	Biofuels	
Vessel size	Air lubrication	Engine de-rating	Electrification	
Alternative routes	Cleaning	Battery hybridization	Methanol	
		Fuel cells	Ammonia	
			Hydrogen	
			Wind power	
			Nuclear	
>20%	5%-15%	5%-20%	0%-100%	0%-90%

Time to take actions

- Ports



2025

- **Develop an overview of the emissions of all stakeholders**
- **Encourage, and where possible incentivize, the mitigation of externalities** (air pollution, noise)

2030

- **Call on shipping companies to lower CO2 emissions at berth by at least 50% (OPS,….)**
- **Call on operators in the port area to help improve air, water, and soil quality, and to reduce noise**
- **Work towards coalitions or framework agreements** with shipping companies and other maritime stakeholders
- **Strive to encourage efficient and sustainable waste management**
- **Seek to reduce waste and the use of plastics in the port area**

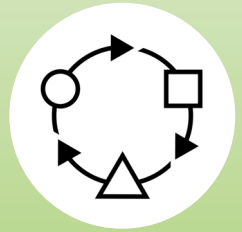
Continuous improvement

- **Catalyst for greening** by encouraging green activities by port stakeholders (offshore, blue growth and circular economy), by facilitating pilot projects, and through attracting green investments.
- **Actively contribute to, and facilitate, research** in relevant fields.
- **Commit to being part of renewable energy solutions**

Font: ESPO

Time to take actions

Pilotage



Adaptation

Action to manage

Pilot resilience

Mitigation

Action to reduce

Time to take actions

Pilotage

- **Pilotage must address ocean pollution threats from plastic waste, oil spills, and other pollutants to safeguard marine ecosystems**

Posidònia
Life

Time to take actions

Pilotage

- Pilots need to adapt to the effects of climate change such as rising sea levels, extreme weather events, and shifts in ocean currents, while also contributing to mitigation efforts

Time to take actions

Pilotage

- Pilotage services play a crucial role in minimizing the impact of shipping activities on marine habitats and biodiversity loss through responsible navigation

Time to take actions

Pilotage

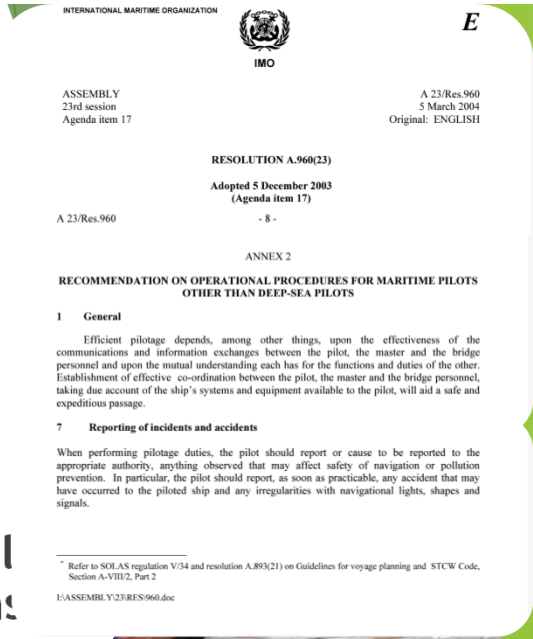
- Pilots can reduce greenhouse gas emissions by making strategic navigational decisions and embracing green technologies, thereby lowering the carbon footprint of vessel movements

Time to take actions

Compliance with Environmental Regulations

Pilotage

- Navigating complex international and regional environmental regulations is essential for pilotage services to ensure adherence to standards and promote responsible maritime practices.



INTERNATIONAL MARITIME ORGANIZATION

IMO

E

ASSEMBLY
23rd session
Agenda item 17

A 23/Res.960
5 March 2004
Original: ENGLISH

RESOLUTION A.960(23)

Adopted 5 December 2003
(Agenda item 17)

A 23/Res.960 - 8 -

ANNEX 2

RECOMMENDATION ON OPERATIONAL PROCEDURES FOR MARITIME PILOTS OTHER THAN DEEP-SEA PILOTS

1 General

Efficient pilotage depends, among other things, upon the effectiveness of the communications and information exchanges between the pilot, the master and the bridge personnel and upon the mutual understanding each has for the functions and duties of the other. Establishment of effective co-ordination between the pilot, the master and the bridge personnel, taking due account of the ship's systems and equipment available to the pilot, will aid a safe and expeditious passage.

