# Considering the Inclusion of Cumulative Impacts in Maritime Spatial Planning

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## 1. Issue

Maritime Spatial Planning (MSP) requires the assessment of cumulative impacts in both forward planning and project decision making. Globally, there is an array of existing ecosystem-based methods for cumulative pressure and impact assessment, however there is a general lack of clarity on how they could be incorporated into the MSP process.[1, 2]

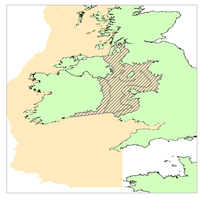

Fig 1. SIMCelt Case Study Area

As part of the SIMCelt project, we are looking at existing ecosystem-based management tools and CEA methodologies to identify a pragmatic, systematic approach to considering cumulative impacts in Maritime Spatial Planning.

## 2. Approach

A case study in the Irish Sea (Fig 1.) is exploring how cumulative impacts can be incorporated into maritime spatial planning. There are four stages to our approach:

- Understanding the sensitivity of the receiving environment;
- Compilation of data on Human Activities in the Irish Sea;
- Interpretation of the pressures caused by those activities;
- Use this information to understand the cumulative pressures and the impacts.

The sources of data are detailed in Table 1.

| Source of Data | Type of Data | Jurisdiction | Organisation |
|---|---|---|---|
| EMODnet | seabed habitats and human activities | Europe wide | DG MARE |
| ICES Marine Data | Spatial fisheries activity and impact | North-East Atlantic | ICES |
| OSPAR | Spatial and temporal marine environmental data | 15 Governments & EU | OSPAR |
| Marine Atlas | Spatial data for Ireland's seas | Ireland | Marine Institute |
| MMO Marine Planning Evidence | Marine planning spatial data | UK | Marine Management Organisation |
| National Marine Planning Interactive | Marine Planning spatial data | Scotland | Marine Scotland |
| DAERA (by request) | Marine planning spatial data | Northern Ireland | DAERA |

Table 1. Sources of data for Irish sea Case Study

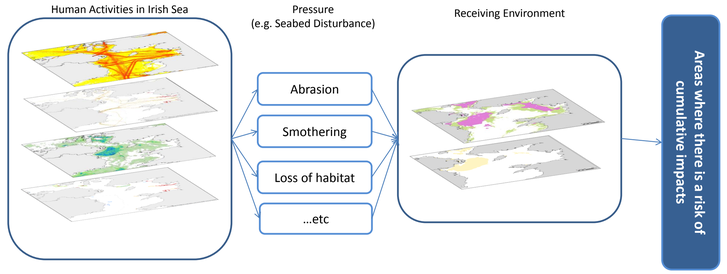


Fig 2. Case Study on the Assessment of Cumulative Impacts in the Irish Sea

## 3. Findings

### Human Activities in the Irish Sea

Spatial data were compiled on human activities including aggregate extraction, Aquaculture, Fishing, pipelines & cables, shipping, marine renewable energy, non-renewable energy and dredging (Fig 2.).

### Pressures

The ODEMM tool was used to identify and prioritise the seabed pressures resulting from these activities (Fig 3.). Fishing is the primary seabed pressure identified in the Irish Sea. Shipping and aquaculture activity also contribute. Seabed disturbance is the principal pressure, caused by abrasion, smothering and substrate loss .

### Receiving Environment

EMODnet broad-scale seabed habitat map for Europe was used to assess the receiving environment. Sensitive substrates were identified with reference to the MARESA[4] database and known habitat types (e.g. fine sediment or low energy environment).

### Cumulative Pressures

Initial results demonstrate that there are limited discrete areas in the Irish Sea where there is a risk to the seabed from cumulative pressures.

## 4. Implications for Policy and Practice

There is widespread consensus that cumulative impacts must be included within Maritime Spatial Planning; further work is need to determine at what stages in the process. While cumulative impacts have been considered widely as part of existing environmental legislation, there is currently no clear methodology on how they could be incorporated into MSP policy.


Fig 3. Seabed in E Irish Sea showing abrasion as a result of fishing

The Irish Sea case study is using a pragmatic approach availing of existing data and ecosystem management tools. It raises some interesting issues for practitioners when considering how to include cumulative impacts in MSP:

- Spatial extent: Local (activity/habitat), national or regional;
- Stakeholder: Developer, regulator, planner or policy maker;
- Temporal: Acute v chronic, Historical or Pace;
- Methodology to address CI in MSP;
- Cross-border cooperation.

**References:**

[1] Judd, A. D., Backhaus, T. and Goodsir, F. (2015). An effective set of principles for practical implementation of marine cumulative effects assessment. *Env. Sci. & Pol* 54: 254-262.

[2] Korpinen S. & Andersen J.H. (2016). A Global Review of Cumulative Pressure and Impact Assessments in Marine Environments. *Front. Mar. Sci* 3: 153

[3] ODEMM: *Options for Delivering Ecosystem-based Marine Management tool*. http://odemm.com/

[4] MARESA: *Marine evidence and sensitivity assessment database*. http://www.marlin.ac.uk/evidence

*Supporting Implementation of Maritime Spatial Planning in the Celtic Seas* (SIMCelt) . www.simcelt.eu