

BUNKERSPOT

CLEARING THE AIR

SHIPPING'S ROLE IN
EMISSIONS TRADING

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Sea change

Ioannis Generalis of Y. Georgiades & Associates LLC looks at the designation of the Mediterranean as a SOx ECA

Last December, 22 Mediterranean States joined forces in deciding to submit a joint proposal to the International Maritime Organization (IMO) for the designation of the Mediterranean as an Emission Control Area for Sulphur Oxides (Med SOx ECA). This outcome has been in the making since 2005, and translates, if and when adopted by the IMO, into a lowering of the allowed sulphur content in bunkers used on ships from 0.50% to 0.10%, as of 1 January 2025.

The landmark decision was reached during deliberations of the 22nd meeting of the Conference of Parties (COP 22) to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (*Barcelona Convention*) and its Protocols, held in Antalya, Turkey. The Barcelona Convention was adopted in 1995, within the framework of the 1975 Mediterranean Action Plan (MAP), in the context of the Regional Seas Programme of the United Nations Environment Programme (UNEP).

EMISSION CONTROL AREAS

Emission Control Areas (ECAs) are specially designated areas under the IMO International Convention for the Prevention of Pollution from Ships (MARPOL), where stricter emissions limits apply. They are defined within MARPOL's Annexes, such as the Regulation for Prevention of Air Pollution from Ships (Annex VI). They largely divide into two different categories: ECAs designated under regulation 13 of Annex VI on Nitrogen Oxides emissions control (NOx), and ECAs designated under regulation 14 of

Annex VI on Sulphur Oxides and Particulate Matter emissions control (SOx and PM).

SOx and PM ECAs primarily achieve emissions control by imposing a 0.10% m/m sulphur limit as of 1 January 2015. Regarding NOx ECAs, NOx emissions limits apply to diesel engines, varying with the date of construction of the ship and the engine's rated speed in rpm (n). They feature Tier I (17g/kWh for n<130) for ships constructed on or after 1 January 2000, Tier II (14.4g/kWh for n<130) for ships constructed on or after 1 January 2011, and Tier III (3.4G/kWh for n<130) for ships constructed on or after 1 January 2016, Tier III applying only within NOx ECAs. The ECAs currently established feature:

- The Baltic Sea area: as defined in Annex I of MARPOL (SOx only);
- The North Sea area: as defined in Annex V of MARPOL (SOx only);
- The North American area: as defined in Appendix VII of Annex VI of MARPOL (SOx, NOx and PM); and
- The United States Caribbean Sea area: as defined in Appendix VII of Annex VI of MARPOL (SOx, NOx and PM).

COP 22 AND THE MEDITERRANEAN ECA

COP 22 was branded 'the COP for the Mediterranean', and for good reason. Though the Med SOx ECA proposal has stolen the spotlight, several other key decisions were taken at the meeting. These include, inter alia, adopting the Mediterranean Strategy for the Prevention, Preparedness, and Response to Marine Pollution from Ships (2022-2031), the Ballast Water Management Strategy for the Mediterranean Sea (2022-

2027), and Guidelines for the Conduct of Environmental Impact Assessments (EIA) under the Offshore Protocol.

Though undoubtedly significant for the decisions adopted, COP 22 fell short of adopting a proposal for rendering the Mediterranean a joint SOx/NOx ECA. Nonetheless, the joint proposal registers an awareness 'that the Contracting Parties are fully committed to... progress on exploring the feasibility of a NOx ECA in the Mediterranean Sea as a whole', which appears to pave the way for further NOx reduction.

GENERAL IMPORTANCE

The Mediterranean comprises a mere 1% of the world's oceans, yet it boasts 20% of the global seaborne trade, 10% of the world container throughput, and some 200 million passengers a year. This increased traffic at a relatively constrained geographical area leads to a precipitation of the effects of airborne emissions. The Mediterranean features a combined population of 500 million, half of which resides around the coast. Air pollution leads to increased illnesses, hospitalisations, loss of productivity, and premature deaths, spreading hundreds of kilometres inland. Sulphur dioxide (SO₂) potentially irritates the eyes and air passages, reacts with airborne solid particles, is water soluble, and oxidises within airborne water droplets. Sulphate aerosol particles (SO₄), along with other PM, enter the lungs, and are associated with increased asthma and even lung cancer. Additionally, emissions from ships harm marine and terrestrial ecosystems, for example through deposition of sulphate particles contributing to increased acidification.



