

Policy Brief No.1 May 2020

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](#)

Fernández-Macho, J., González, P. and Virto, J. (2020). Assessing anthropogenic vulnerability of coastal regions: DEA-based index and rankings for the European Atlantic Area, *Marine Policy*, vol. 119, p. 104030, Sep. 2020, doi: 10.1016/j.marpol.2020.104030

Fernández-Macho, J., 2016. Risk assessment for marine spills along European coastlines. *Marine pollution bulletin*, 113(1-2), pp.200-210.

Fernandez-Macho, J., 2016. A statistical assessment of maritime socioeconomic indicators for the European Atlantic area. *Journal of Ocean and Coastal Economics*, 2(2), p.4.

Assessing the vulnerability of marine and coastal ecosystems across the Atlantic Arc

The aim of this research was to assess the levels of coastal vulnerability in the EU Atlantic region. This was achieved by constructing a synthetic index which was used to rank the European Atlantic Arc countries and regions at NUTS3 Eurostat geographical level. The report defined coastal vulnerability as 'the degree to which coastal areas are susceptible to damage or degradation due to environmental conditions and impacts related to maritime transportation, port facilities and coastal socio-economic uses'. There were five vectors of pressures considered. These were marine spill risk; port facilities impact; coastal activities and tourism; protection of coastal areas; and bathing water quality. In order to estimate the size of these pressure vectors, data collection was undertaken using an extensive number of sources including Eurostat, EcoPorts, regional agencies, EU Directives, and previous research in the area of each vector. Ranking the vectors by country using simulation models, they were aggregated with other pressure vectors to give an overall ranking for coastal vulnerability – an aggregated vulnerability index.

Research Findings

Overall, the results show that the UK has the most vulnerable coastline, where most NUTS3 regions are above the European Atlantic average. Ireland has the least vulnerable coastline, with many of its' regions below the Atlantic average. However overall, most of the Atlantic European coast appears to be quite vulnerable. The data is shown in Figure 1 below.

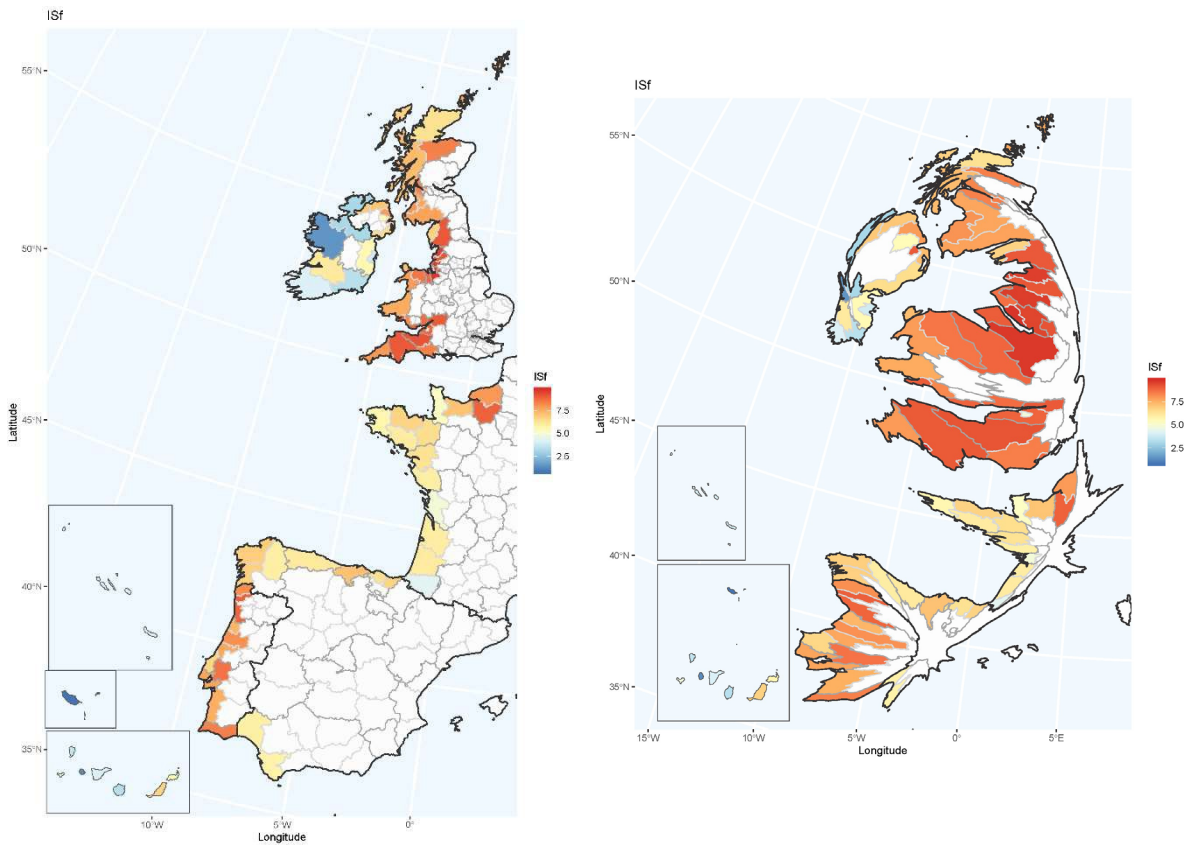


Figure 1 (a) geo distribution; (b) 2cartogram with surface proportional to overall scores

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www.mosesproject.eu or follow us on twitter @atlanticmoses.

Policy Implications

This research provides information that feeds into a number of EU policy directives and action plans including two priorities of the Atlantic Action Plan (AAP). They are Priority Two; protect, secure and enhance the marine and coastal environment; and Priority Four; create a socially inclusive and sustainable model of regional development. These priorities are currently being addressed at member state level through implementation of the Marine Spatial Planning (MSP) Directive. Member states are required to develop a national maritime spatial plan by 2021 and are currently in the process of creating these plans. The outputs from this work provides important information for consideration in creating marine plans for the EU's marine and coastal areas. Maritime spatial planning works across borders and sectors to oversee trade-offs for human activities at sea take place in an efficient, safe and sustainable way. The need to balance human activities and the environment is an important part of planning, and can only be successfully achieved when complimented with data such as coastal vulnerability. By using cross-border coherent approaches as that adopted here, resources can be directed to where the need is greatest.

The work can also inform continued development of the management plans that are required under the Marine Strategy Framework Directive (MSFD). The MSFD uses the ecosystem approach for the achievement of 'good environmental status'; integrating the concepts of environmental protection and sustainable use of EU marine waters. Regional policy makers can also use these results as diagnostic tools to assess the coastal vulnerability of their region and to develop plans to potentially lessen the impacts from the driving factors. The findings should assist them in designing and carrying out appropriate actions in line with integrated European coastal and marine management policies.