7 Reporting of incidents and accidents

When performing pilotage duties, the pilot should report or cause to be reported to the appropriate authority, anything observed that may affect safety of navigation or pollution prevention. In particular, the pilot should report, as soon as practicable, any accident that may have occurred to the piloted ship and any irregularities with navigational lights, shapes and signals.

* Refer to SOLAS regulation V/34 and resolution A.893(21) on Guidelines for voyage planning and STCW Code, Section A-VIII/2, Part 2

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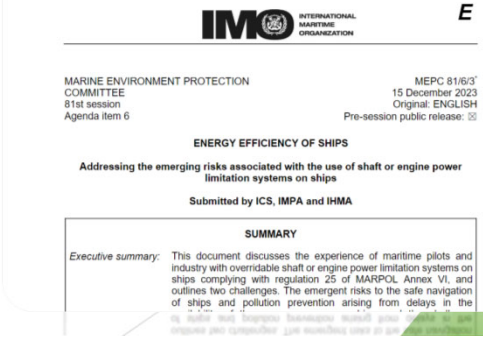

IMO INTERNATIONAL MARITIME ORGANIZATION

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MARINE ENVIRONMENT PROTECTION COMMITTEE
81st session
Agenda item 6

MEPC 81/6/3
15 December 2023
Original: ENGLISH
Pre-session public release: ☒

ENERGY EFFICIENCY OF SHIPS

Addressing the emerging risks associated with the use of shaft or engine power limitation systems on ships

