

Major study predicts grim future for Europe's seas

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Their models developed during a €2.5M EU funded research project have predicted dire consequences for the sea unless European countries take urgent action to prevent further damage from current and emerging patterns of development. The project coordinator, Professor Laurence Mee, Director of the Marine Institute at the University of Plymouth said "Europeans are just beginning to wake up to the fact that the area of their seas is bigger than the land and that it is already seriously degraded.

"In every sea, we found serious damage related to the accelerated pace of coastal development, the way we transport our goods and the way we produce our food on land as well as the sea.

"Without a concerted effort, to integrate protection of the sea into Europe's development plans, its biodiversity and resources will be lost"

The past two decades have witnessed unparalleled changes in the European political and economic landscape, particularly resulting from expansion of the European Union, decline of the centrally planned communist Bloc and pursuit of rapid economic growth. Despite numerous accounts of the declining state of the marine environment, few studies have attempted to link this situation with Europe's human lifestyles or to examine what the future may hold for the seas. The project, European Lifestyles and Marine Ecosystems was designed to explore this relationship.

28 institutions from 15 European countries participated in this work which focused on the four major European sea areas: Baltic Sea, Black Sea, Mediterranean Sea and North-East Atlantic. It examined four cross-cutting environmental issues: habitat change, eutrophication (over-fertilisation of the sea), chemical pollution and fishing. For each issue and sea, models were devised linking economic and social drivers, environmental pressures and the state of the environment.

In a similar process to that used by climate change researchers, innovative models were employed to explore the consequences of a 'business-as-usual' scenario, along with four alternatives, for economic and social development in the coming two to three decades. The research confirmed the serious state of decline of Europe's regional seas, particularly when the complex web of interactions between different human pressures is taken into account. In each sea, components of the ecosystem were identified that are 'winners' or 'losers' as a result of human activity. This situation will severely compromise future options for economic use of the sea and for the conservation of its biodiversity.

The team explored the reason for these changes and the prognosis for the future. Eutrophication for example, continues to be a severe problem for the most enclosed seas (the Baltic Sea, Black Sea and the Adriatic within the Mediterranean Sea). It is partly maintained by a legacy of past phosphate and nitrogen loads (from agriculture and industrial/domestic effluent) that have accumulated in soils, aquifers and sediments and continue to leak into the sea. This may be further exacerbated by nutrient loads accompanying intensification of food production in Europe. This combination of pressures limits the scope for short-term remedial action and in the case of the Baltic Sea; short-term prospects for reducing eutrophication are particularly bleak.

The future condition of each sea is closely associated with the economic options that will be pursued in Europe, the transport of goods to and from other parts of the world and the European regulatory framework. Continued reduction of pollutants, such as chlorinated pesticides, is likely, but the authors are concerned about poorly monitored 'lifestyle' chemicals associated with household products. Changing economies and a more mobile labour force are likely to affect fisheries, though success or failure are currently

clearly tied to the 'total allowable catch' set through the Common Fisheries Policy. The study illustrates how management of fisheries in isolation from the other environmental issues is unlikely to lead to overall sustainability.

Source: Alfred Wegener Institute for Polar and Marine Research

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