A regional approach to data and information collection: marine litter – North Sea

1. Policy Objective & Theme

- SUSTAINABLE USE OF RESOURCES: Preserving coastal environment (its functioning and integrity) to share space
- SUSTAINABLE ECONOMIC GROWTH: Developing Europe's regional seas sustainably

2. Key Approaches

- Knowledge-based

3. Experiences that can be exchanged

This case shows how the problem of marine litter has been brought to the forefront as a result of an extensive information-gathering and monitoring programme on a regional scale and that, in order to satisfactorily address the issue, up-to-date information is a pre-condition.

4. Overview of the case

This case highlights what is believed to be the best available information collected on the assessment of marine litter in the North-East Atlantic. It shows that despite year on year variability, the overall amount of marine litter is consistently high and is not reducing despite recent EU legislative efforts. It clearly indicates the need for a targeted and concerted action programme.

5. Context and Objectives

a) Context

Marine litter is one of the most pervasive pollution problems affecting the marine environment. It has been defined as ‘any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment’. Marine litter consists of items that have been made or used by people and deliberately discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds; or accidentally lost, including material lost at sea in bad weather. Marine litter originates from many sources and causes a wide spectrum of environmental, economic, safety, health and cultural impacts. The very slow rate of degradation of most marine litter items, mainly plastics, together with the continuously growing quantity of the litter and debris disposed, is leading to a gradual increase in marine litter found at sea and on the shores. Serious public health issues are associated with hazardous materials, medical wastes, syringes, glass and other sharp and/or dangerous litter washed-up on beaches. Durable, plastic materials are the most abundant, discarded material. In addition, many plastic items are highly buoyant, allowing them to be carried with wind and currents for long distances. It is estimated that more than one million birds and 100,000 marine mammals and sea turtles die each year throughout the world after either becoming entangled in or eating plastic materials dumped in the sea. Litter is one of eight contaminant categories of the Global Programme of Action (GPA) for the Protection of the Marine environment from Land-Based Activities of UNEP. The OSPAR Commission’s initial contribution to the GPA has been to undertake an assessment of the marine litter problem in the North-East Atlantic Region.

b) Objectives

To assess the amounts, types and sources of marine litter as well as investigating their environmental and socio-economic

impacts and to draw together information on legislation, programmes and measures and organisations involved with marine litter issues.

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

a) Management

The Convention for the Protection of the Marine Environment of the North-East Atlantic (the “OSPAR Convention”) entered into force in 1998. The six-year OSPAR Pilot Project on Monitoring Marine Beach Litter (2000–2006) was the first Region-wide attempt in Europe to develop a standard method for monitoring marine litter on beaches and to assess the presence of marine litter on the beaches of the OSPAR Region. From the North Sea region, Belgium, France, Germany, The Netherlands, Sweden and the United Kingdom participated in the pilot project, which was coordinated by an International Steering Group with representatives of the countries and OSPAR observer organisations.

b) ICZM tools

A method for conducting surveys of marine litter on beaches, following a common, standardised survey protocol for either a 100-metre or a 1-km stretch of beach was developed, tested and used in fieldwork. A total of 614 regular beach surveys were conducted on a total of 51 reference beaches during the pilot project period, 2001–2006. In addition, 10 surveys were made during 2006 on 4 beaches in France (not classified as regular reference beaches). Surveys were also made on 1 km stretches for larger items (>50 cm in any direction), but included some items smaller than this. Furthermore, OSPAR National Contacts in each Contracting Party were asked to fill in a questionnaire on marine litter after consulting with competent organisations within their country: no response was received from Denmark. Other monitoring work was also included e.g. the results of plastic particles in Fulmars’ (Fulmarus glacialis) stomachs in the Netherlands which goes back to 1982, and the ‘Fishing for Litter’ activities run in the Netherlands and Belgium. The latter is one of the main sources of information on the amount of litter on the seabed and involves fishing boats collecting marine litter that accumulates in their nets as part of their normal fishing activity and taking it ashore in large hardwearing bags before it is processed in an onshore waste facility.

