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

Regional Expert Meeting on the Possible Designation of the
Mediterranean, as a whole, as a Nitrogen Oxides Emission
Control Area (Med NOX ECA), pursuant to MARPOL
Annex VI

REMPEC/WG.63/6
04 September 2026
Original: English

Kalkara, Malta, 7-8 October 2026

Agenda Item 6: Review of draft IMO MEPC submission on the designation of the Med NO_x ECA under MARPOL Annex VI

Draft IMO MEPC Submission to Propose to designate the Mediterranean Sea, as a whole, as an Emission Control Area for Nitrogen Oxides

For environmental and cost-saving reasons, this document will not be printed and is made available in electronic format only. Delegates are encouraged to consult the document in its electronic format and limit printing.

Note by the Secretariat

This document, prepared by the Secretariat, presents a consolidated draft IMO MEPC Submission to propose to designate the Mediterranean Sea, as a whole, as an Emission Control Area for Nitrogen Oxides (Med NO_x ECA), taking into account the feedback received from Contracting Parties during the work undertaken by the MAP NOX ECA Technical Committee of Experts (NECA TCE).

Background

1 In November 2025, the Regional Expert Meeting on the Possible Designation of the Mediterranean, as a whole, as a Nitrogen Oxides Emission Control Area (Med NO_x ECA), pursuant to MARPOL Annex VI, convened in Malta to review the draft Technical and Feasibility Study, including the proposed draft roadmap. The said Meeting agreed, with amendments made during the discussions, and that the Final Technical and Feasibility Study, including the revised roadmap, should be transmitted to the Seventeenth Meeting of the Focal Points of REMPEC, to be tentatively held in May 2027, for consideration and further guidance, as in the Report to the Meeting, in [REMPEC/WG.62/8](#).

2 Following the completion and updating of the Technical and Feasibility Study and the revised roadmap, which was circulated to the NECA TCE in January 2026, REMPEC was also requested to submit a Note to the Seventeenth Meeting of the Focal Points of REMPEC. This Note is to include a draft submission to the International Maritime Organisation (IMO) and the draft roadmap towards the possible designation of a Med NO_x ECA, for consideration and guidance. Subject to the guidance provided by the Sixteenth Focal Points Meeting of REMPEC (Malta, May 2025), the roadmap foresees subsequent consideration of a joint and coordinated proposal through the Meetings of the MAP Focal Points and the Contracting Parties to the Barcelona Convention and its Protocols, with a view to possible endorsement through a COP Decision. Such endorsement would provide the basis for the submission of a proposed amendment to MARPOL Annex VI to the IMO, for consideration by the Marine Environment Protection Committee (MEPC), in accordance with the procedures set out in Article 16 of MARPOL.

3 The Final Technical and Feasibility Study, including the draft revised roadmap is presented in document REMPEC/63/INF.4.

4 The preparation of the draft IMO submission was supported by a consultant and carried out under the guidance of the NECA TCE. The process included one technical consultation by correspondence.

Work of the NCE TCE

5 Following the Sixteenth Meeting of REMPEC Focal Points (Malta, May 2025), the Secretariat re-established the NECA TCE on 4 June 2026. Eighteen (18) Contracting Parties have confirmed participation. The Secretariat reiterates the importance of full participation and encourages Contracting Parties that have not yet nominated experts to do so via their REMPEC Prevention and Governmental Focal Points. Ensuring accurate contact details is essential for effective communication through the final project stages.

6 The main objective of the work undertaken by the NECA TCE, was the drafting process in preparing the draft IMO MEPC Submission, to translate the main findings and conclusions of the Final Technical and Feasibility Study, into a coherent and concise IMO MEPC submission and restructuring the information contained in the Study, around the eight IMO ECA criteria (in appendix of MARPOL Annex VI).

7 The Report of the NECA TCE is presented in document REMPEC/63/INF.3.

Next Steps

8 In this context, and on the basis of the outcome of the NECA TCE, as referred to in paragraph 7 above, the Secretariat proposes to review in detail the draft IMO MEPC Submission, as set out in the Appendix to this document, as a basis for the development of a joint and coordinated proposal for the designation of the proposed Med NO_x ECA to the IMO.

Actions requested by the Meeting

9 **The Meeting is invited to:**

- .1 **take note** of the information provided in the present document;

Appendix

**Draft IMO MEPC Submission to propose to designate the Mediterranean Sea, as a whole, as an
Emission Control Area for Nitrogen Oxides (Med NO_x ECA)**

MARINE ENVIRONMENT PROTECTION
COMMITTEE
[...] session
Agenda item [x]

MEPC[...]
[Day] [Month] 202x
Original: ENGLISH
Pre-session public release: ☒

IDENTIFICATION AND PROTECTION OF SPECIAL AREAS, ECAs AND PSSAs

Proposal to designate the Mediterranean Sea, as a whole, as an Emission Control Area for Nitrogen Oxides

Submitted by [22 States + European Commission]

SUMMARY

Executive summary: This document contains a proposal to designate the Mediterranean Sea, as a whole, as an Emission Control Area for nitrogen oxides, pursuant to MARPOL Annex VI. A Study providing supporting data is available in annex 1, and proposed draft amendments to MARPOL Annex VI are provided in annex 4.