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The significance of the creation of a Med SOx ECA is not limited to the obvious health and ecosystem benefits. ECAs potentially affect both port access and shipping lanes. Current ECA port container throughput rests at 17%, which is already significant enough, and will increase considerably with the inclusion of the Mediterranean. Moreover, shipping lanes shall be affected to a much larger extent than currently, given the sheer volume of traffic within the Mediterranean, whether internal, or via the Suez-Gibraltar route entering through the Bosphorous strait.

BUNKER IMPLICATIONS

The designation of an ECA under MAPPOL must satisfy each of the eight criteria established under Appendix III to Annex VI. Criterion 3.1.8 considers ‘the relative costs of reducing emissions from ships when compared with land-based controls, and the economic impacts on shipping engaged in international trade’.

The transition from the current IMO 2020 sulphur limit of 0.50% to a Med SOx ECA sulphur limit of 0.10% in terms of bunkers largely reflects a transition from very low sulphur fuel oil (VLSFO) to ultra low sulphur fuel oil (ULSFO) or marine gas oil (MGO). One therefore needs to consider relative fuel costs, as well as fuel availability. Moreover, one should factor in a parallel deployment of exhaust gas cleaning systems (EGCS), and a potential rise in the use of alternative fuel.

Regarding fuel availability, the joint proposal submits that refinery capacity to produce both gas/diesel and fuel oil for provision of 0.10% sulphur fuels through the combination of distillate fuels and blended products in

the Mediterranean is sufficient, considering a range of estimates and growth rates for fleet fuel use, even before adjusting for deployment of EGCS. It does however observe that current production levels of middle distillates are lower than demand, allowing Mediterranean refineries to profit from exporting fuel oil while purchasing gas/diesel on the market.

In terms of relative cost, although fuel prices fluctuate along with crude oil prices, the price differential between MGO and low sulphur fuel oil (LSFO), both in the Europe, Middle East and Africa (EMEA) region as well as worldwide, appears relatively steady. Within the EMEA, the MGO/LSFO median ratio lies at approx. 1.29, while the mean price increase is around 29%. It remains to be seen whether and/or how the continuing conflict in Ukraine shall affect this price differential in terms of sanctions (targeting Russia’s access to financial markets or even its oil industry directly), bearing in mind Russia was the third largest producer of crude oil globally during 2020, crude oil being the main component of LSFO.

The joint proposal supports that approximately 18% of the Mediterranean fleet could adopt EGCS, over a 100-year investment horizon, at a 15% investment rate. Comparing the cost of annual compliance per vessel type for IMO 2020, the Med SOx ECA, and the Med SOx ECA plus EGCS, provides an illustration for the changes ahead. For instance, a cargo ship now running at \$290,000/year could run at \$327,000 without EGCS and \$325,000 with EGCS, a container ship currently at \$2,340,000 runs at \$2,640,000 without or \$2,540,000 with EGCS, and a tanker currently at \$681,000 runs at \$763,000 or \$750,000 respectively.

The joint proposal estimates that based on current fuel prices the cost of imposing

the Med SOx ECA could come at \$1.761 billion a year, achieving a 95% net reduction in SOx and a 62% net reduction in PM. To put things into perspective, were this additional cost to be borne exclusively by container ships in the Mediterranean, it would signify a reasonable additional burden of \$8.30/TEU. This annual compliance cost could be lowered upon successful deployment of abatement technologies and/or through increased use of alternative fuels, the latter expected to play a vital role in terms of the IMO’s shipping decarbonisation targets, with vital synergies emerging in terms of investment. Moreover, this added cost is considered but a fraction of the cost associated with achieving similar results through more stringent land-based controls.

CONCLUSION

In sum, the designation of the Mediterranean as a SOx ECA is a very positive and long overdue outcome for all Mediterranean countries and their inhabitants, bound to protect health as well as marine and terrestrial ecosystems, in one of the world’s busiest shipping areas. In terms of bunkers, it translates into a transition from VLSFO to ULSFO or MGO which is feasible considering refinery capacity, and comes at a reasonable price which could be lowered through the successful use of abatement technologies and/or alternative fuel.

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