
**MEDITERRANEAN ACTION PLAN (MAP)
REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE FOR THE
MEDITERRANEAN SEA (REMPEC)**

Sixteenth Meeting of the Focal Points of the Regional
Marine Pollution Emergency Response Centre for the
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Agenda Item 8: Reduction of GHG emissions from ships

Implementation of possible Green Shipping Routes (Corridors) and Maritime Hubs (Green Hubs) to reduce GHG emissions from shipping in the Mediterranean region

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Note by the Secretariat

The present document presents the Study on implementation of possible Green Shipping Routes (Corridors) and Maritime Hubs (Green Hubs) to reduce GHG emissions from shipping in the Mediterranean region.

The Meeting will be requested to consider the recommendations and propose the best way forward.

Background

1 The International Maritime Organisation (IMO) as an international key actor has been working continuously on reducing Greenhouse Gas (GHG) emissions from shipping by adopting GHG strategies and commissioning several studies. In 2021, the Clydebank Declaration was introduced to establish at least six green shipping corridors by 2025, with plans to expand further by 2030. These corridors are envisioned as critical enablers for accelerating the adoption of zero-emission fuels, directly supporting the objectives outlined in the 2023 IMO GHG Strategy. This strategy targets a 5% adoption rate of zero-emission fuels by 2030, with an aspirational goal of achieving 10%.

2 At the regional level, the European Union Emissions Trading System (EU ETS) and FuelEU Maritime Initiative were adopted to reduce emissions from international shipping. Other regional initiatives about the Mediterranean region include the EU Freight Transport Action Plan, Trans-European Transport Network (TEN-T) Corridor Network, Motorways of the Sea, European Green Deal and EU Fit for 55 packages, EU Research and Development (R&D) and Innovation Funding Instruments, Sustainable and Smart Mobility Strategy, the Global Gateway Initiative, and the Connecting Europe Facility. In the Nordic countries, the Nordic Roadmap has gathered various stakeholders from the shipping value chain in the region to contribute towards zero-emission shipping.

3 The use of green fuels is the principal strategy identified by the maritime sector to reduce GHG emissions. However, for this to be possible, there must be enough bunkering hubs for such fuels, to adequately spread throughout routes. Green shipping corridors are increasingly viewed as an essential tool to kick-start shipping's transition to zero emissions. According to industry reports, it is calculated that Green corridors – specific shipping routes where the feasibility of zero-emission shipping is catalysed by a combination of public and private actions – can provide the context for the testing, demonstration, and at-scale deployment needed to get to 5%.

4 Several countries have developed National Action Plans (NAPs) and policies to decarbonise the shipping industry. These include the major maritime hubs, such as the United States, China, Singapore, and others. Apart from that, several countries, such as Norway, Singapore, The Netherlands, the USA, China, etc., have established programmes related to green shipping and green ports as well as green shipping corridor initiatives.

5 Some green shipping corridor frameworks, e.g., the U.S. and Canada, have been developed and published as well. These frameworks provide a clear direction and message from the Government in supporting the development and implementation of green shipping corridors, where the definitions, steps of planning and implementing green shipping corridors, as well as the potential areas for the deployment of green shipping corridors are elaborated.

6 To this effect, REMPEC commissioned DNV Maritime Services to develop a Study to assist the Contracting Parties to the Barcelona Convention (CPs), with their efforts towards examining strategies and measures that could be deployed in the Mediterranean Sea basin, to increase efficiency, decrease impacts on human and environmental health and propose possible strategies for the long-term sustainability of coastal regions of the Mediterranean, through the implementation of possible green shipping corridors and maritime green hubs in the region. This activity was financed by the voluntary contribution from the Italian Ministry for Environment and Energy Security (MASE).

7 The Study is provided in document REMPEC/WG.61/INF. 17.

Development of Green Shipping Corridors

8 The development of green shipping corridors is progressing at a global level, with many initiatives currently in the planning or implementation phase. Since the launch of the Clydebank Declaration in 2021, over 60 green shipping corridor initiatives have been announced, reflecting a significant increase from 21 in 2022 to more than 60 as of November 2024, including nearly 32 new corridors announced in 2023.

9 While most corridors remain in the feasibility study stage or are formulating implementation plans, none have yet been fully operationalized. In the Mediterranean region, studies such as “*Green Corridors: The Spanish Opportunity*” and “*Green Shipping Corridors in and out of Spain: Assessing Route-based Opportunities*” could be relevant for the planning and implementation of green shipping corridors in the region. Similar to Spain, other Mediterranean coastal States could leverage their potential to fulfil the four main criteria, i.e., cross-value-chain collaboration, a viable fuel pathway, customer demand, as well as policy and regulation, hence, to identify the opportunities for green shipping corridors in the Mediterranean region

10 Reference may be made to several other industry-led frameworks and reports which can be adopted to initiate and develop green shipping corridors and green maritime hubs. For examples:

- a. The “*Tides of Change: A Framework for Developing Just and Inclusive Maritime Green Corridors*”, emphasises the necessary considerations and actions required from companies and governments involved in establishing green shipping corridors around the world¹;
- b. The “*First Mover Framework*” aims to guide the private and public stakeholders in the supply chain to systematically evaluate decarbonisation strategies for a specific fleet²; and
- c. The “*The Next Wave*” study provides a framework evaluating the green shipping corridors assessing the feasibility and impact through various quantitative and qualitative criteria³.