Strategic direction, if applicable: TBC

Output: TBC

Action to be taken: Paragraph

Related documents: TBC

Introduction

1 The Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (the “Barcelona Convention”), at their [...] meeting, agreed to submit a proposal for the designation of the Mediterranean Sea, as a whole, as an Emission Control Area to prevent, reduce and control emissions of nitrogen oxides (NO_x) from ships, pursuant to regulation 13 and Appendix III to MARPOL Annex VI (herein referred to as the proposed “Med NO_x ECA”).

2 [Countries X, Y, Z set forth the proposal for the designation of the Med NO_x ECA]. [Countries X, Y, Z associate themselves with this proposal]. [Countries X, Y, Z, as members of the European Union, associate themselves with this proposal.]

Background

3 The Mediterranean Sea is one of the world’s busiest maritime corridors, characterised by high vessel density, diverse ship types and intense international traffic. Emissions from ships contribute largely to air pollution and nitrogen deposition, with cascading impacts on ecosystems, public health and coastal economies. Mediterranean

coastal areas experience elevated concentrations of NO_x emissions, particularly in countries with dense coastal populations and major port infrastructures.

4 In recent years, the 22 States Contracting Parties to the Barcelona Convention, under the auspices of the Mediterranean Action Plan of the United Nations Environment (UNEP/MAP), have taken decisive steps to address air pollution, notably with the designation of the Mediterranean Sea Emission Control Area for sulphur oxides and particulate matter (Med SO_x ECA) through resolution MEPC.361(79) which entered into effective application on 1 May 2025.

5 Building on this landmark achievement, Contracting Parties to the Barcelona Convention, had further agreed to explore the possible designation of the Mediterranean Sea as a NO_x ECA. A Technical and Feasibility Study (herein referred to as “the Study”, as available in annex 1) was commissioned to examine the possible designation of Med NO_x ECA and to provide data, impact assessments and cost-effectiveness analysis. The Study supported the collaborative process between Mediterranean States and provided the necessary background information to submit this proposal for designation to MEPC [...].

6 The collaborative work, facilitated by UNEP/MAP and REMPEC, involved representatives of the 21 Mediterranean coastal States and the European Union, and took place through meetings, workshops and correspondence work (see figure 1 below for illustrative purposes). During this process, the Contracting Parties to the Barcelona Convention agreed first on the appropriate implementation timeline. Taking into consideration the various challenges and diverse capacity building within the Mediterranean region, as highlighted during consultations, it was agreed that the entry into force of the Med NO_x ECA should be set to 1 January 2032.

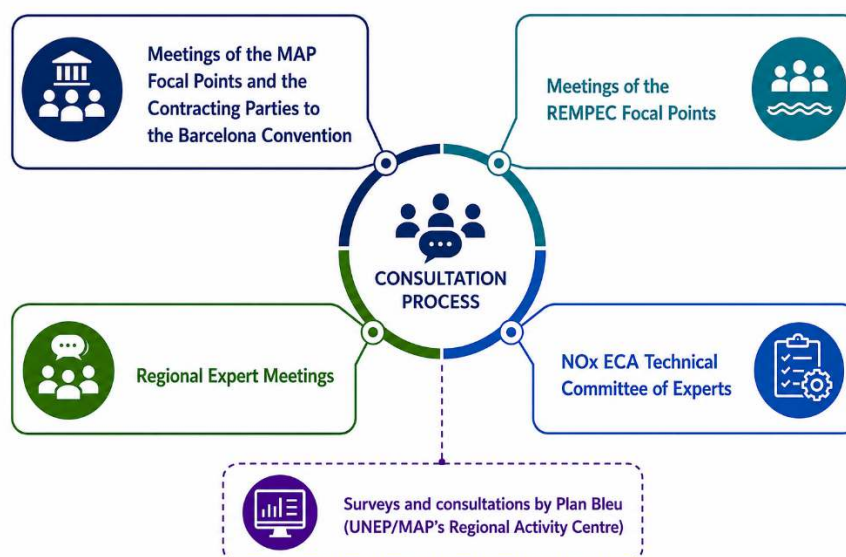


Figure 1 – Collaborative process towards a Med NO_x ECA proposal

7 In [...] 2027, following the Meetings of the MAP Focal Points and the Contracting Parties to the Barcelona Convention, a COP decision¹ endorsed the submission of this proposal on the designation of the Med NO_x ECA to MEPC [...].

8 This proposal is the result of a multilateral exercise delivering a practical output for a healthy Mediterranean Sea and coast. Contracting Parties to the Barcelona Convention

¹ Insert the document reference.

also take this opportunity to recall that collaboration remains essential to address all concerns raised and challenges foreseen in some shipping sectors.

Summary of the proposal

9 It is proposed to designate a Mediterranean Sea NO_x ECA complementing the existing SO_x ECA. Addressing NO_x emissions alongside SO_x and PM broadens the scope of air pollutant controls from maritime sources and would deliver enhanced environmental and public health benefits.

