

Towards a Mediterranean NECA: Contextual Foundations and Sectoral Implications for Fisheries and Tourism

REMPEC - Regional Expert Meeting Med NOx ECA
Malta, November 18th, 2025

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An ongoing commitment



- **Plan Bleu** is one of the **Regional Activity Centres of UNEP/MAP**, established by the Contracting Parties to the Barcelona Convention.
- It supports **sustainable development and environmental protection** in the Mediterranean region through **scientific analysis, foresight studies, and policy recommendations**.
- Based in Marseille (France), Plan Bleu works on topics such as **climate change, blue economy and marine conservation**, helping countries implement regional strategies and achieve the **Mediterranean Strategy for Sustainable Development (MSSD)**.
- As part of its ongoing commitment to a cleaner Mediterranean, **Plan Bleu** is continuing the work initiated on **SOx and the SECA proposal**, now turning its attention to **NOx emissions**, a key step toward improving air quality and protecting the Mediterranean environment.

Findings from previous PB SECA Study



Implementation costs: Around USD 1.7 billion per year

Health benefits

- More than USD 2.4 billion linked to avoided premature deaths.
- Health benefits are over **5× higher** than maritime compliance costs.



Health impacts avoided (per year)

- 1,100 premature deaths avoided (cancers, strokes, heart disease).
- 2,300 cases of childhood asthma avoided.

Economic Implications

- Maritime transport remains competitive. Costs would have to increase by **1.6 to 30 times** for rail or road to become more profitable.
- Minimal cost increases (**\$0.16–1.31 per tonne**) → almost no impact on prices or purchasing power.



Next steps: setting course for a NECA?

- UNEP/MAP, through REMPEC (the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea), produced a comprehensive Technical and Feasibility Study to assess the implications of establishing a NECA.
- Plan Bleu is :
 - contributing to this effort through Technical Committee of Experts
 - producing its own **analyses focused on sectoral impacts** of a Mediterranean NOx ECA — particularly on **fisheries and tourism** — based on **expert surveys**



Mediterranean
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Towards a Mediterranean NECA: Contextual Foundations and Sectoral Implications for Fisheries and Tourism¹

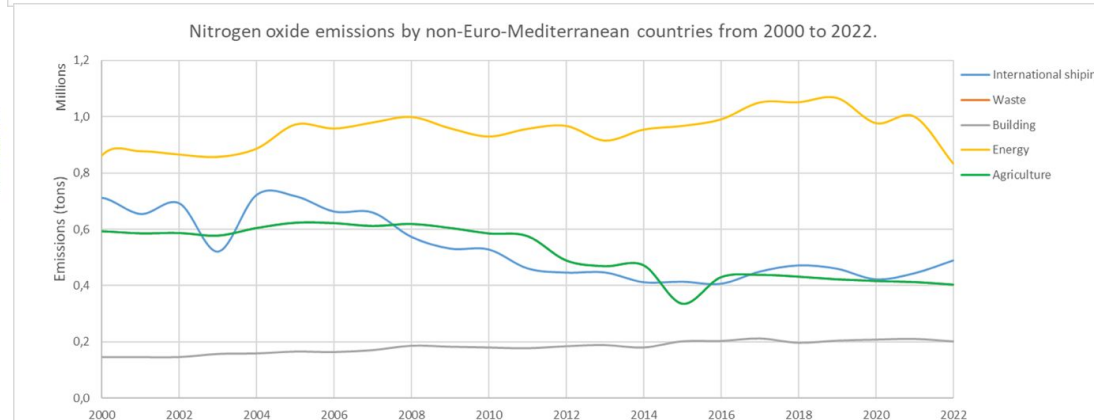
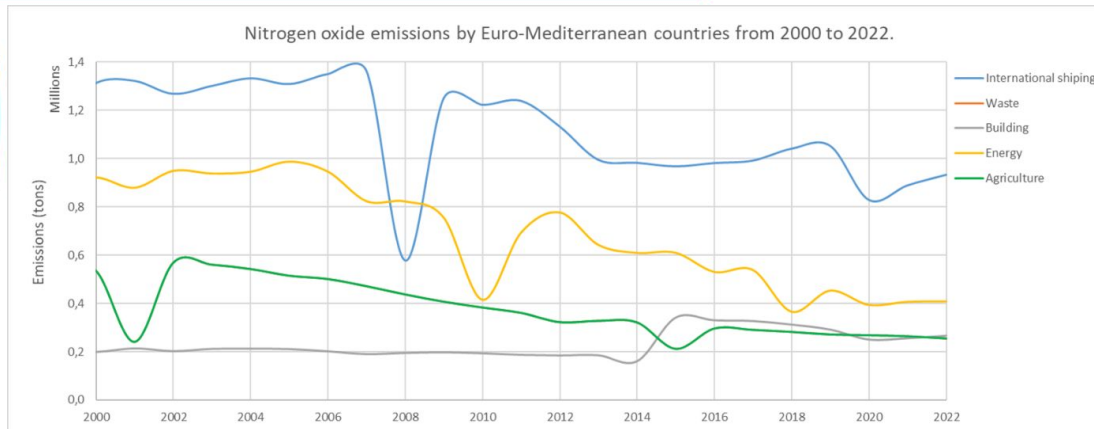


