

New tools to improve the management of the coastal environment

How can new approaches help national decision makers improve management of coastlines for people and wildlife?



A typical managed realignment scheme. Photo by Valuing Nature Network

Coasts provide a natural habitat for many types of plants and animals while we rely on coastal areas for food, recreation, flood protection and livelihoods. But coasts are also subject to constant changes. A new more flexible adaptive management approach can help decision makers to improve coastal management. It can support them in assessing how changes in policies could impact on the provision of services from coastal areas, the value of coastal services and goods, and the livelihoods and wellbeing of people who live at and use the coast for work and leisure.

What ecosystem services do coasts provide?

Coasts provide a number of services which generate goods and benefits for people, such as:

- Formation of dunes and marshland which can help with flood defence and reduce coastal erosion.
- Diverse habitats for wildlife.
- Wild and farmed food, such as fish and shellfish, for recreational anglers and commercial fishing.
- Seascapes which have cultural significance, promote wellbeing and support tourism.
- Climate regulation by the uptake of greenhouse gases.

What problems does coastal management pose for policymaking and implementation?

Management of coastal areas poses a difficult challenge because:

- These areas of land and sea are constantly changing, requiring sensitive management and responsive policy.
- There are potentially conflicting demands on their use for different human needs, and also for nature conservation, which can lead to management options being highly contested.
- In the past decision makers considering a change in coastal policy at the strategic level have not always fully followed through the consequences for policy delivery at the local level.
- Coastal management requires a tricky balance between strategic requirements and local schemes.
- Because of the way coastal processes often work small scale schemes can have much wider and sometimes negative consequences. One community's erosion control scheme, for example, can mean a loss of beach frontage further down the coast.

How can we put a value on our coasts?

Different kinds of services may be valued in different ways:

- *Direct use value*: consumptive use such as fisheries, which can be valued through market prices, and non-consumptive use such as recreation, which can be valued in tourists' spending, wellbeing and health benefits.
- *Indirect use value*: benefits from ecosystem services, such as carbon capture by plants and seawater, which can be valued by the avoided damage costs of carbon dioxide, and the cleaning of pollution, which can be valued by estimating the costs avoided by not building and running treatment plants.
- Deliberative methods (eg stakeholder discussions or mapping techniques which are then assessed by experts and the public, or analysis of representations in art, literature and media) may be used to put values on cultural and symbolic significance of landscapes/seascapes, which are more difficult to translate into financial terms.

How would this help?

The process of putting a monetary value on these benefits can:

- Indicate the costs we would incur if we fail to sustain our coasts adequately and the future benefits of investments made now.
- Help to emphasise the importance of the coastal environment to the economy and human welfare.
- When management decisions are being taken, help to ensure that natural and cultural assets are not overlooked within a process that may be dominated by financial concerns and the need to make difficult trade-offs between competing demands.

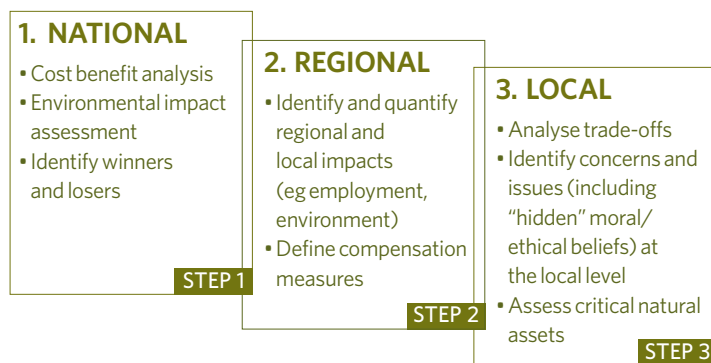
How can decision makers do things differently in future?

An adaptive approach is required which shifts as coast and policy contexts change:

- More effort has to be put into the interplay between centralised strategic decision making and the affected regional/local communities which these days are increasingly part of wider networks.
- Social networks must be taken into account and used to positive effect. These have allowed stakeholder groups to engage more rapidly and effectively with policy proposals, perhaps complicating the decision making but also offering opportunities.
- More emphasis needs to be put on the importance of feedback loops and the transparency of information flows between the central decision makers and affected communities.