10 Total NO_x emissions in Mediterranean countries remain among the highest in Europe, particularly in countries with dense coastal populations and major port infrastructure. In the Mediterranean region, ship-sourced NO_x emissions are believed to represent around 10–20% of total NO_x emissions, a proportion higher than in many other enclosed seas².

11 The direct benefits of the proposed Med NO_x ECA are expected to outweigh additional compliance costs. Such costs are not expected to lead to significant indirect impacts on citizens and wider economies, even in countries heavily dependent on maritime imports. The burden on international shipping is expected to be small compared to the improvements in air quality, the reductions in premature mortality and health incidences associated with this air pollution.

12 It is recalled that, in practice, a NO_x ECA introduces Tier III emission limits for marine diesel engines above 130 kW installed on new ships (or in cases of transformation). The adoption of the North-East Atlantic Ocean as an ECA for SO_x, PM and NO_x (entry into force 2028), along with the other existing or planned ECAs for NO_x, already mandates Tier III compliance for a large proportion of new built ships that will be sailing through the Mediterranean Sea.

13 The Study in annex 1 provides a comprehensive assessment of environmental, economic and social impacts of the proposed NO_x ECA, along with an analysis of the cost-effectiveness. Data, illustrations, or analysis in the main part of this submission are all extracted from the Study, unless specified otherwise. The Study specifically answers the eight criteria for the designation of an ECA, set out in Appendix III of MARPOL Annex VI, as shown in the table below.

Ref.	Criteria	Section of the Report
3.1.1	a clear delineation of the proposed area of application, along with a reference chart on which the area is marked;	3.1
3.1.2	the type or types of emission(s) that is or are being proposed for control (i.e. NO _x or SO _x and particulate matter or all three types of emissions)	3.3
3.1.3	a description of the human populations and environmental areas at risk from the impacts of ship emissions;	3.4
3.1.4	an assessment that emissions from ships operating in the proposed area of application are contributing to ambient concentrations of air pollution or to adverse environmental impacts. Such assessment shall include a description of the impacts of the relevant emissions on human health and the environment, such as adverse impacts on terrestrial and aquatic ecosystems, areas of natural productivity, critical habitats, water quality,	Emissions from ships: 4.4 Air quality impacts: 5.1.3

² Annex 2, "Towards a Mediterranean NECA: Contextual Foundations and Sectoral Implications for Fisheries and Tourism", Paper 2, Plan Bleu.

Ref.	Criteria	Section of the Report
	human health, and areas of cultural and scientific significance, if applicable. The sources of relevant data including methodologies used shall be identified;	
3.1.5	relevant information, pertaining to the meteorological conditions in the proposed area of application, to the human populations and environmental areas at risk, in particular prevailing wind patterns, or to topographical, geological, oceanographic, morphological or other conditions that contribute to ambient concentrations of air pollution or adverse environmental impacts;	3.5
3.1.6	the nature of the ship traffic in the proposed emission control area, including the patterns and density of such traffic;	4.2
3.1.7	a description of the control measures taken by the proposing Party or Parties addressing land-based sources of NO _x , SO _x and particulate matter emissions affecting the human populations and environmental areas at risk that are in place and operating concurrently with the consideration of measures to be adopted in relation to provisions of regulations 13 and 14 of Annex VI;	5.3
3.1.8	the relative costs of reducing emissions from ships when compared with land-based controls, and the economic impacts on shipping engaged in international trade.	7

Table 1 – Cross references to criteria for an ECA designation under MARPOL Annex VI

14 This submission comprises four annexes:

1. **Annex 1:** the Study providing evidence to address each criteria for the designation of an ECA set out in Appendix III of MARPOL Annex VI
2. **Annex 2:** a reference to the Survey work undertaken by Plan Bleu focusing on the sectoral repercussions of a Med NO_x ECA
3. **Annex 3:** a description and a chart of the proposed area
4. **Annex 4:** proposed draft amendments to regulation 13.6 and Appendix VII of MARPOL Annex VI

Description of the proposed area and emissions proposed for control

15 The area proposed to be designated as a NO_x ECA is the current Mediterranean Sea SO_x ECA, as referred in regulation 14.3.5 and defined in paragraph .4 of appendix VII to MARPOL Annex VI. The geographical area is illustrated in figure 2 below and described in detail in annex 3.



Figure 2 – Area covered by proposed Med NO_x ECA

16 It is recalled that NO_x comprise primarily nitric oxide NO and nitrogen dioxide NO₂. NO_x under the scope of regulation 13 in MARPOL Annex VI are produced by the combustion of fossil fuels in diesel engines used for propulsion or auxiliary purposes onboard ships.

Populations and environment at risk from exposure to ship emissions

17 The Mediterranean region is home to significant coastal populations, and is renowned for its rich cultural heritage and diverse ecosystems. Coastal hotspots such as the Adriatic Sea, the Strait of Gibraltar and the Eastern Mediterranean are particularly affected by NO_x due to intense shipping activity. While total NO_x emissions across sectors have slightly declined over the past decade, Mediterranean coastal areas continue to experience elevated concentrations, especially during peak tourism and shipping seasons³.