Intro. The threat of NO_x in the Med



- In the Mediterranean, ships account for **10–20% of total NO_x emissions**.
- In **coastal port areas**, **54% of NO_x emissions come from ships**, compared with **30% from road transport**.
- Given the high population density and intense maritime traffic, the region faces a high potential for external costs linked to emissions — including public health impacts, economic risks (such as reduced fish catches or degraded seafood quality), and damage to coastal landscapes.

Intro. The threat of NO_x in the Med



Source: Hoesly et al. (2024) - Community Emissions Data System (CEDS), Population based on various sources (2024) - with major processing by **Plan Bleu Observatory** (Samson Bellieres)

Trends and impacts:

In EU-Med countries, international maritime transport is the main source of NO_x emissions, followed by energy.

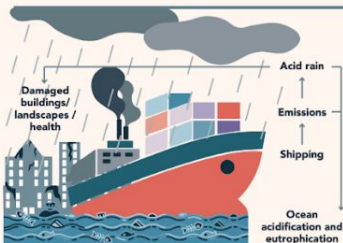
Across Europe, maritime NO_x emissions increased by **10% between 2015 and 2023**.

In non-EU Mediterranean countries, the energy sector remains dominant, with maritime transport as the second-largest source.

Global Frameworks



Emission Control Areas - Reducing Air Pollution From Shipping



Shipping emissions significantly impact the climate, human health and ocean biodiversity

EMISSION CONTROL AREAS (ECAs)

Emission Control Areas (ECAs) are designed to **reduce atmospheric pollutants** from ships by requiring more **stringent controls on fuels and engines** while operating in the ECA.



Why do we need new ECAs?

- ✓ Cleaner air
- ✓ Cut premature deaths
- ✓ Reduce climate impacts

- Established ECAs
- Newly adopted ECAs
- Possible future ECAs

Two types of ECAs

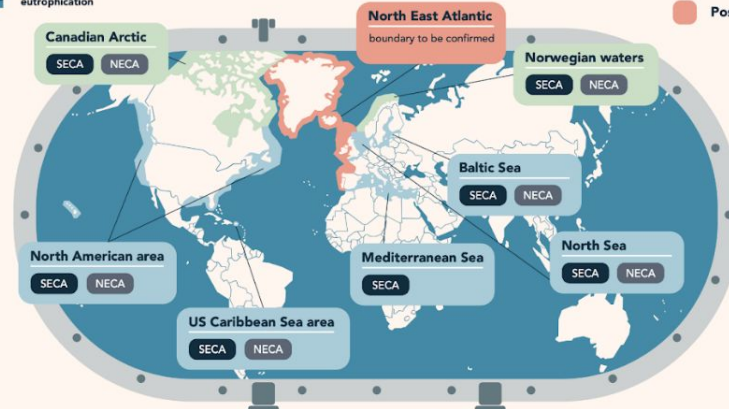
SECA

Reduces SOx and PM emissions, with co-benefits:

- Reduces particulate matter (PM) including short-lived climate pollutant - black carbon (BC)
- Encourages ships to use cleaner fuels, potentially reducing CO₂ emissions

NECA

Reduces NOx emissions



SOx

Sulphur oxide triggers fine particulate matter (PM) emissions which leads to **health impacts**, and **acid rain** which damages buildings and landscapes.