11 EU Member States along the Mediterranean coast can further leverage EU policies, particularly the *Fit for 55* package, which includes shipping-specific measures, to advance green shipping corridors. Additionally, using the methodology outlined in “*The Next Wave*,” potential international and regional routes for establishing green shipping corridors can be systematically assessed, building on the findings of these foundational studies.

12 Analysis of various reports related to green maritime hubs, has highlighted the following elements:

- .1 green shipping corridors will require the supply of green energy at one or both ends or nearby ports, adding a layer of complexity to their implementation. Factors such as volume of traffic, volume of energy used by the traffic and their voyage patterns may be used to assess the feasibility of faster implementation of zero-emission energy hubs (green hubs);
- .2 ports with high fuel consumption but simpler voyage structures may have higher feasibility for fast implementation as zero-emission energy hubs (green hubs);

¹ UN Global Compact, et al. (2023). *Tides of Change: A Framework for Developing Just and Inclusive Green Shipping Corridors*. Retrieved from <https://www.zerocarbonshipping.com/publications/tides-of-change-a-framework-for-developing-just-and-inclusive-green-shipping-corridors/>

² Silk Alliance. (2023). *The Silk Alliance: A progress report*. Retrieved from <https://www.thesilkalliance.com/wp-content/uploads/LR-Silk-Alliance-Progress-and-Next-Steps-Nov2023.pdf>

³ Global Maritime Forum. (2021). *The Next Wave: Green corridors*. Retrieved from <https://globalmaritimeforum.org/report/the-next-wave-green-corridors/>

.3 key elements important for the development of green maritime hubs include the twin transition of decarbonisation and digitalisation, a steady supply of green fuels for bunkering, distribution, and storage, utilisation of renewable energy, provision of port electrification and shore power, CO₂ reception and handling facilities, and implementation of safety standards and procedures for safe operations; and

.4 key maritime hubs in the Mediterranean region recognized under EU and international regulations including ports in Greece, Spain, Italy, France, Morocco, etc., have been actively taking similar initiatives to become green maritime hubs.

Best Practices Identified

13 The Study identified some best practices for the implementation of green shipping corridors and green maritime hubs that may be considered, as follows:

.1 Resolving challenges among stakeholders

The core of the green shipping corridor concept is establishing the required level of understanding and agreement among the stakeholders for a specific transport system, such that the cost and risk level associated with using zero-emission fuels become acceptable. Key challenges include the willingness to adopt green fuel in coastal shipping by the ship owner, the availability of capital to execute the management of change, acceptance of green-fueled ships by the port authorities and safety concerns for the ship crew.

.2 Promoting collaboration and partnership

Green shipping corridors require close cooperation between public and private stakeholders, including port authorities, shipping companies, fuel providers, regulators, and technology developers. Having all necessary stakeholders around the same table facilitates collaboration, early identification of bottlenecks, and a common understanding of each stakeholder's motivation for being in the corridor partnership.

.3 Harmonising regulations across jurisdictions in alignment with international standards for shipping operations

Green-fueled ships require alignment on the safe operations of ships as well as the safety of bunkering infrastructure ashore. The competency of staff ashore and onboard ships is a critical part of the implementation of green shipping corridors and green maritime hubs. To resolve the abovementioned aspects, it is recommended that the Contracting Parties to the Barcelona Convention join forces to take a more active role at IMO and create a regional partnership hub to share best practices and experiences.

.4 Standardising ship design, shore power and bunkering infrastructure

The future development of the IGF Code under the SOLAS Convention to address different green fuels will be the key enabler for establishing green shipping corridors. Similarly, an initiative by the port authorities to reduce GHG emissions by providing the availability of shore power, as well as green fuel bunkering is critical for this objective.

.5 Adopting digital platforms for enhancing performance and efficiency

Digital platforms and tools optimise logistics, streamline border procedures, and improve data sharing, contributing to real-time information which is beneficial in planning a reduction of GHG emissions, onboard as well as ashore. The trends related

to the development of green maritime hubs are often related to the twin transition: Decarbonisation and Digitalisation. The twin transition of decarbonisation and digitalisation in maritime ports refers to the simultaneous efforts to reduce carbon emissions and enhance digital capabilities. This dual approach aims to create more sustainable and efficient port operations.