Coastal populations

18 In 2018, the Mediterranean coastal States were home to approximately 512 million people, of which nearly 30% resided in coastal areas. This population was projected to reach 529 million in 2025, as illustrated in figure 3.

19 Atmospheric transport mechanisms enable pollutants to travel considerable distances inland, thereby affecting air quality well beyond the immediate vicinity of ports and shipping routes. As a result, both coastal and inland populations are exposed to elevated levels of air pollution.

³ Annex 2, "Towards a Mediterranean NECA: Contextual Foundations and Sectoral Implications for Fisheries and Tourism", Paper 2, Plan Bleu.

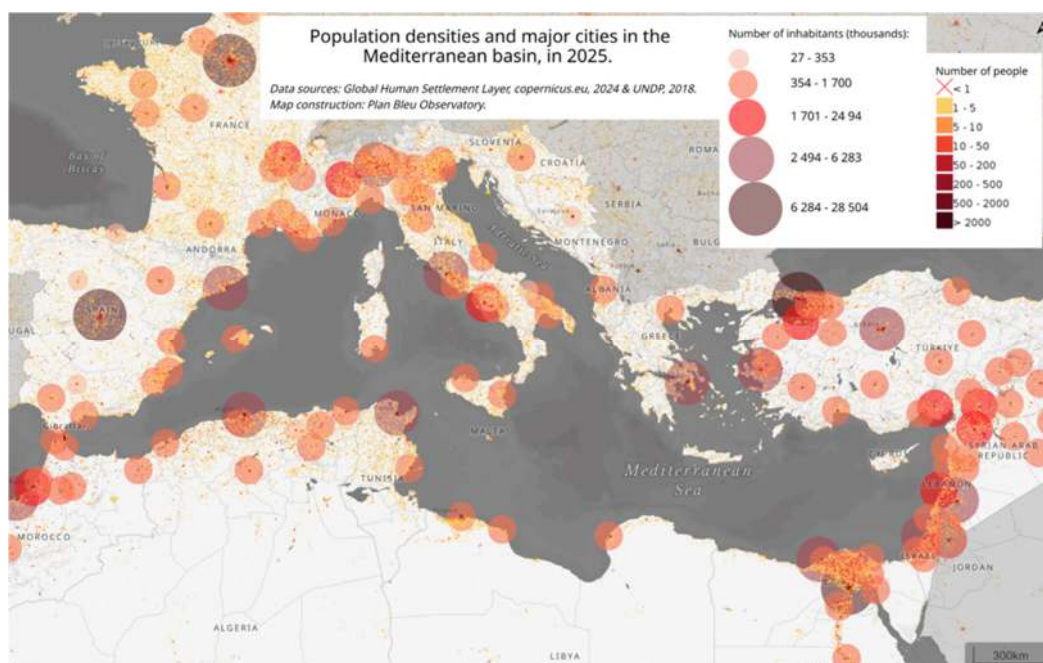


Figure 3 - Population density in the Mediterranean region (as in the Study)

Port areas

20 Mediterranean coastal regions are densely populated areas where numerous ports and vulnerable communities are located. In 2008, there were 480 ports and terminals in the Mediterranean area. Port or maritime workers and surrounding populations are disproportionately impacted by air pollution, as frequently exposed to harmful levels of air pollutions from shipping activities.

Environmental areas at risk

21 The Mediterranean region is home to a very large number of culturally and environmentally significant sites. These include UNESCO World Heritage sites, archaeological or historical landmarks, and ecologically sensitive marine and coastal ecosystems.

22 Such areas are particularly susceptible to NO_x , which contribute to the formation of ground-level ozone and secondary particulate matter.

23 NO_x emissions also contribute to environmental degradation through processes such as soil acidification and eutrophication, which have detrimental effects on biodiversity.

Meteorological conditions

24 Meteorological conditions in the Mediterranean region are characterised by prevailing onshore winds, which are key drivers to the dispersion of NO_x emissions from shipping, carrying pollutants over land and potentially hundreds of kilometers inland.

25 It is estimated that approximately 70% of shipping emissions occur within 400 km of the coasts. NO_x emissions, along with their secondary pollutants, can remain airborne for five to ten days before being removed from the atmosphere through deposition or chemical transformation. During this period, prevailing winds facilitate the movement of these pollutants across both water and land, adversely affecting large portions of Mediterranean coastal States.

Ship traffic in the Mediterranean Sea

Traffic patterns

26 The main traffic flows in the Mediterranean can be categorized as such:

1. **transiting traffic:** Asia-Europe route (through the Suez Canal and Strait of Gibraltar); Trans-Atlantic route (connecting with North America via the Strait of Gibraltar); and traffic bound for the Black Sea (via the Bosphorus Strait);
2. **intra-Mediterranean traffic:** represented 58% of the total Mediterranean traffic in 2016. Includes short-sea shipping and ferry connections.
3. **cruising itineraries:** The Mediterranean Sea is the second biggest cruising region in the world.
4. **ships on domestic routes:** fleet operating exclusively within flag State jurisdictions, such as ferries or ro-ro vessels providing inter-islands connections.