The assessment showed that the amount of marine litter in the Greater North Sea was the highest for any OSPAR Region. There were no statistically significant trends of either a decrease or an increase in the average number of marine litter items found. However the average number of items of marine litter found per 100 m stretches was already high so this lack of trend could not be interpreted as a good sign. Small plastic/polystyrene pieces were the most common type of marine litter items with 600-1400 items per 100m of beach surveyed in the Northern North Sea and 200-600 items per 100m in the Southern North Sea. An average of 75% was made of non-degradable plastic and/or polystyrene the. 94% of investigated birds contained plastic; on average 34 pieces and 0.3g mass and 55% of all birds exceeded the critical EcoQO level of 0.1g in the stomach. Over the whole North Sea area over 90% of fulmars have plastic in their stomach, and 45% to 60% exceed the critical EcoQO level of 0.1g of plastic. Invasive species have also been carried into the region by marine litter as in the case of the exotic barnacle species Elminius modestus, which has been found on plastic on the shoreline of the Shetland Islands.

There are several, recent EU legislative efforts. The Directive on port reception facilities for ship-generated waste and cargo residues aims to reduce the illicit discharge of waste and other pollutants to a minimum; the Waste Framework Directive concerns all waste as per this case; the Marine Strategy Framework Directive sets up for the first time an overall, integrated policy for the protection of the marine environment; the Urban Waste Water Treatment Directive which requires that all sewerage discharges serving populations over 10,000 in coastal areas and 2,000 in estuarine areas must receive secondary (biological) treatment prior to discharge; the EU Environmental Liability Directive which aims to prevent environmental damage by forcing industrial operators (or polluters) to pay both prevention and remediation costs; and the Directive on Packaging and Packaging waste which is to prevent packaging waste by encouraging packaging re-use and recycling,

7. Cost and resources

The cost of cleaning marine litter from beaches can be significant with the cost usually falling to local authorities rather than national governments. Marine litter may have impacts on human health and local economics including the loss of tourism and recreational potential, repeated clean-up costs, fouling of marine equipment and fishing gear, direct competition with fisheries (ghost fishing) and reduced value of catches. UK local authorities, industry and coastal communities spend approximately €18 million/yr to clean up coastal marine litter in England and Wales. The Hague Municipality, in the Netherlands spends as much

as €626,709/yr on coastal cleaning. It is estimated that in the fishing industry, one of the main contributors of marine pollution, loses itself between €7,600 - €38,000/yr/boat due to the effects and presence of marine debris.

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

The monitoring method developed during the pilot project proved functional for the purpose of providing data on marine litter on beaches. It provides a feasible approach and could be used as a cost effective means to monitor marine litter on beaches – quantities, composition and trends – throughout Europe. It has shown that the amount of marine litter remains high and is not reducing. This is despite the North Sea being a Special Area under MARPOL and the introduction of EU legislation. However, the extent of the problem has now been brought into sharp focus thus facilitating the development of a programme of mitigation measures. Some initial steps to address marine litter have been taken e.g. beach cleanup activities, 'Fishing for Litter' projects, national litter campaigns, as well as through the initiation of information, education and public awareness programmes. Nonetheless, marine litter remains one of the major unresolved and outstanding pollution issues throughout the North-East Atlantic Region.

9. Success and Fail factors

There has been a lack of standardisation and compatibility between methods used and results obtained which has made it difficult to compare litter data in the North Sea. Monitoring is currently proceeding on a voluntary basis only. At a national level one of the main gaps is the lack of a coordinated approach to marine litter. Awareness of the issues is another area e.g. two of the main sources of marine litter are the shipping and fishing industries but there are no compulsory courses on marine environmental awareness in either of these sectors. Marine litter monitoring itself is only a voluntary programme and is often not funded at national level.

10. Unforeseen outcomes

One of the emerging threats from marine litter in the Greater North Sea is the identification of microscopic plastic particles, in the µm to mm size range, in the marine environment at concentrations of 150-2400 particles per m3.

11. Prepared by

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12. Verified by

It has not been possible to verify this case.

13. Sources

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- www.kimointernational.org
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- OSPAR Pilot Project on Monitoring Marine Beach Litter: Final Project report. 2007. OSPAR Commission.
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North Sea-MARINE LITTER - 2009 paper (6.81 MB)

North Sea-Pilot project - Monitoring Marine Beach Litter Report (5.43 MB)