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February 2022

Costs and benefits of establishing a low sulphur emission zone in the Mediterranean

The Mediterranean: a very busy sea that faces significant pollution

Although the Mediterranean Sea constitutes less than 1% of the world's oceans, it remains one of the busiest seas in the world, hosting 20% of seaborne trade, 10% of world container throughput, and over 200 million passengers every year. Ships sailing in the Mediterranean consume about 19 million tonnes of fuel oil per year, at an estimated purchase cost of about $10 billion (REMPEC, 2019).

Ship movements result in emissions of air pollutants and particulate matter from fuel combustion, including Sulphur Oxides (SO_x). These pollutants affect human health, impact biodiversity, and damage infrastructure through acid rain. One way to reduce these effects is to establish regulations for the fuel oil used on board ships.

International efforts to reduce air pollution from ships

In 2020, the International Maritime Organization (IMO) took bold action to reduce SO_x emissions from ships, with the entry into force of a new global regulation limiting the sulphur content in fuel oil used on board ships to 0.50%, the so-called IMO sulphur limit.

This decision has had tangible global benefits, starting with cleaner air and an annual reduction of approximately 8.5 million tonnes of SO_x released into the atmosphere.

Going further in the Mediterranean

Today, the 21 countries around the Mediterranean and the European Union, with the support of the Barcelona Convention system, want to go even further: to propose the designation of the Mediterranean Sea, as a whole, as an Emission Control Area (ECA) for SO_x, better known as **Med SO_x ECA**. This implies capping the sulphur content in fuel oil used on board ships to just 0.10%, equivalent to one fifth of the current legal limit.

SO_x ECAs in other regions of the world

The Mediterranean is not the only sea in the world whose riparian countries wish to benefit from the advantages of a SO_x ECA. The step towards the designation of a SO_x ECA has already been successfully completed in the North American area, the United States Caribbean Sea area, the Baltic Sea area, and the North Sea area.

According to the evaluations carried out, the Med SO_x ECA will bring the following benefits:

1. a significant reduction in the negative effects of maritime transport on human health through lowering emissions by 79% for SO_x and 24% for fine particulate matter. This would prevent, each year on average, more than 1,100 premature deaths from lung cancer, cardiovascular disease, and strokes, as well as more than 2,300 cases of childhood asthma (REMPEC, 2019). The prevented premature deaths are concentrated in countries around the Mediterranean, with the greatest impact expected in Turkey, Algeria, Morocco, Italy, and Tunisia. But the benefits will be felt even in neighbouring countries such as Austria or Jordan (Ineris, 2019).
2. a health gain equivalent to 8 to 14 billion euros per year, i.e. more than 5 times more benefits for the health sector alone than costs for the maritime transport sector (Ineris, 2019).
3. a reduction in acidification by decreasing acid pollutants formed from SO_x, leading to a reduction in harm to crops, forests, and aquatic species (REMPEC, 2019), as well as to buildings and monuments (Cofala et al. 2018). The Med SO_x ECA would thus bring benefits to the agriculture/forestry sectors, improve the state and productivity of ecosystems, and avoid costs linked to the restoration of historical monuments and other buildings.
4. a reduction in haze and visibility improvements, notably over major Mediterranean shipping routes, potentially avoiding maritime incidents (REMPEC, 2019) and improving tourist attractiveness.

And in practice - what needs to change?

The designation of a Med SO_x ECA implies a change in the type of fuel oil used on board ships, switching to a more expensive (REMPEC, 2019) but significantly less polluting fuel. No modification to the ships' engines is required[1].

1 tonne of cargo crossing the entire Mediterranean (from the Suez Canal to Gibraltar) is expected to be US$1.31 more expensive with the Med SO_x ECA.

1. *The installation of Exhaust Gas Cleaning Systems (scrubbers) is accepted as an alternative means to meet the sulphur limit requirement if approved by flag States. These scrubbers remove SO_x from the ships' exhaust gas, allowing them to continue to use heavy fuel oil, while complying with the SO_x emission limits of the SO_x ECA. However, these scrubbers, especially if they are used in open-loop, emit toxic and acidifying contaminants into the water, creating considerable negative impacts on the marine environment.*

UN environment programme | Mediterranean Action Plan Barcelona Convention | Plan Bleu | REMPEC | IMO INTERNATIONAL MARITIME ORGANIZATION

The role of the Mediterranean Action Plan - Barcelona Convention in the Med SO_x ECA

According to Article 6 of the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean ("Barcelona Convention"), whose Contracting Parties are the 21 countries around the Mediterranean and the European Union, "the Contracting Parties shall take all measures [...] to prevent, abate, combat and to the fullest possible extent eliminate pollution of the Mediterranean Sea Area caused by discharges from ships...".

Several components of the Mediterranean Action Plan - Barcelona Convention have been mobilised, in close collaboration with the Coordinating Unit and the Contracting Parties, in particular:

- the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC): carrying out of the technical and feasibility study as well as additional analyses of fuel supply and alternative compliance methods, the development of the road map and the draft submission to the IMO for a proposal for the designation of the Med SO_x ECA;

- the Plan Bleu Regional Activity Centre: carrying out of a further study related to the economic impact evaluation of the proposed Med SO_x ECA, including an analysis of the socio-economic impacts on the Contracting Parties to the Barcelona Convention; and

- the Mediterranean Pollution Assessment and Control Programme (MED POL): knowledge gathering related to land-based emissions control measures of SO_x and fine particulate matter in the Mediterranean coastal States.

More recently, at their 22nd meeting in December 2021, the Contracting Parties to the Barcelona Convention adopted a landmark decision agreeing to initiate the formal process for the designation of the Med SO_x ECA at the IMO.

Retro-planning until the effective application of the Med SO_x ECA	
February 2022	Submission of the joint and coordinated proposal on the designation of the Med SO_x ECA to the IMO
June 2022	Assessment and approval of the said proposal and of a draft amendment to MARPOL Annex VI related to the designation of the proposed Med SO_x ECA, if any, by the 78th session of the IMO's Marine Environment Protection Committee (MEPC)
December 2022	Consideration and adoption of the said draft amendment, if any, by the 79th session of the IMO's MEPC
1st January 2025	Expected date of effective application of the Med SO_x ECA, if any

For more information:
www.rempec.org
www.planbleu.org
www.unep.org/unepmap/

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