NOx

Nitrogen oxide causes health impacts, and **eutrophication and acidification** of water, which disrupts aquatic and terrestrial ecosystems.

Implementation of an ECA and the Arctic HFO ban in the **Canadian Arctic** would *:

- reduce SOx by 80% by 2030
- reduce PM by 73% by 2030
- reduce BC by 58% by 2030

The **Mediterranean SECA** requirements will **::

- reduce SOx by up to 80% by 2030
- prevent up to 3,000 premature deaths annually by 2030
- save more than 6,000 lives annually by 2050

*MEPC 80/16/2 Development of a proposal to designate a Canadian Arctic Emission Control Area

**Cofala et al., 2018. Shipping_emissions_reductions_main.pdf (iiasa.ac.at)

Plan Bleu focus: Sectoral impacts



- **Fisheries:** Effects on **fishing activities and trade** within **Marine Protected Areas**, including possible benefits from healthier marine ecosystems
- **Tourism:** Socio-economic impacts on **coastal and maritime areas**, including potential improvements in air quality and attractiveness of destinations.



1. Expert Survey on NOx Controls in Mediterranean Marine Settings

Michael Tanner and Patricia Puig (Oceanogami)

Methodology



The Mediterranean is one of the world's busiest shipping regions, and NO_x emissions pose serious air-quality and health challenges.



OBJECTIVES OF THE SURVEY:



1

Assess stakeholder perceptions on feasibility and readiness.

2

Evaluate economic, environmental and social impacts

3

Identify policy preferences and enabling conditions.

Methodology



1

Survey

18 structured questions (quantitative + qualitative)
31 experts from academia, government, industry, NGOs,
and international institutions.



