

Science for Environment Policy

New web-based tool supports Integrated Coastal Zone Management

A free tool to help coastal managers plan sustainable coastal development is now available online. The decision support system provides up-to-date information and data on subjects such as populations and land use, to support integrated management of coastal areas in the North Sea region affected by climate change, both now and in the future.

About one third of the EU's population lives within 50 km from the coast and human activities, such as expanding urban developments, are increasingly putting pressure on the diversity of [ecosystems](#) found in these regions. Climate change, with its associated impacts, such as sea-level rise and more frequent extreme storms and storm surges, will only increase the pressure on the coastal environment. People living in coastal areas will also become more vulnerable to the effects of [climate change](#).

As part of the EU funded BLAST¹ project, researchers developed a spatial decision support system, called the Coastal Indicator System (COINS), to improve integrated coastal zone management in the face of climate change challenges. It provides practical support for planners implementing the European Commission's recently adopted [Directive](#)² for a common EU framework for marine spatial planning and integrated coastal management.

COINS is based on the DPSIR (Driver Pressure State Impact Response) framework. It assesses impacts caused by human activities and identifies potential environmental changes as a consequence.

Coastal planners can visualise the effects of climate change on coastal areas using the COINS system. They are able to develop scenarios of socio-economic development balanced with environmental protection that are realistically constrained by the potential effects of climate change. For example, users can see how coastal developments might be affected by flooding as a result of sea-level rises and storm surges.

The researchers consulted stakeholders from the countries around the North Sea to choose suitable sustainability indicators that can be used by COINS to monitor and evaluate the effect of coastal management strategies on sustainability under climate change. As a result, the researchers included seven climate-related indicators in COINS. Six of these come from the set of 27 indicators developed by the European Expert Group on integrated coastal zone management ([ICZM](#))³.

Four indicators provide information for managers trying to control further development on undeveloped coasts: demand for property on the coast, the area of built-up land, the rate of development of undeveloped land and the demand for road travel on the coast.

Two indicators recognise the threat to coastal areas from climate change: coastal zone erosion, and natural, human and economic assets at risk. The seventh indicator recognises the potential of the coastal zone as a resource for renewable energy.

A prototype version of COINS is freely available on the internet: <http://blast-project.eu/index.php?page=224>. The researchers have used open source software and data from each country and users can also add their own data. However, there are some limitations – not all data have been harmonised across all the countries yet and land and sea data have not yet been fully integrated for the whole of the North Sea region, meaning the system cannot yet be fully implemented in all countries around the North Sea.



October 2014
Thematic Issue 46

Coastal Zones

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Source: Hansen, H.S. and Fuglsang, M. (2014) An Operational Web-Based Indicator System for Integrated Coastal Zone Management. *ISPRS International Journal of Geo-Information*. 3(1): 326-344. DOI:10.3390/ijgi3010326. This study is free to view at www.mdpi.com/2220-9964/3/1/326

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To cite this article/service: "[Science for Environment Policy](#)": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

1. Bringing Land and Sea Together (BLAST) was funded by the European Union as part of the Interreg IVB North Sea Region Programme. See: <http://blast-project.eu/index.php>

2. See: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0089&from=EN>

3. http://ec.europa.eu/environment/iczm/expert_group.htm