.6 Use of energy-efficient technologies to enhance vessel energy efficiency and reduce emissions

The vessel operators can adopt several operational and technical measures, such as the use of wind-assisted propulsion systems, air lubrication systems, battery hybridisation, etc., to enhance vessel energy efficiency and reduce emissions, in addition to the adoption of alternative fuels. Similarly, port operators could adopt appropriate measures, e.g., battery electrification, fuel cells, etc. for harbour craft and electrification technologies, e.g., electric cargo handling equipment, etc., for port operations.

.7 Role of digitalisation in emission tracking

Digital technologies that streamline operations can reduce delays and improve throughput, resulting in enhanced efficiency. Standardised emission reporting and data handling can also help with regulatory compliance, preparing the ports to meet the increasingly stringent environmental regulations and standards. Improved efficiency and reduced energy consumption by the vessels as well as in port, have a great potential to reduce the operational cost over time.

.8 Need for appropriate financial instruments and support mechanisms in realising green shipping corridors

A key challenge for the implementation of green shipping corridors and green maritime hubs is to reduce the cost gap, which is expected to persist until the underlying technologies related to green fuels reach an advanced development level. The cost gap's structure varies based on many corridor-specific factors, with a crucial determinant being the types of energy sources used. For scalable zero-emission fuel solutions, particularly relevant for deep-sea shipping, it is widely recognised that the cost of alternative fuel production constitutes the majority of the cost differential. Various support mechanisms or subsidy schemes can be employed, ranging from fuel subsidies and vessel subsidies to R&D funding for enabling technologies. The schemes can help bridge the cost gap by providing financial support and reducing the economic burden on early adopters. Incentives such as subsidies, tax breaks, and grants can stimulate private-sector investment and accelerate the adoption of new technologies. Additionally, incentive schemes can foster innovation by encouraging companies to invest in Research and Development (R&D), ultimately leading to more cost-effective and scalable solutions.

Way Forward

14 The following actions are recommended by the Study to initiate the implementation of Green Shipping Corridors and Green Maritime Hubs in the Mediterranean region:

.1 Establish the baselines (current situation) for the three pillars (i.e., ships, fuels used by the ships, and infrastructure supplying the fuels) and identify first-mover opportunities

Governments and regulators need to drive the first push to implement green shipping corridors and green maritime hubs in their respective regions, to minimise GHG emissions as well as implement IMO's Revised GHG strategy. Current GHG emissions

can assist in identifying the geographical location where more urgent actions are required to implement first.

.2 Engage relevant stakeholders to identify barriers and actions to overcome them

The key stakeholders such as cargo owners, shipowners and operators along with government and regulators, ports and fuel producers need to join together to facilitate the implementation of green shipping corridors and green maritime hubs. Combined discussions need to be conducted to identify barriers to their implementation and how these could be resolved.

.3 Develop a holistic plan with timelines for all the stakeholders

Once details of the planned location of the green shipping corridor are identified, and key stakeholders decide to work together for their implementation, a holistic plan should be drafted. The guidance may be taken from numerous such corridors which are in various stages of development and implementation, as included in this study.

Table 1 Proposed draft roadmap with an action plan

Action	Timeline	CPs	Regulators	Cargo owners	Ship owners and operators	Ports	Fuel producers and distributors
Establish the baselines (current situation) for the three pillars and identify first-mover opportunities	2025	R	R	C	C	C	C
Engage relevant stakeholders to identify barriers and actions to overcome barriers	2025	R	R	C	C	C	C
Develop a holistic plan with timelines for all the stakeholders	2026	R	R	R	R	R	R

*R: Responsible, C: Consult

Table 2 Suggested actionable recommendations for policymakers and industry stakeholders

Action	CPs	Regulators	Cargo owners	Ship owners and operators	Ports	Fuel producers and distributors
.1 Establish competitive tenders for Mediterranean green shipping corridors	R	R				
.2 Allocate funding to the Mediterranean green shipping corridors	C	R				
.3 Develop a plan for regional integration of fuel production and infrastructure, with the development of energy hubs	R	R	C	C	R/C	R/C
.4 Set GHG emission requirements for Mediterranean ship segments	R	R	C	C	C	C
.5 Continue to implement and support the strengthening of EU and IMO GHG regulatory framework	R	R	R	R	R	R
.6 Develop a common approach to implement alternative design approval (as per SOLAS convention) among Mediterranean coastal States	R	R				
.7 Develop a common approach to fuel bunkering and establish common practices for safe and efficient operations with zero-emission fuels	R	R	R/C	C	R/C	C
.8 Develop and submit specific proposals on fuel safety and seafarer training to the IMO to help accelerate the international regulatory development process	R	R	R/C	R	R/C	C
.9 Establish a common approach for how to ensure green fuel quality and certification	R	R	C	C	C	R
.10 Establish Mediterranean support mechanisms accelerating demonstration, commercialisation, and deployment of new technologies	R	R	C	R	R	C

*R: Responsible, C: Consult

Actions requested by the Meeting

15 **The Meeting is invited to:**

- .1 **take note** of the information provided in the present document; and
- .2 **comment** as deemed appropriate, on the recommendations provided in paragraph 14 and discuss a possible way forward.