2

Quantitative analysis



3

Qualitative coding



4

Integrated findings

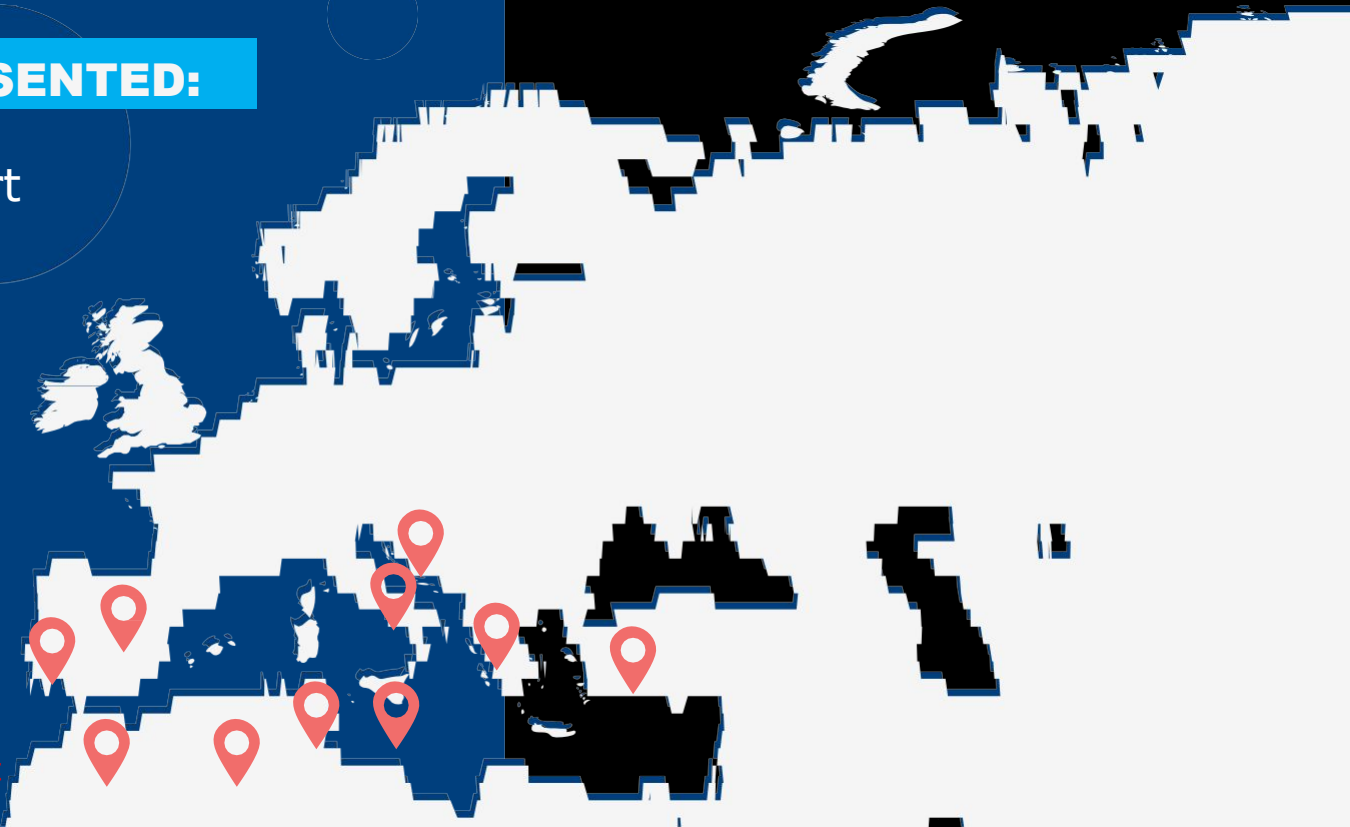
Stakeholder Coverage



SECTORS REPRESENTED:

- Maritime transport
- Fisheries
- Tourism
- Environmental management
- Policy & research

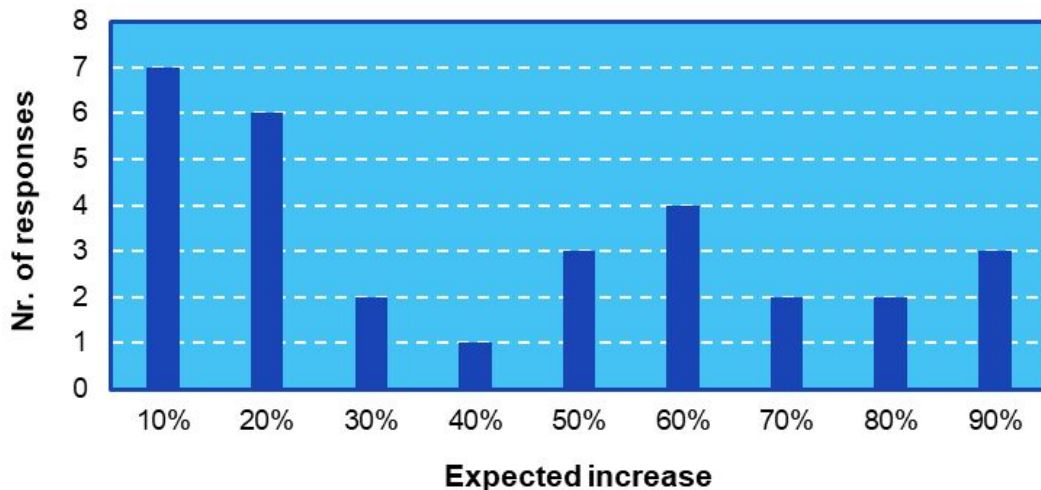
- one-third ($\approx 35\%$) of respondents specialised in MPA management and policy
- one-quarter ($\approx 23\%$) had strong experience in fisheries management