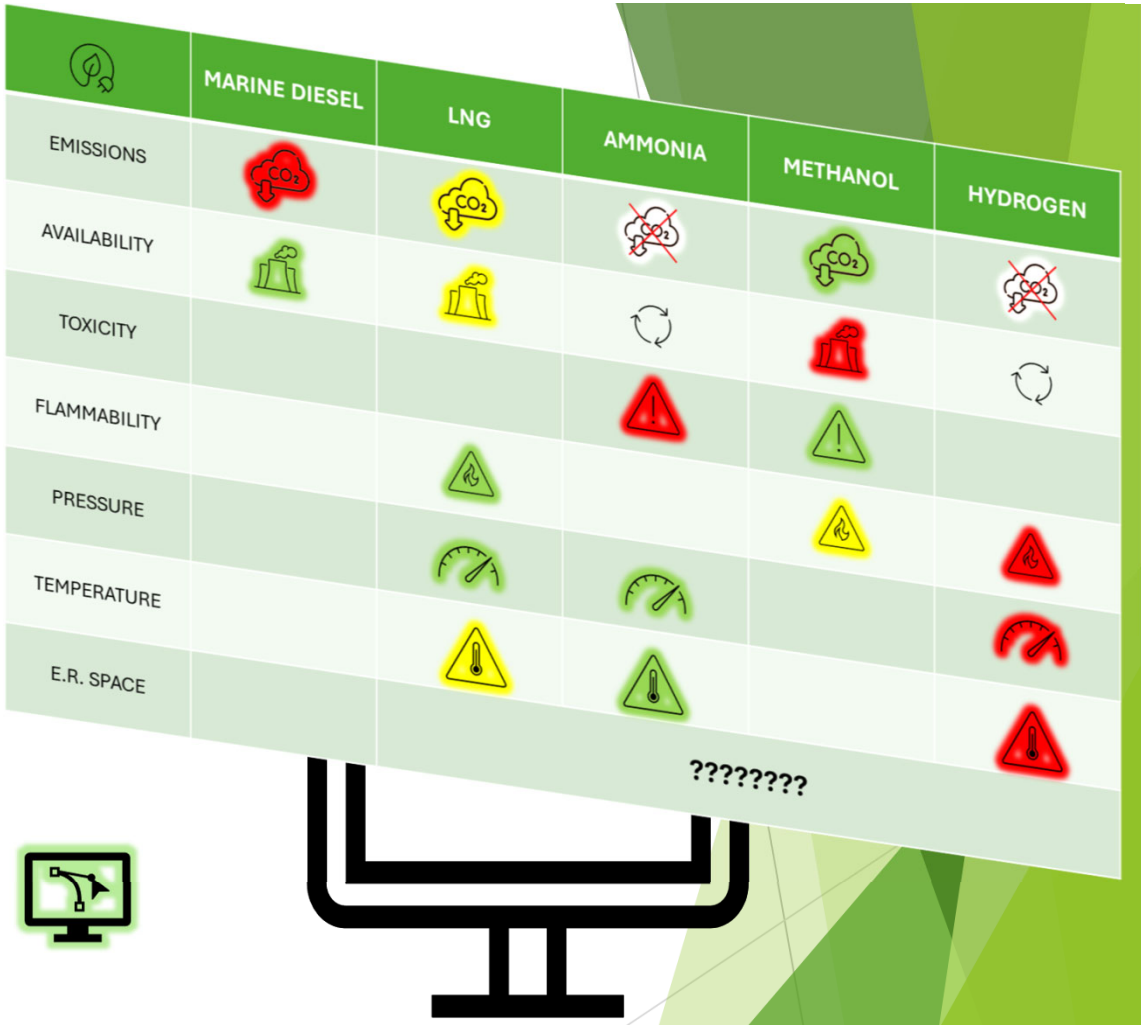
Submitted by ICS, IMPA and IHMA

SUMMARY

Executive summary: This document discusses the experience of maritime pilots and industry with overridable shaft or engine power limitation systems on ships complying with regulation 25 of MARPOL Annex VI, and outlines two challenges. The emergent risks to the safe navigation of ships and pollution prevention arising from delays in the

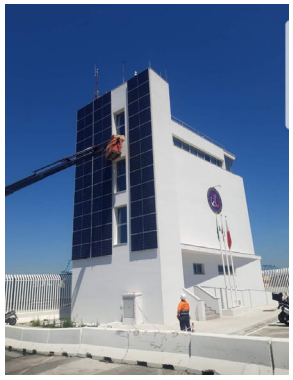
Developments

- Pilot boats
  - Green propulsion systems
  - Energy-efficient boat designs
    - Hull shapes
    - Hydrofoil technology
    - Dynamic stability and trim systems
  - Engine consumptions and maintenance software’s
  - Ultrasonic anti-fouling systems
  - Multi-sensors equipment



Developments

- Fleet/Operations management/ Pilot Station (ashore)
  - Sensors and data analytics software enable predictive maintenance
  - Use of eco-friendly products
  - Green propulsion systems for ashore logistics
  - Collaborative tools of information exchange with other port stakeholders to optimize the port traffic
  - Use of renewable sources of energy
  - Insulation improvements