27 Intra-Mediterranean traffic involves ships that are not directly affected by other NO_x ECAs. Transiting traffic include ships that may be built as Tier III compliant due to their operational patterns covering other NO_x ECA.

Description of the fleet

28 The main characteristics of the fleet analysed in the Study, for reference year 2023, are summarized as follows:

- Around 24,000 unique ships (fitted with engine power above 130 kW) operated in the Mediterranean Sea in 2023.
- 16% of those ships operated exclusively within waters of their flag State.
- Amongst the total fleet operating in the Mediterranean Sea, 8% of ships were fitted with engines certified to Tier III, 20% with engines certified as Tier II and 37% as Tier I.

29 Figure 4 shows the number of ships by Tiers and types for year 2023. The fleet is dominated by bulk carriers and general cargo ships. Some categories, notably general cargo ships, have a higher share of older ships (e.g. Tier 0 and Tier I).

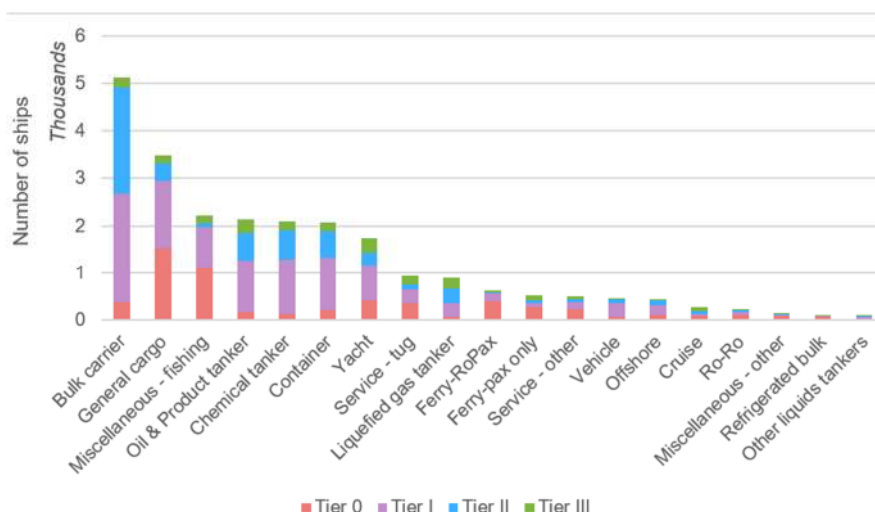


Figure 4 – Ships operating in the Mediterranean Sea in 2023 by Tier and type

Contributions from ships to adverse impacts and benefits gained from a NO_x ECA

Different scenarios assessed in the Study

30 The Study provides estimations and assessments for different scenarios:

- **two decarbonisation pathways**, reflecting possible variations in the future share of marine fuel types, resulting from the outcome of the consideration of IMO mid-term GHG reduction measures:
 - *no global mid-term measures (NGMT)*: a business-as-usual scenario based on 2023 reference year (for example, in 2050 the share of HFO is set to 15% and 0% for biomethanol).
 - *global mid-term measures (GMT)*: based on Scenario 50 analysed in the IMO Comprehensive Impact Assessment of the basket of candidate GHG reduction mid-term measures in MEPC 82/INF.8/Add.1 (for example, in 2025 the share of HFO is set to 5% and 10% for biomethanol).
- **three proposed NO_x ECA entry into force dates** (2032, 2035 and 2038), as initially reviewed by the Contracting Parties to Barcelona Convention.

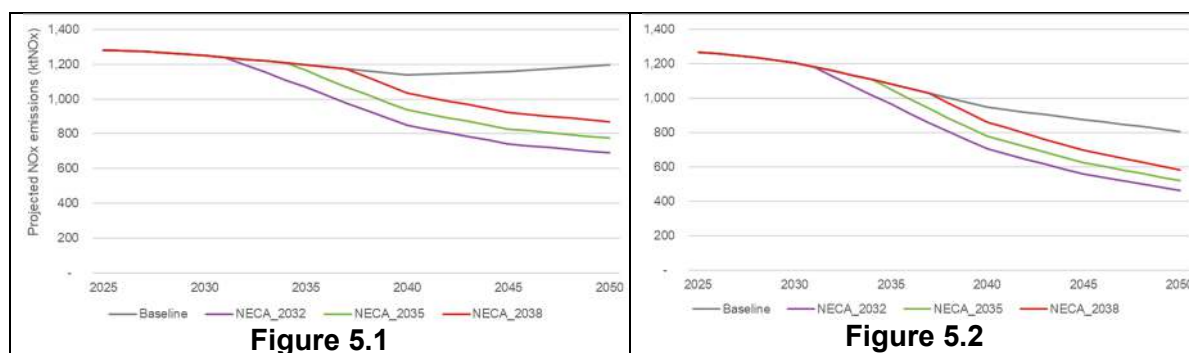
Estimation of NO_x emissions from shipping

31 According to the Study modelling analysis:

- in 2023, **1,415 kilotonnes of NO_x** were emitted within the Mediterranean Sea by ships subject to NO_x regulations (modelled real world emission factors based on sniffer measurements).
- Containerships are the top emitters with around 30% of total NO_x emissions, followed by bulk carriers (14%) and oil & product tankers (13%).