Economic Impacts

MARITIME TRANSPORT

Expected Distribution of Costs for the
Maritime Transport Sector

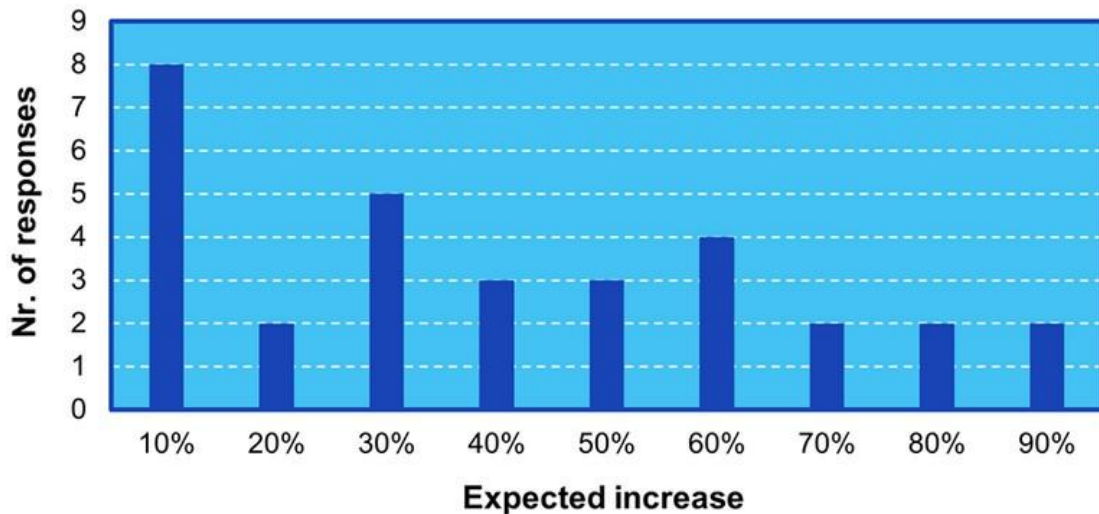


**~50 % of experts
expect cost
increases ≤ 20 %.**

Economic Impacts

FISHERIES

Expected Distribution of Costs for the
Local Fisheries Sector



Median cost increase:
≈ 30 % (all respondents)
≈ 40 % (fisheries experts)

Anticipated Benefits



ENVIRONMENTAL BENEFITS:

≈ 80 % median improvement
in marine ecosystem health.

TOURISM BENEFITS:

Expected revenue
growth of 30–70 %

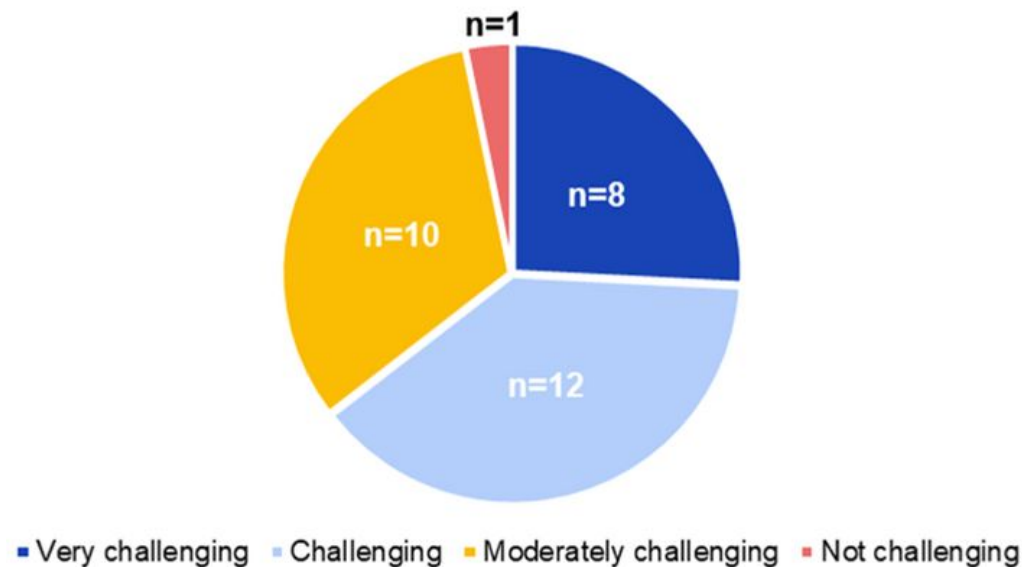
SOCIAL & HEALTH BENEFITS:

