

Chapter 31 Conclusions on Other Human Activities

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1. The nature and magnitude of the human activities

1.1 Communications and transport

The network of shipping routes covers the whole ocean. There are particular choke points, where large numbers of ships pass through relatively limited areas, with consequent increases in the risks of both disasters and chronic pollution problems. The impending opening of the Panama Canal to larger ships will tend to modify the pattern of ship movements. Global warming is likely to lead to more use of the routes between the Atlantic and Pacific Oceans through Arctic waters, with increased risks to ecosystems that have slow recovery times, and where infrastructure for response to disasters does not currently exist. Shipping traffic grows in relation to world trade, and considerable further growth is therefore likely. Cargo ships have been steadily increasing in size, but limits are probably being reached because of the draught limitations of some of the world's choke points. More emphasis is being placed in many areas on coastwise movement of goods by ship to reduce pressures on roads. Passenger shipping is largely divided into cruise ships and ferries. The cruise ship market is growing steadily and is also moving to larger vessels. Ferries are most important around the Baltic Sea, the North Sea and the Mediterranean Sea (where there are large international cargo movements over relatively short crossings) and in States with a large scatter of islands (such as Greece, Indonesia and the Philippines).

Ports form the nodes of the network of shipping routes. General cargo ports have changed completely over the past 50 years with the introduction of containerization. A hierarchy of these ports is developing, with transshipment as cargoes are cascaded to the ports nearest to their final destinations. Specialized oil and gas ports are

1.2 Waste

All parts of the ocean are affected by waste materials arriving by a variety of routes. Waste can take the form of discharges of liquid waste from land and emissions to the air, of dumping solid waste and other matter at sea, and of marine debris resulting from poor management of waste on land, discharge of garbage by ships and loss of fishing gear. Areas of particular concern are large conurbations, where large amounts of human bodily waste have to be disposed of, and areas of heavy industrial concentrations. Sewage from areas of high human population does not inevitably cause problems, since it can be treated to remove the potential to cause problems. However, in many parts of the world, particularly in developing countries, there is a lack of adequate sewage collection and treatment systems, and large amounts of untreated sewage are discharged to the sea. Much progress is being made in some places (particularly South America), but there is still a vast amount of further installation needed. Likewise methods exist to avoid discharges of hazardous substances from industries, or to control them to acceptable levels, but these are not being applied everywhere. In this context, the massive growth of chemical industries in East Asia over the past decade and a half presents particular difficulties.

1.4 Coastal zone

All around

2.

2.3 Extractive industries

The offshore oil and gas industries are significant for the economies of the countries that have started them: the industry accounts for about 21 per cent of Norway's gross domestic product (GDP), 35 per cent of Nigeria's GDP, 3.5 per cent of the United Kingdom's GDP and 1.5 per cent of United States GDP. The number of people employed is relatively small: estimated at 200,000 worldwide.

Compared with land-based mining, the extraction of minerals from the seabed is a very small-scale activity. The United Kingdom industry extracting sand and gravel seems to be the largest, with 400 employees.

2.4 Coastal zone

Since a high proportion of humans live in the coastal zone, there is a preoccupation with making sure that (1) land used for housing, industry or agriculture is not lost or flooded, (2) the demand for land suitable for urban development and ports (and in some cases agriculture) is met, and (3) existing homes and infrastructure are not destroyed. This leads to a readiness to invest substantial amounts in both coastal protection and land reclamation. The long-term effectiveness of hard engineering approaches to these tasks has been called into question, and in many parts of the world the approach tends more towards adjusting the natural process of erosion and sedimentation to achieve the desired ends.

As has been said, in many parts of the world, tourism and recreation is a major economic activity in the coastal zone. It requires a relatively high proportion of labour in preparing and serving food and in cleaning and maintaining accommodations, providing jobs that in many regions are strongly seasonal. A high proportion of these jobs are filled by women.