Pilotage

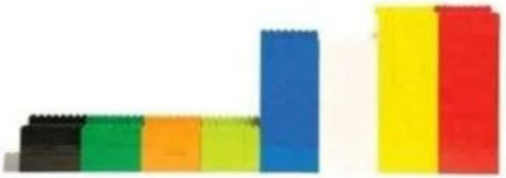
Data-Driven Decision Making

DATA

SORTED

ARRANGED

PRESENTED VISUALLY

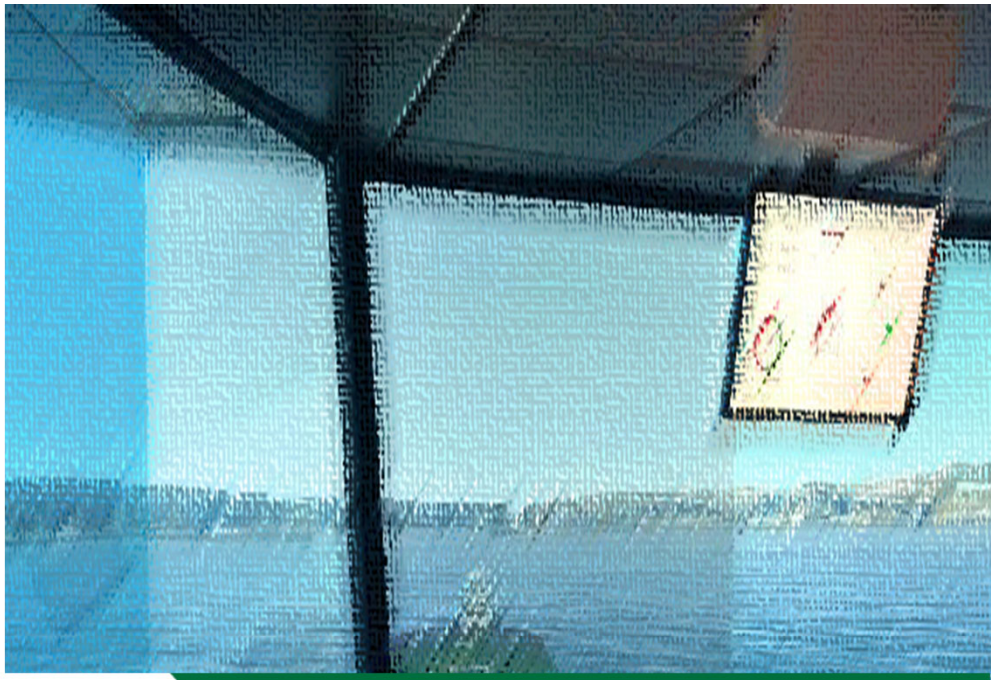


EXPLAINED WITH A STORY

ACTIONABLE (USEFUL)

Training and research

- Introduction of new regulations at Pilot training courses
- Proper application of manouvering skills in new marine propulsion developed in shipping
- Efficient tug use in port
- Emergency preparedness with EPL systems
- Adaptation of procedures to climate change (together with regulators)
- Among pilot boat crew (eco speed, responsible navigation, etc)
- GreenPort Alliances project



Conclusion

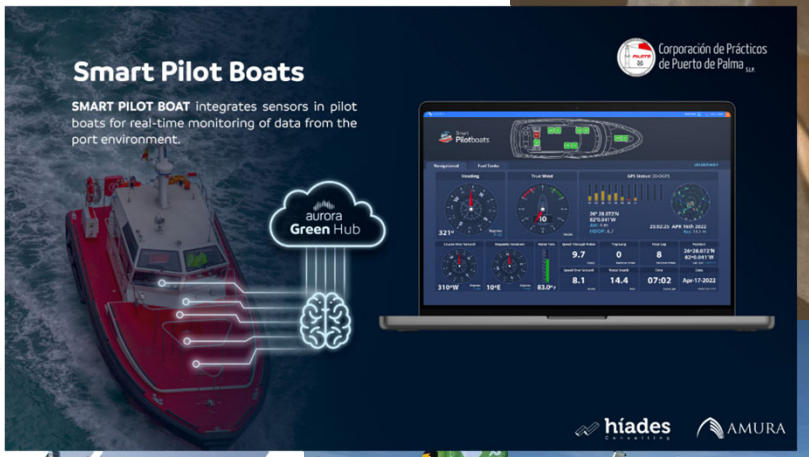
Now, I would like to say cautiously, "My conclusion is the same.
The ships' maneuverabiltiy remains unchanged in an era of environmental focus. However, as the engine power is generally reduced, it will inevitably affect the stopping ability.
We need to pay special attention to the engine power.
Since decarbonization and fuel transitions are on going, I will continue to keep an eye on ships' maneuverability and would like to suggest that IMPA do more research on this topic.

