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**Project name:** MOSES: Maritime, Ocean Sector and Ecosystem Sustainability: Fostering Blue Growth in Atlantic Industries.

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**Further Reading:** The full report is available to download here:

[http://mosesproject.eu/ban/wp-content/uploads/2021/08/WP5\\_DeliverableAction3\\_21June21.pdf](http://mosesproject.eu/ban/wp-content/uploads/2021/08/WP5_DeliverableAction3_21June21.pdf)

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## Maritime economy-wide impacts on the marine environment: a synthetic index applied to the EU Atlantic Area

The objective of this research is to define an indicator-based synthetic index that can be used to broadly assess the impact of maritime activities. For each maritime activity, we identify not only the use of the marine ecosystem (using business indicators following a national account approach), but also the ripple effect on the marine environment associated with those business indicators. We consider the potential use/impact that the socio-economic production has on the marine ecosystem services (ES) like fish provision, regulatory, and cultural services.

### Research Findings

- **How:** Developing an index that provides multipliers that are used to estimate the economy-wide effects that a business activity has on the marine environment. The first direct effect is measured through business indicators and the size of macroeconomic multipliers applied depends on the characteristic of the activity (spatial extent, frequency and the rents and employment generation, among others) and on the natural system where the activity takes place.
- **Pilot Study:** We applied the index assessment to the suite of maritime sectors operating across the EU Atlantic area coastal regions (NUTS3 spatial scale).
- **Cumulative impacts:** The assessment reveals small increases in the impacts on ESs across the coastal regions between 2013 and 2015. However, using a global approach all regions combined are found to have a high cumulative impact with an increase of 40% in the whole AA. The cumulative impact on food provisioning is particularly high, with an increase in the index of around 100% over that time-period. Clustering the Atlantic Areas according to the maritime activity pressures, two differentiated groups might be established (Spain, France and Ireland with a higher impact and UK and Portugal with a lower one).

### Policy implications

- Regulation should identify and prioritize high-risk economic activities. Direct impacts might also be analysed to identify if they are region-

specific.

- The number of high cross-linkages between maritime sectors and ecosystem services reinforces the necessity of adopting a holistic assessment. Therefore, the design of joint management measures for the whole AA is required to achieve the objective of reducing economic impacts.
- Management measures should be oriented to enhance the conservation of the ecosystem services. Private maritime companies tend to consider the conservation of marine ecosystems as an external issue out of their control, but they should cooperate with research bodies and public administrations to guarantee such conservation.
- The index provides a new indicator that the Atlantic Area and maritime sector managers, and other interested stakeholders, can use at regional, national, or European level to identify the most harmful activities when a wider-economic approach is followed. An interface is available for stakeholders to assess the index, <https://aztigps.shinyapps.io/Moses/>, using the password: MOSES\_AZTI.