

# Executive summary

The East China Sea is one of the largest marginal seas in the world. Its surface area covers ca. 770 000 km<sup>2</sup> with a broad shelf in the west part (70-75%) and the deep Okinawa Trough to the east. This region receives tremendous inflow of freshwater and terrestrial sediments, mainly from mainland China, of which the Yangtze River alone is responsible for ca. 90-95%. In the eastern part of the sea, the Kuroshio current, flows northward along the continental slope, effectively isolating the sea from the open Northwest Pacific Ocean. This provides the approximate limits of the region at 24°-30° N and 118°-130° E.

The East China Sea is bounded by China to the west and south, Korea to the north and Japan to the east. It connects with the South China Sea through the Taiwan Strait in the southwest, the Yellow Sea to the north and the Sea of Japan to the northeast. The connection between the East China Sea and the northwest Pacific Ocean is mainly through straits and/or channels. The most salient feature of the region in the context of the Global International Waters Assessment (GIWA) is the large population and rapid economic development in the countries over last two decades, particularly in China. The problem of keeping a balance between social and economic progress on the one hand and protection of marine ecosystems on the other is a very sensitive issue between neighbouring countries and in international trade. For instance, the majority of pollutants are generated on land and anthropogenic disturbances are in most areas constrained to drainage basins, but the subsequent pollution ends up in coastal and oceanic environments, resulting in degradation of ecosystems and economic impacts.

The natural landscape in the region's drainage basins has been greatly modified by the development and expansion of agriculture, which is dramatically accelerating soil erosion and riverine flux of nutrients and trace organics. The construction of dams has allowed for power production and irrigation and the control of floods, but dam development has also changed the seasonal and/or interannual

natural variability of the hydrographic properties of downstream and coastal environments, which has had a profound influence on the evolution of these ecosystems. Urbanisation, particularly in the coastal area, changes land use from agricultural to a built environment, which as a whole results in problems as varied as inadequate sewage treatment capacity and deforestation. Aquaculture and coastal area reclamation alter natural wetlands and destroy spawning and nursery grounds in the East China Sea. Aquaculture may also result in the discharge of wastes into coastal waters and contamination of marine living resources at the genetic level. The traditional fishery in the East China Sea is based on the catch of species with high quality protein that usually have a long growth period. This has shifted to smaller-size and low quality; cheaper species, in part as a result of overfishing. As a consequence, pollution, destruction of habitats and overfishing are considered to be the most critical large-scale environmental concerns to be addressed in the East China Sea region.

Although the environmental and socio-economic impacts for each of the predefined GIWA issues and concerns are assessed in this report for the East China Sea region, the heterogenic character and dimensions of the region make it difficult to conduct a causal chain analysis and to develop policy options. The report places emphasis on data analyses that allow a comprehensive understanding of the efforts that will be needed for the mitigation of habitat and ecosystem modification, and transboundary pollution in the region, in view of its social and economic importance in Northeast Asia.

The failures by governments to provide for a sustainable fishery and protection of the environment in the East China Sea region have been due to the misconception that natural resources both on land and in the ocean are inexhaustible. This has led to a domino effect in terms of the damage that has been done to the ecosystem at various levels. Information is needed to implement actions to ensure

the sustainable use of water resources, and governments need to be aware of the environmental and social impacts of water and land-based activities in the marine domain and drainage basins. This can be done and realised through: (1) research to obtain new information, (2) dissemination of existing knowledge, and (3) conversations within and/or between governments to coordinate implementation of various conservation programmes, (4) training and education to improve public understanding, and (5) legislation and international agreements. It should be noted that the impetus for establishing a framework for the sustainable development of marine ecosystems in the East China Sea is more significant from a social perspective than the economics of such an endeavour. The increase in conflicts over various

demands for the region's natural resources means that the political feasibility of any programme must be addressed as well. Otherwise, the political feasibility and success of the implementation will be threatened, or conflicts may become intensified and uncontrollable.

The GIWA assessment of the East China Sea region is marked by major data gaps in several areas, including demographic and economic sectors. Previous assessment work in this region has not included fisheries issues in combination with impacts from land-based perturbations. For instance, no consensus has been reached on the evolution of stock replenishment of threatened species in the East China Sea.