2.5 Other activities

Desalinization is essential for the continued existence of many States. It may likewise be important for avoiding constraints on future economic development in other places. Renewable energy from maritime sources is beginning to be implemented in some parts of the world as a significant potential role to play in mitigating climate change. The use of marine genetic resources offers possibilities of finding and applying new marine ecosystem services. Marine scientific research is an essential underpinning of managing the sustainable use of the ocean.

3. Pathways from the human activity to its environmental impacts

3.1 Communications and transport

There are three main pathways by which shipping impacts on the environment: loss of ships, chronic discharges and emissions, and noise.

Ports also impact on the environment in three main ways: the demand for coastal land (which often leads to reclamation of the necessary land from the sea), changes in the form of the coast (with hard coastlines replacing softer ones) and dredging to maintain navigation channels (and the consequent need to dispose of the dredge material). Ports also inevitably lead to concentrations of shipping, and therefore represent areas where the impacts of shipping are equally concentrated.

Submarine cables have very limited environmental impacts, since they are very slim (typically 25–40 millimetres wide in the deep sea), and since their routes are usually chosen to avoid, where possible, areas that may cause problems from bottom trawling and ships' anchors. In soft substrates on continental shelves the cables are usually buried by ploughing, but again the zone affected is narrow.

3.2 Waste

Waste products reach and affect the marine environment through a variety of routes. Liquid discharges may reach the sea either through discharges to rivers or directly through pipelines. Waste emissions to air can be carried to the sea directly, or through runoff from the land on which they are originally deposited. Substances applied to land may volatilize and be deposited, either directly to the sea, or through successive volatilizations and redepositions. Solid waste and other matter may be deliberately dumped into the sea, or may reach it from badly managed waste disposal on land.

3.3 Extractive industries

The offshore oil and gas industries affect the marine environment through main pathways: the effects of seismic exploration during the exploration phase; the drill cuttings (and the drilling muds used to .9(e),(,5(o)2((w/00 Tc 0 Tw 8.18 0))4(c)10(a)4(y)s

however the anthropogenic change happens, there are likely to be consequential changes in the processes elsewhere in the general neighbourhood. Secondly, such change usually involves moving from soft shore forms (gravel, sand or mud) to hard shore forms (stone or concrete). In addition to these two processes, changes in land affecting river regimes (for example, through the building of dams) tend to reduce the flow of sediment from land to sea, we

Ports have an important role to play in enforcing the control regime over ships. Since they are often in competition with other ports in the region, the regional memorandums of understanding ~~port~~ state control have an important function. The quality of port reception facilities for waste oil, sewage and garbage is also important in reducing environmental impacts of ports and their users. The disposal of dredged material needs proper ~~management~~. Even where the material is harmless, it can damage ~~bottom~~ living plants and animals by smothering them. Where the material contains contaminants (usually from historic industrial activities), disposal at sea risks remobilizing them and again ~~require~~ proper management.

Submarine cables have always been at risk of breaks from submarine landslides, mainly at the edge of the continental shelf. As the pattern of cyclones, hurricanes

from the drilling muds with which they are mixed, although some release of metals can occur from the rock cuttings themselves. Regulation of the drilling muds used can control this problem. The same approach can be used to control the chemicals used on, and discharged from, offshore installation. Produced water, because of its quantity, has to be discharged to the sea. The problem which it poses is the oil content. This oil content can be largely removed by centrifuges, and an acceptable level (usually 30 parts per million or less) can be achieved. In the North Sea steps have been taken to tighten limits as the amount of produced water increases. Spills

therefore important that, when a decision is initially taken, there should be a clear view of what measures will be required to protect the marine environment. There is now widespread understanding of what is required in most environments. Problems arise, however, when the circumstances of a new development are very different from past experience. This is particularly the case in Arctic conditions, where natural

7. Capacitybuilding gaps

The capacitybuilding gaps identified in this Part are summarised in Chapter 32 (Capacitybuilding in relation to human activities affecting the marine environment).