> 80 % expect strong
improvements in public
health and wellbeing

**Perceived
benefits
outweigh
costs across
all sectors**

Perceived Difficulty

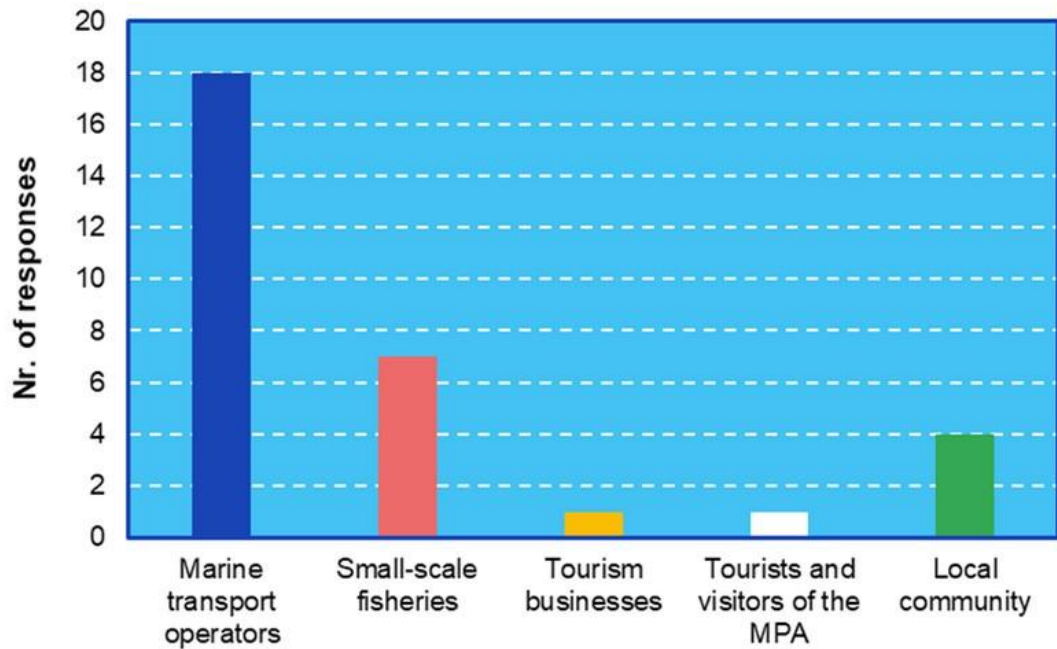
Difficulty of implementing NOx control



64 % see implementation as “Challenging” or “Very Challenging”