32 The projected shipping emissions were calculated for the different scenarios covered in the Study, as illustrated below:

Projected shipping NO _x emissions for different ECA implementation dates	
NGMT scenario	GMT scenario



33 As shown on figure 5.2, in the “global mid-term measures” scenario, NO_x emissions from shipping would be reduced from approximately 70% by 2050 (decreasing from 1,300 kt in 2025 to 450 kt by 2050).

34 The proposal for the Mediterranean SO_x ECA, submitted in 2022 in MEPC 78/11, contained a technical feasibility study which had estimated that a NO_x ECA would reduce NO_x by 38% (2015/16 baseline) when half of the ships would be Tier III and by 77% when all ships would be Tier III.

Impacts of NO_x on human health and benefits gained from an ECA

35 The inhalation of air pollutants leads to a higher risk of respiratory and cardiovascular diseases (e.g., bronchitis, asthma, lung cancer). These impacts on health lead to medical treatment costs, production loss at work (due to illness) and, in some cases, death.

36 The health benefits were estimated for the period 2031 to 2050, based on 13 different health diseases. The result table is shown below.

Health impact	Unit	NECA EIF 2032	
		NGMT	GMT
Chronic Mortality (30yr +) deaths	Total life years lost	-156,978	-119,040
Infant Mortality (1 month-1yr)	Total life years lost	-1,266	-960
Chronic Bronchitis (18yr +)	Change in cases	-30,537	-23,157
Bronchitis in children aged 6 to 12	Change in cases	-9,040	-6,855
Stroke	Change in cases	-2,094	-1,588
Myocardial infarction	Change in cases	-1,397	-1,060
Diabetes Mellitus Type 2	Change in cases	-284	-215
Lung Cancer	Change in cases	-531	-402
Asthma symptom days (children 5-19yr)	Change in cases	-6,047	-4,585
Cardiovascular hospital admissions	Change in hospital admissions	-2,480	-1,881
Respiratory Hospital Admissions (All ages)	Change in hospital admissions	-2,575	-1,953
Minor Restricted Activity Days (MRADs all ages)	Number of restricted activity days	-5,997	-4,548
Workday Lost	Number of workdays lost	-1,913	-1,451

Table 2 – Health benefits over 2031-2050 for the NGMT and GMT scenarios

37 The Study shows that a Med NO_x ECA provides benefits for all 13 health diseases,

with chronic bronchitis (18yr +) benefiting the most.

Impacts of NO_x on biodiversity

38 The Mediterranean Sea is a sensitive ecosystem with high marine biodiversity (17,000 listed marine species). It continues to experience environmental degradation driven by anthropogenic factors, including acidification, pollution and loss of marine habitat (e.g. seagrass meadows and coral reefs).

39 NO_x have a significant impact on biodiversity, particularly within sensitive ecosystems. Atmospheric deposition of NO_x is one of the major sources of nitrogen and phosphorus in some regions of the Mediterranean Sea. Potential impacts on the biodiversity include nutrient loading (increased growth of certain algal species, which may produce harmful toxins) and acidification or eutrophication in both terrestrial and aquatic ecosystems (impacts on species composition, habitat quality and overall ecosystem resilience).

40 The potential contribution from ships on total NO₂ concentration, including nitrogen deposition, is high on the main shipping routes and in coastal regions, ranging from 25% to 85% of the total NO₂ concentration. Values are high (over 300mg) in cities and densely populated regions, with the highest impact of NO₂ concentration found near major ports.

Impacts of NO_x on areas of cultural significance

41 There are 49 cultural UNESCO World Heritage Sites located in coastal areas of the Mediterranean.

42 NO_x emitted by ships contribute to the corrosion and soiling of cultural heritage sites, accelerating the deterioration of historic buildings and monuments. Substantial evidence shows their role in the corrosion of calcareous stone, such as limestone, and in surface discolouration. As explained above, NO_x originating from sources located far away, such as ships at sea or in port, travel inland and can potentially affect cultural heritage sites.

Total “air quality benefits” of a Med NO_x ECA

43 In summary, a Mediterranean NO_x ECA brings air quality benefits, as a combined reduction of all the adverse impacts described above. The Study estimates the cumulative air quality benefits as such:

- The introduction of a NO_x ECA is expected to result in **cumulative air quality benefits just under €15 billion** (for implementation year 2032 and GMT decarbonisation scenario) in the period 2031-2050 (or € 19 billion with the NGMT scenario).

Land-based emissions controls

44 The most significant land-based contributors to NO_x emissions in Mediterranean coastal states are road transport; public power; industry; and other stationary combustion (based on 2022 data and projections for 2030).

