

A Regional Strategic Coastal Monitoring Programme - UK

1. Policy Objective & Theme

- ADAPTATION TO RISK: Managing impacts of climate change and safeguarding resilience of coasts/coastal systems
- ADAPTATION TO RISK: Preventing and managing natural hazards and technological (human-made) hazards
- ADAPTATION TO RISK: Integrating coherent strategies covering the risk-dimension (prevention to response) into planning and investment

2. Key Approaches

- Integration
- Knowledge-based

3. Experiences that can be exchanged

A strategic coastal monitoring programme on a regional scale to gather data for policy-makers to develop coastal defence strategies.

4. Overview of the case

A strategic regional programme for south east England was set up to offer a standard, repeatable and cost-effective method of monitoring of the coastal environment. Previous monitoring had been isolated, ad hoc and not integrated. Such a monitoring system is vital for operational management of coastal protection and flood defence. The programme has the capacity to fulfil both strategic needs and local management requirements.

5. Context and Objectives

a) Context

The south-east coast of England is characterised by low-lying land susceptible to both flooding and erosion as a result of rising sea levels and soft sedimentary geology. Various studies have highlighted the need for a more standard approach to coastal monitoring in order to maximise the use of data and to provide best value. The historic approach to coastal monitoring has been both ad-hoc and unsatisfactory within the UK. Data collection and analysis methodologies have been inconsistent, and coordination has been poor. However, despite this, region-wide monitoring costs have been estimated to vary between £700,000 and £1.4m per year. Although several region-wide monitoring programmes have been managed in isolation, results have not been integrated; neither in context with each other, nor with relation to regional aspects of shoreline management; this is contrary to best practice shoreline management principles. The South-East Strategic Regional Coastal Monitoring Programme (SRCMP) was introduced as a means of providing a standard, repeatable and cost-effective method of monitoring the coastal environment. It provides information for development of strategic shoreline management plans, coastal defence strategies and operational management of coastal protection and flood defence.

b) Objectives

The objectives are to promote a standard, repeatable and cost-effective method of monitoring of the coastal environment and to promote, inform and integrate operational monitoring requirements. This has entailed i.a. an examination of the range of types of data collected within the coastal zone on both defended and undefended coasts and a determination of whether any further types of data should be collected which might benefit the understanding and management of the coastal zone.

6. Implementation of the ICZM Approach (i.e. management, tools, resources)

a) Management

DEFRA is the government department responsible for coastal defence legislation and funding. A specialist team has been established at the Channel Coastal Observatory within the National Oceanography Centre, Southampton, to manage the monitoring programme and develop the data analysis, storage and dissemination procedures.

b) ICZM tools

Local Authorities, the Coastal Groups of the southeast of England and the Environment Agency are working with a collective vision to develop a long-term, region-wide coastal process monitoring and analysis programme. The South-East SRCMP covers approximately 1000km of coastline. Although there were a number of extremely good local monitoring programmes in place in areas such as Bournemouth, North Kent and Christchurch Bay, it was identified that a region-wide approach was necessary offering a standard and repeatable means of coastal monitoring. The Environment Agency Annual Beach Management Survey (ABMS), an annual aerial survey programme generating beach profiles by photogrammetry, over 440km of coast, was, prior to the SRCMP, the most comprehensive regional monitoring programme. The South-East SRCMP encompassed the older ABMS programme along with an extensive Geographical Positioning System (GPS) survey schedule and wave and tidal data. Data is collected via a series of contracts and also by in-house local authority teams.

A risk-based design approach was adopted for the regional programme in order to optimise expenditure. Ideally, regular surveys of the various variables should be conducted at consistent (dense) spatial and (frequent) temporal scales. This approach cannot be sustained or justified financially however, and a reasoned method of sampling was designed to provide best value for money. The risk categories considered in programme design are:

- Exposure to wave attack
- Vulnerability to flooding
- Management strategy
- Coastal geomorphology and geology
- Defence type

Each of the risk categories was considered separately, before drawing the data together within a weighted risk model. Illustrations of this risk-based approach are as follows:

- Exposed sites with active beach management and vulnerable features and a shingle beach require frequent and intensive monitoring e.g. Medmerry (Sussex).
- Low exposure, hard-cliff sites, with a do-nothing strategy need less intensive coverage e.g. Beachy Head (Sussex), but some strategic data is needed to support other down-drift sites within the process unit e.g. Eastbourne (Sussex).
- Bathymetric surveys may be needed annually in areas of low tidal range and active submerged sediments e.g. Bournemouth (Dorset), whilst areas that have a beach toe that dries at low water on a hard rock platform will not benefit from frequent bathymetric surveys e.g. Hythe (Kent).

Each site was reviewed on the basis of exposure and the general dynamics of the local system.

The survey programme consists of a number of different survey techniques including both land-based and bathymetric surveys. In addition, the programme also undertakes airborne photography and remote sensing topographic surveys (using lidar). Ortho-photography is also used for habitat mapping. The programme came into being on 1 August 2002 and the first phase extended to March 2007. The second phase is underway and is funded until 31 March 2012, with the expectation that the programme will continue indefinitely.

7. Cost and resources

The programme is funded by DEFRA and the programme is costing approx £1.5m per year.

8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

The South-East SRCMP offers a standard and repeatable approach to coastal monitoring which has been lacking in the past. Although the programme is still in its early stages there have already been significant advances made in data collection and management as a result of the programme. All data collected by the SRCMP and results from the analysis programme are made freely available via the Programme's website.

9. Success and Fail factors

Continuous funding has been important for the success of the programme. One of the strengths of the programme is that it is led by a Local Authority. It is quite unusual in the UK for Local Authorities to run such extensive programmes on behalf of others but this has been of huge benefit since it makes sure that local needs don't get neglected by a region-wide, strategic programme. So it's a "bottom-up" approach, scaled up to provide regional consistency and economy of scale. It is also the first programme to make all its data and analysis freely available.

10. Unforeseen outcomes

The first phase of the programme acted as a regional pilot model that was later used for a similar programme in the south-west of England, which came into being on 1 April 2006. The data is useful to Local Authorities within the region, the Environment Agency, consultants in coastal defence, conservation management, academic research and for educational purposes. Links are established with research communities to provide opportunities for value-added research programmes and in support of strategic research programmes.

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13. Sources

- The UK South-East Regional Strategic Coastal Monitoring Programme (2005) Isle of Wight Council
- www.channelcoast.org
- www.se-coastalgroup.org.uk



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