

Conclusions - the Netherlands

The Netherlands, being for the greater part a densely populated and highly developed low-lying delta, is extremely vulnerable to flooding, erosion and salt water intrusion. The impacts of climate change will aggravate these problems. In order to survive, coastal zone planning and implementation is embedded in the Netherlands' history and will remain so. Historically the emphasis has been on protecting the land from flooding. With vision, ingenuity and leadership many difficult projects were undertaken. In the last few decades, the concept of coastal protection has broadened to include aspects of integrated spatial planning and sustainable development. Consequently, the Netherlands has become a fertile 'environment' for ICZM development and application, as can be illustrated by the following examples.

1. A number of very large-scale flood protection works (dams and storm surge barriers) were built in the second half of the last century. Today flood and erosion protection is based mainly on managing the sediment budget of the sandy coast. Over many decades, a thorough understanding has been developed of morphological processes and sediment movements along the coast, based on extensive monitoring programs. This facilitates the implementation of a flexible and resilient sand nourishment scheme at acceptable costs. Cooperation was established among public and private bodies, based on vertical and horizontal integration.
2. The sustainable development of the Greater Rotterdam Harbour Area provides a very specific example of the application of integrated coastal planning. This involves a wide variety of aspects related to land use-planning, economic development, environmental protection and sustainable use of resources, all based on integration of regional development plans. These plans were legally founded at national level. The path to achieve the sustainable harbour development through long term cooperation was sometimes quite cumbersome. But the time and money invested certainly pays off, both economically and environmentally
3. From the seventies onwards, the impacts of severe chemical pollution of river and coastal waters and sediments became clear through frequent monitoring and field observations. In the decades that followed, there were extensive national and international efforts to reduce these problems. These efforts resulted in a spectacular improvement of water and sediment quality in the coastal system.
4. More recently there has been a focus on integrated spatial planning of the maritime and terrestrial parts of the wider coastal zone. This has led to an Integrated Management Plan for the Netherlands' North Sea, agreed by Parliament in 2005 and embedded in the National Land Use Planning Act (2008). It is based on zoning functional uses, such as marine wind farms. Although this plan controls and restricts certain uses, it provides more clarity on sustainable development potential and commercial use options, enhancing economic development opportunity and continuity.
5. Considering long-term future developments, the pressures of socio-economic development and the impacts of climate change pose a serious challenge to the Netherlands. The long-term consequences of possible future strategies to deal with these problems have been considered by the Delta State Committee (2008), which has proposed a comprehensive set of actions. These include flood protection, water management and spatial planning with a time horizon of a century. Moreover, the Committee has urged the Cabinet of Ministers to develop a plan for the long-term implementation and financing including the establishment of a legal and political framework. The government has adopted the proposals of the Committee and has taken active steps for their implementation.

To find solutions to meet the future challenges, vision and ingenuity is needed. The central government will demonstrate its leadership in promoting innovative adaptive response strategies, by using the experience gained in protecting life and property, during the long period of developing and living in the Dutch Delta. Finding solutions to the enormous challenges facing us can be applied to other vulnerable coastal areas in the world.