45 The limited availability and comparability of cost data created challenges to determine cost effectiveness ratios of land-based measures for countries bordering the Mediterranean. Based on further review of various data sources, a range of €900-6,500 per tonne of NO_x reduced was considered as the most suitable proxy for the cost of land-based emissions controls.

Economic impacts of a Med NO_x ECA

Fleet-wide compliance costs

46 The costs assessed relate to the direct compliance costs placed on fleet operators (and potentially passed on to end-consumers) through increased investment for ship replacements and energy demand of technologies or methods required to meet Tier III emission limits. It is recalled that CAPEX increase as Tier III compliant technologies and engines are required for newbuild ships or when engines are transformed/modified. In that context, the replacement rates for each ship type across the fleet is an important factor. The increase in OPEX, or operational costs, will vary based on the Tier III technology installed.

47 The fleet-wide compliance costs for shipping in Mediterranean Sea is estimated to a total of €1,624 million cumulated over the period 2035-2050.

48 The projected impact of a NO_x ECA on total costs is expected to be modest, as the cumulative cost increase from the baseline scenario remains under 0.2%.

Shipping costs

49 On average, shipping freight rates are not expected to increase beyond 0.3%. Impacts on cruise ticket prices are expected to be negligible.

50 The Study provides two *Case studies* focused on short sea shipping connections, showing variations in ticket prices (passenger or truck with driver tickets). While the increase remains under 5% for the period 2035-2040, it could reach 14% in the long term (2041-2050), due to a later replacement of the existing fleet with Tier III compliant ships, occurring by or after 2040.

51 The proposed NO_x ECA will have a limited cost impact in the near-term (2040) on short sea (ro-ro, ro-pax and passenger ships) shipping costs in the Mediterranean, given lower replacement rates for ferries, but increasing gradually as Tier III compliance reaches 100% of the Mediterranean fleet. Therefore, the NO_x ECA could generate additional cost for operators of ferries and/or routes in the Mediterranean area. Connectivity impacts could be more significant in non-EU countries, unless specific public service obligation (fixing the maximum price) contracts were established to protect essential services.

Other impacts of a Med NO_x ECA

52 An overview of other economic impacts is provided in the table below. Overall, the Study concludes that the economic impacts would remain relatively modest.

Impacts on	Description and Key findings
Consumer prices	Marginal impact on goods' prices. Maximum price increases estimated at 0.03% Price increases are higher in small island countries like Malta or Cyprus, particularly for fuels and consumer goods (however, modelled price increases in these countries are still marginal.)
Macroeconomy	Marginal impacts on GDP and employment levels, given small changes in transport costs

Modal shift	No evidence to suggest that a significant mode shift would occur, noting however a higher cost impact on short sea shipping.
Re-routing risks	The very limited increase in costs (< 0.3% on total shipping costs) is not expected to provide a financial incentive for re-routing.

Table 3 – Summary of other economic impacts assessed in the Study

Cost-effectiveness of a Med NO_x ECA

53 The cost-effectiveness analysis is informed by the various data described above and consists in comparing the benefits obtained with the costs incurred. It is supported by three indicators, as such:

1. *Net Present Value* (difference between total discounted benefits and costs):
 - i. the NPV from a NO_x ECA is positive across all scenarios considered;
 - ii. benefits outweigh costs for all fuel/technology mix sensitivities.
2. *Benefit-cost ratio* (total benefits vs implementation costs, up to 2050).
 - i. with a BCR estimated around 9 (i.e. benefits 9 times greater than the costs), the NO_x ECA is considered highly cost-effective.
3. *NO_x abatement cost* (compliance cost per tonne of NO_x reduced):
 - i. around €530 per tonne of NO_x reduced;
 - ii. the Med NO_x ECA abatement cost is at the lower end of the cost ranges provided in previous NO_x ECA feasibility studies.

54 The results demonstrate the strong cost-effectiveness of the proposed Med NO_x ECA compared to both land-based measures and previously implemented ECAs.

Lessons learned during the implementation of the SO_x ECA and measures to support implementation of the NO_x ECA

55 During the consultation process, leading to the submission of this proposal, Contracting Parties to the Barcelona Convention [co-sponsors] shared their feedback on the implementation of the SO_x ECA and their comments on the challenges for Mediterranean coastal States to adopt and implement the Med NO_x ECA. In particular, the need for technical assistance and capacity building was reinstated, while acknowledging initiatives already taken. Contracting Parties were invited to continue engaging actively for the promotion of technical co-operation, capacity-building initiatives, technology transfer, and the need for financial support was raised, taking into account the different levels of readiness among Mediterranean coastal States. In that context, REMPEC was invited to continue, subject to availability of funds, supporting Contracting Parties which so request, through technical assistance, training, and capacity-building activities aimed at enhancing compliance with MARPOL Annex VI.

Proposed amendments

56 Annex 4 contains the proposed draft amendments to regulation 13 and appendix VII of MARPOL Annex VI, to designate the Mediterranean Sea, as a whole, as an Emission Control Area for nitrogen oxides.