Equity and cost distribution

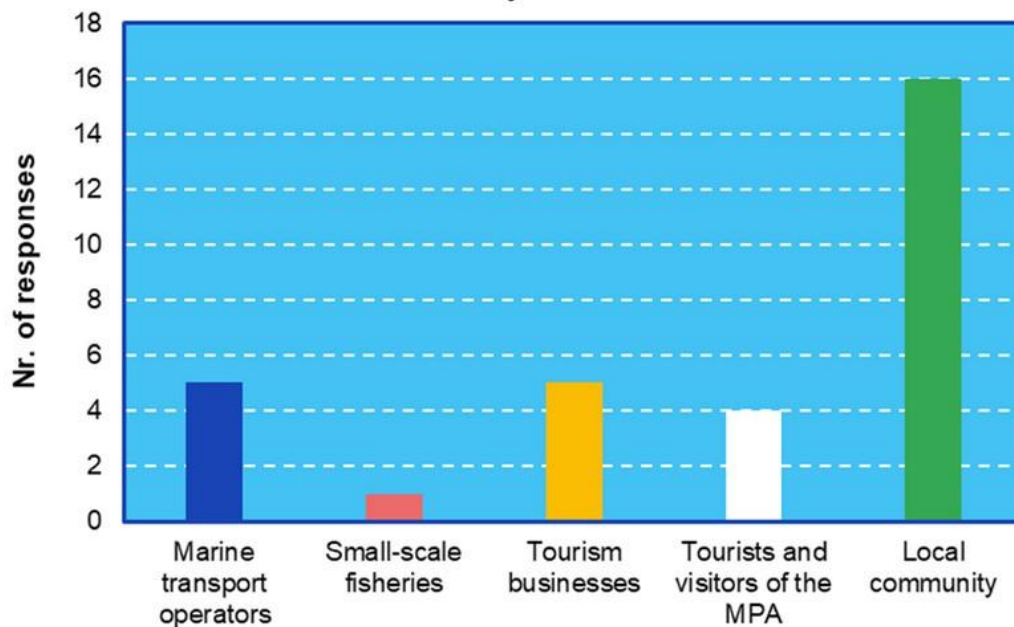
STAKEHOLDERS MOST AFFECTED



Costs are asymmetric

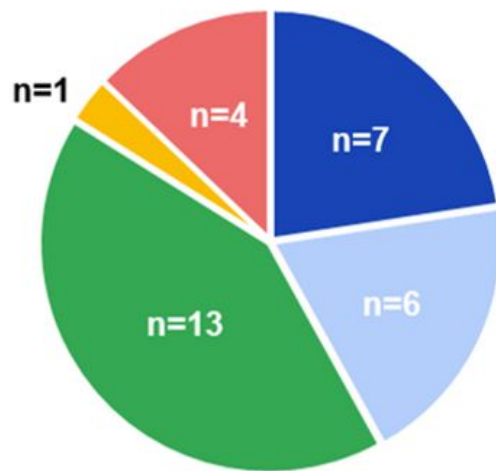
Equity and cost distribution

PRIMARY BENEFICIARIES



Benefits are also asymmetric

PREFERRED POLICY INSTRUMENTS



- Tax Incentives for Cleaner Technologies
- Emission Trading Systems (ETS) or Cap-and-Trade Programs
- Environmental Performance Standards Linked to Financial Rewards or Penalties
- Flexible Compliance Mechanisms
- Subsidies

**Stakeholders
favour measures
combining clear
targets and
economic
incentives**

Governance Readiness



YES

Legal basis exists
(MARPOL Annex VI)

Regional cooperation
frameworks

Funding tools
available

MAYBE

**Conditional
optimism:**

progress depends on
coordination, finance,
and phased rollout.

NO

Fragmented
policies

High compliance
costs

Limited political
will

Governance Readiness



- 1 Adopt performance-based standards with economic incentives.
- 2 Complement with market tools (tax credits, ETS).
- 3 Target financial support to small operators and fishers.
- 4 Strengthen regional coordination & governance capacity
- 5 Implement gradual but irreversible timelines.
- 6 Invest in innovation and capacity building.

Key Messages



1

Stakeholders recognise that benefits outweigh costs.

2

Equity and capacity issues must be addressed to secure buy-in.

3

Governance coordination and phased, incentive-based implementation are the keys to success.



2. Socio-Economic Impacts of a Potential Mediterranean NOx Emission Control Area (ECA) on the Tourism sector

Jérémie Fosse, eco-union

(Co-author Haiat Jellouli Moaddine)

Objectives and context

Objective of the paper

- Assess socio-economic and tourism-related implications of Med NOx ECA
- Inform policymakers and stakeholders on opportunities & challenges in the tourism sector

Context

- Mediterranean is the world's #1 tourism region (**> 400 M visitors / year**).
- Maritime transport is a major NOx source (**10–20 % of total NOx in region**).
- A Med NOx ECA would complement the Med SOx ECA (2025)



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- **Multi-method qualitative approach**
 - **Online survey** from targeted tourism & maritime stakeholders.
 - **Semi-structured interviews** with selected key actors (tourism operators, ports, NGOs, communities).
 - Comparative **case studies** (Baltic Sea, North America, Norway, Los Angeles, Barcelona).
 - **Triangulation** of literature review + stakeholder inputs + policy analysis.