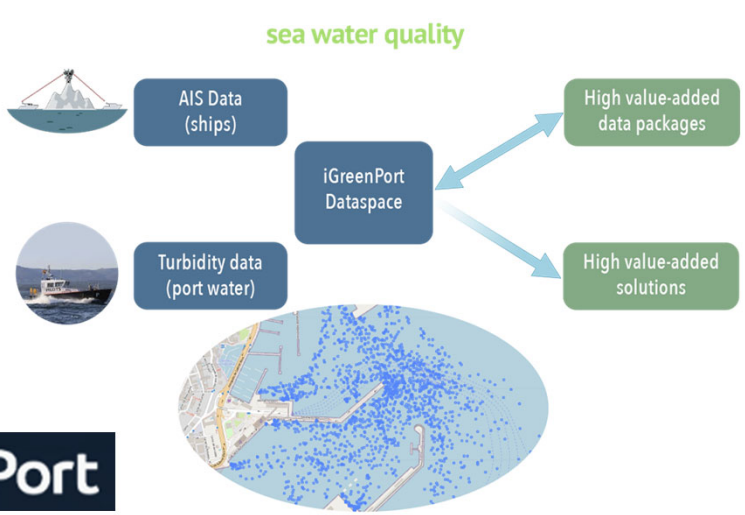
Capt. Goag, Sang Min
Cancún 2022

Collaborative Initiatives

EMPA

RECOMMENDATIONS FOR ENERGY EFFICIENT HARBOUR TOWAGE





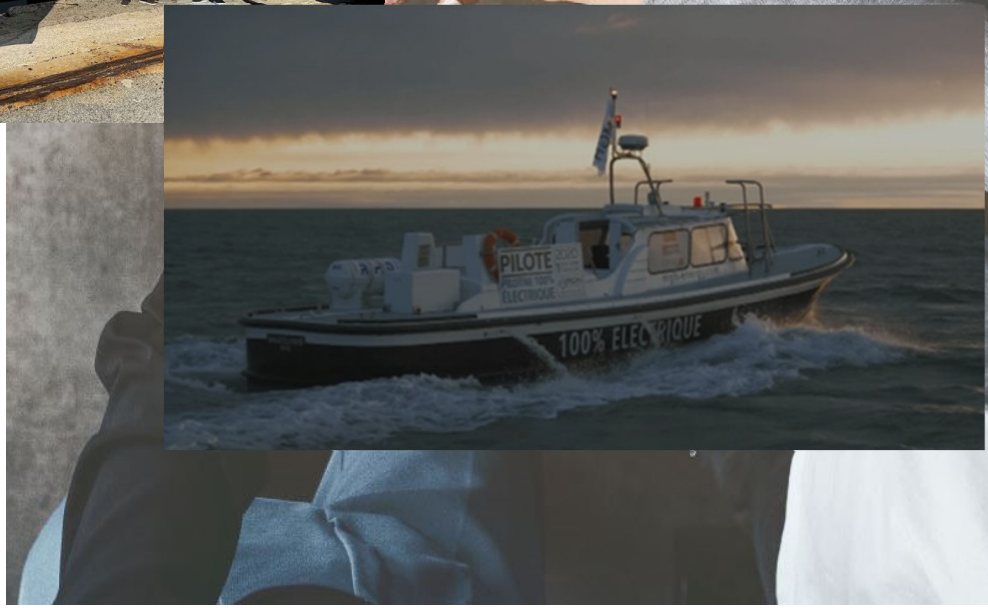
iGreenPort

6 July 2023

DUBLIN PORT COMPANY COMPLETES SUCCESSFUL FIRST ROUND OF HVO FUEL TRIAL IN PILOT BOAT

Switch Could Cut DPC's Total CO_2 Emissions By Up To 15%

Dublin Port Company (DPC) has completed a successful first round trial using Hydrotreated Vegetable Oil (HVO), a low-carbon biofuel produced from waste material that can be used as a direct replacement for conventional marine diesel, in one of its Pilot Boats.



Best Practices in Sustainable Pilotage

- Guidelines and recommendations to implement best practices
- Dissemination in Pilotage seminars
- Management systems can help
- ATTITUDE FOR SURE HELP!!!

EMPA

EUROPEAN MARITIME PILOTS' ASSOCIATION vzw

Regentlaan - Boulevard du Reger
TEL : + 32 2 430.25.78 – e-m
www.emp

Facultat de Nàutica de Barcelona, February 24, 2023

The real meaning of Climate Change and its affection in southern Europe

Damià Gomis

imedea CSIC Universitat

LINCC

EMPA Recommendation on Environmental Sustainabi

Introduction

By adopting a set of proposals to make all sectors of
to deliver the European Green Deal, Europe strives t
neutral continent. It is legislating for clean, accessible,
of private and public transport. This includes transporting goods and passengers through the air, over water, road, and rail. Complimentary to energy saving solutions in transportation, sustainable alternative fuels will contribute to greening the transport sector.