Decision makers:

- Need a combination of science, models, environmental indicators and social science tools to assess the likely level of impact of environmental and/or policy changes and to decide on feasible mitigation measures.
- May use a sequential “balance sheet” approach (see diagram) as part of the toolbox to compile an increasingly robust evidence base, linked to user needs and changing circumstances.



How does the balance sheet approach work?

The balance sheet approach enables government to better anticipate regional and local environmental and societal implications of a change in policy:

- It takes into account measures of impact on the environment and people, in addition to financial costs and savings, before making and delivering the new policy.
- It is both a tool and a process, which also seeks to open up flows of information horizontally and vertically, and to make progress towards more co-produced policy.

National impacts

- Defra would take the lead for England, the Scottish, Northern Ireland and Welsh Governments for the devolved territories.
- Government agencies such as, for example, the Environment Agency and Marine Management Organisation, carry out an economic cost-benefit analysis. They use market data, willingness to pay data, based on random samples of the population, and cost information, assessing the impact of implementing the policy on jobs and growth at the national level, with an analysis of gains and losses. The economic analysis will be underpinned by information drawn from environmental impact assessments.

Regional impacts

- Collaborating agencies and local authority groupings (eg management forums and planning authorities), in consultation with stakeholder groups, will need to assess financial and social impacts including local unemployment, loss of community diversity, loss of cultural assets such as a symbolic seascape and issues of compensation.
- This can highlight winners and losers from a given policy option choice, such as people suffering unemployment due to fishing restrictions, or householders facing the risk of coastal erosion.
- Compensation measures for people who are likely to lose out will be defined at this level. How many people will be affected, how much will it cost and is it an acceptable solution to local people? For managed realignment, these measures are specified in Defra’s Flood Resilience Community Pathfinder scheme.

Local impacts

- Before policy changes are finally made and delivered local people will be further engaged at this level. This could include, for example, representatives of coastal communities faced with erosion or flooding.
- Methods such as citizens/stakeholder forums may be used to assess local concerns about biodiversity loss, environmental standards and ethical issues. This would involve, for example, local people who may be concerned about the loss of a particular coastal area which they consider to be part of their heritage.

What are the implications for decision makers?

When making policy involving UK coastlines it is important to take into account that:

- Decisions made in one place can have an impact on the environment, people and businesses further along the coast, so some strategic decision making is unavoidable, albeit with due regard for more local perspectives.
- More coastal areas may need to be designated as “critical” for wildlife or heritage reasons, which means they can’t easily be substituted or re-created elsewhere and some economic activities may be restricted as a consequence. The impacts of these restrictions need to be assessed.
- The extensive and continuing use of coastal resources means that management decisions are likely to be increasingly contested by competing interests. For example, wildlife organisations and local people may want to see specific types of birds on nature reserves, which could be under threat from changes in how that area and surrounding land or sea is used or protected.
- A precautionary approach (ie taking some decisions before complete knowledge is available with a “learning by doing” philosophy) will help to protect critical environmental, social and financial assets.
- A sequential approach depending on the policy context at issue, to provide a more robust evidence base, seems to hold some promise. The balance sheet approach, making use of national and regional assessments, compensation measures, and deliberative methods such as stakeholder forums can help to both devise and deliver more effective adaptive policy.
- This kind of methodology helps to push policy making in the direction of more co-produced options, making it more likely that that policy changes will be understood and accepted by a majority of the people affected and meaning that policy is more likely to be fully delivered.

Further information

This note was written by Professor Kerry Turner and Dr Ruth Welters and draws on the Coastal Management project which was part of the Valuing Nature Network and the National Ecosystem Assessment Follow-on.

Useful resources:

The Valuing Nature Network brings together natural scientists and economists alongside decision-makers in business and policy who have an interest in valuing nature. www.valuing-nature.net

The UK National Ecosystem Assessment was the first analysis of the UK’s natural environment in terms of the benefits it provides to society and continuing economic prosperity. <http://uknea.unep-wcmc.org/Home/tabid/38/Default.aspx>

Coastal/ marine ecosystem services, principles and practice UK National Ecosystem Assessment report, 2014. See <http://uknea.unep-wcmc.org>
Defra Flood Resilience Community Pathfinder scheme
www.gov.uk/government/publications/flood-resilience-community-pathfinder-scheme-prospectus

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