57 The “three-dates system” is used for the application criteria, as already applied for the introduction of the Norwegian ECA (MEPC 81/11/1) and the North Atlantic ECA (MEPC

83/12). The wording follows the recommendation in the IMO *Guidance on drafting of amendments to the 1974 SOLAS Convention and related mandatory instruments* (MSC.1/Circ.1500/Rev.3). This approach could prevent an increase in keel-laying activity prior to entry-into-force of a Med NO_x ECA in an effort to circumvent emission requirements, as seen in the implementation of other NO_x ECAs in the past.

Conclusion

58 The designation of the proposed Mediterranean Sea NO_x ECA will significantly reduce ship emissions, improve air quality, thereby contributing to public health and environmental protection in the Mediterranean region.

59 The strong cost-effectiveness of the proposed Mediterranean Sea NO_x ECA compared to both land-based measures and previously implemented NO_x ECAs is demonstrated. Overall, the direct benefits of the proposed Med NO_x ECA is expected to outweigh additional compliance costs. Furthermore, a large proportion of ships sailing across the proposed NO_x ECA will already be impacted by other ECA's, hence reducing the impact on international shipping sectors.

Action requested of the Committee

60 The Committee is invited to:

1. consider the information contained in this document;
2. approve the proposed draft amendments to MARPOL Annex VI for the designation of the Mediterranean Sea, as a whole, as an Emission Control Area for Nitrogen Oxides, set out in Annex 4, with a view to adoption at MEPC [...]; and
3. take action as appropriate

ANNEX 1

Information responding to the criteria in Appendix III to MARPOL Annex VI

Detailed Technical and Feasibility Study to Assess the Relevant Existing and On-going Studies as well as to Examine the Possible Designation of the Mediterranean Sea, as a whole, as an Emission Control Area for Nitrogen Oxides (Med NOx ECA) pursuant to MARPOL Annex VI, including Health and Socio-economic Impacts on the Mediterranean Region and the Individual Contracting Parties to the Barcelona Convention - Prepared by Ricardo

➔ *TBD - Insert the full text of the Final Technical and Feasibility Study (102 pages)*

ANNEX 2

Further information

Towards a Mediterranean NECA: Contextual Foundations and Sectoral Implications for Fisheries and Tourism – Technical report prepared by Plan Bleu (UNEP/MAP Regional Activity Centre).

Available on Plan Bleu website for consultation and downloading with the link below:

<https://planbleu.org/en/publications/med-nox-eca-impacts/>

ANNEX 3**Description and chart of the proposed Mediterranean NO_x ECA**

The area of application is strictly identical to the current Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter, defined in paragraph 4 of appendix VII to MARPOL Annex VI, and reproduced below for ease of reference:

“4 In respect of the application of regulation 14.4, the Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter includes all waters bounded by the coasts of Europe, Africa and Asia, and is described by the following coordinates:

- .1 the western entrance to the Straits of Gibraltar, defined as a line joining the extremities of Cape Trafalgar, Spain (36°11'.00 N, 6°02'.00 W) and Cape Spartel, Morocco (35°48'.00 N, 5°55'.00 W);
- .2 the Strait of Canakkale, defined as a line joining Mehmetcik Burnu (40°03'N, 26°11'E) and Kumkale Burnu (40°01'.00 N, 26°12'.00 E); and
- .3 the northern entrance to the Suez Canal excluding the area enclosed by geodesic lines connecting points 1-4 with the following coordinates:

Point	Latitude	Longitude
1	31°30'.00 N	32°16'.00 E
2	31°30'.00 N	32°28'.48 E
3	31°14'.00 N	32°32'.62 E
4	31°14'.00 N	32°16'.00 E

Chart of the proposed Mediterranean NO_x ECA

Being identical to the current Med SO_x ECA, the same definition, as set out in annex 3 of MEP 78/11, applies:

“The area of application of the proposed Med NO_x ECA includes waters internal to the Mediterranean Sea, as defined by the International Hydrographic Organization and shown in the chart below. The area shall take into account points defined in .1, .2 and .3 above.”



ANNEX 4

Proposed draft amendments to regulation 13 and appendix VII of MARPOL Annex VI

(new text is shown as underlined and text to be deleted as ~~strikethrough~~).

Regulation 13

Nitrogen oxides (NO_x)

Tier III

At the end of paragraph 13.5.1.2, add a new sub-paragraph 4, as follows:

“4 [1 January 2032] and is operating in the Mediterranean Sea Emission Control Area. For the Mediterranean Sea Emission Control Area, "ship constructed on or after 1 January 2032" means a ship:

.1 for which the building contract is placed on or after 1 January 2032; or

.2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2032; or

.3 the delivery of which is on or after 1 January 2036.”

Emission control area

At the end of paragraph 13.6, a new sub-paragraph⁸ is added as follows:

“8 the Mediterranean Sea Emission Control Area, which means the area described by the coordinates provided in appendix VII to this Annex.”

Appendix VII

Emission control areas (regulations 13.6 and 14.3)

Amend the existing paragraph 4 as follows:

“4 The Mediterranean Sea Emission Control Area ~~for Sulphur Oxides and Particulate Matter~~ includes all waters bounded by the coasts of Europe, Africa and Asia, and is described by the following coordinates: (...)