Europe's Green Deal is not just a
emissions. It aims to protect the e
biodiversity to thrive again.

Europe's seas, oceans, and envir
economic wealth for Europe. We mu
that they continue sustaining us t
economic and environmental risk fr
role of pilots even more essential

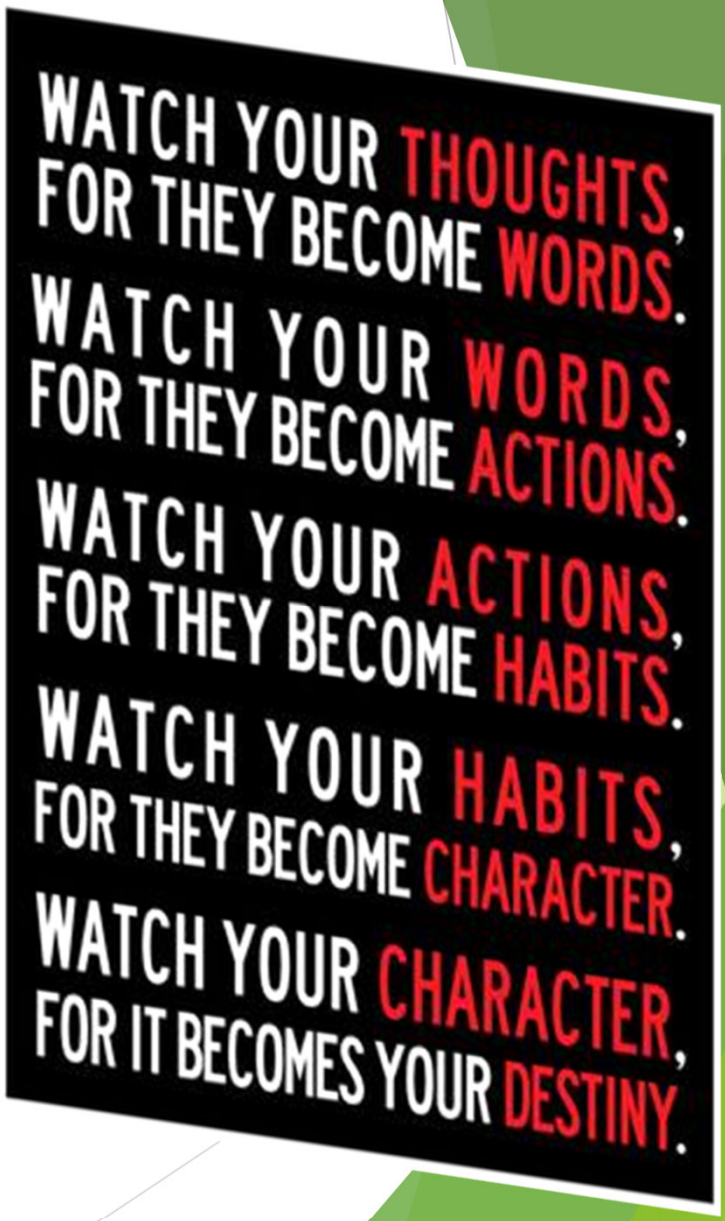
Challenges

SUSTAINABLE DEVELOPMENT GOALS FOR PILOTAGE ORGANIZATIONS

- Implement measures to ensure the health and well-being of pilots and crew members, including regular medical check-ups, access to personal protective equipment, and mental health support programs.
- Promote training and skill development to improve the overall competence and professionalism of the workforce.
- Collaborate with educational Institution to support educational programs related to maritime studies.
- Participate in awareness campaigns and divulge to inspire students to pursue careers in maritime fields.
- Participate in scholarships and sponsorships to contribute building a qualified and diverse workforce for the future.
- Facilitate research and development to contribute to the

Future Outlook

- Upcoming trends and innovations in pilotage contribute to environmental sustainability
- Encourage continuous improvement and adaptation to reach the goals and challenges
- Don’t intend to be ‘green’, try to be ‘greener’



THANKS for listening!

José A. Pérez Lorente

EMPA Vice President

Spanish Pilots' Association Secretary General

Palma de Mallorca Pilot

japerez@empa-pilots.eu

EMPA