Stakeholders Consulted

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- **Public institutions:** UfM, Plan Bleu, REMPEC, Barcelona & València cities, Malta gov.
 - **Ports & cruise:** Genoa, Alexandria, MedCruise Assoc., Yacht Club Monaco.
 - **NGOs / MPAs:** WWF MMI, IUCN-Med, Pelagos Sanctuary, SMILO.
 - **Tourism sector:** Iberostar, GSTC, WTTC, UNWTO, Catalan Tourism Agency.
 - **Research & Academia:** Toulon Univ., Genoa, CNR-ISMAR, Damascus University.

Survey Insights

- **100 % of respondents** → reducing air pollution from ships is “important or very important.”
- **64 %** → “some tourists willing to pay more for eco-friendly services.”
- Mediterranean brand perceived as “**moderately eco-friendly**” → stronger in North, weaker in South.
- **Majority of respondents** expect slight increase in costs but also long-term benefits for competitiveness & health.
- **Consensus** → financial incentives and phased implementation are essential.





Environmental & Branding Gains

- Cleaner air → improved health & destination image.
- Mediterranean can rebrand as global sustainable tourism hub.



Economic & Operational Challenges

- Compliance costs (esp. for small operators).
- Risk of higher cruise prices / reduced itineraries if support lacking.

Tourist Behaviour

- Growing segment of eco-conscious travellers.
- Shift towards low-impact activities & eco-accommodation.
- Willingness to pay premium (5–10 %) for verified sustainability.



Key Findings - Perceptions & Impact



- North Med: higher regulatory capacity & marketing of eco-tourism.
- South Med: strong interest but less resources / infrastructure.
- Need for regional solidarity & capacity building to avoid new gaps.

Long-Term Socio-Economic Impacts

- **New jobs** in green ports, ship retrofitting, eco-tourism, renewables.
- Possible **job losses** in traditional maritime & mass tourism segments.
- **Innovation driver** → clean tech, digital tools, eco-labels.
- Enhanced **global competitiveness** through sustainability branding.

Key Findings - Challenges identified

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- 
- **Uneven financial capacity** across countries & operators.
 - **Limited awareness and training** in southern ports.
 - **High CAPEX** for retrofitting and onshore power infrastructure.
 - Need for credible **monitoring and anti-greenwashing** mechanisms.
 - Risk of leaving **small operators** behind without targeted support.

Key Findings - Opportunities and Co-benefits

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- Improved **public health and quality of life** for coastal communities.
 - Stronger alignment with **SDGs and EU Green Deal**.
 - **Marketing advantage** for eco-certified ports and destinations.
 - Attracting **quality tourism and foreign investment**.
 - Strengthened **cross-sector synergies** (tourism × fisheries × transport).

Policy Recommendations



- **Financial Incentives** – subsidies & tax reliefs for clean tech.
- **Capacity Building** – training and technical support for operators.
- **Phased Implementation** – progressive timeline to adapt.
- **Public-Private Partnerships** – green ports & tourism investment funds.
- **Integrated Policies** – link climate, transport, and tourism strategies.
- **Communication Campaign** – to promote benefits.

in a nutshell...



The Med NOx ECA is both an environmental imperative and a strategic chance to make the Mediterranean a global leader in sustainable tourism, with success hinging on **support, coordination, and incentives.**



Broad consensus: Med NOx ECA is **technically feasible, environmentally necessary, and economically viable.**

- **Major benefits** expected, especially in **Pelagos Sanctuary**, and **manageable costs.**

Strategic Suggestions

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- **Creation of a Med Fund** to support vulnerable operators + **Green Bonds.**
 - **Taxation & Fiscal Instruments**, three potential scenarios discussed:
 - a. Uniform tourist arrival tax (TAF): simple and institutionally neutral, but does not account for regional differences in environmental impacts.
 - b. Health-weighted tax: applies multipliers based on local impacts; fairer but complex.
 - c. Maritime freight tax: targets main emissions and allows regional revenue redistribution; main risk is potential port competition.
 - **Shared monitoring and evaluation framework** based on common indicators.
 - **Cooperation & key role of port cities** as green innovation hubs.

visit our website : planbleu.org



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Thank you for your attention !

