

Policy options

YELLOW SEA

This section aims to identify feasible policy options that target key components identified in the Causal chain analysis in order to minimise future impacts on the transboundary aquatic environment. Recommended policy options were identified through a pragmatic process that evaluated a wide range of potential policy options proposed by regional experts and key political actors according to a number of criteria that were appropriate for the institutional context, such as political and social acceptability, costs and benefits and capacity for implementation. The policy options presented in the report require additional detailed analysis that is beyond the scope of the GIWA and, as a consequence, they are not formal recommendations to governments but rather contributions to broader policy processes in the region.

Definition of the problem

The assessment and Causal chain analysis have shown that the priority environmental concerns in the Yellow Sea region are freshwater shortage, habitat and community modification, and unsustainable exploitation of living resources. The region has experienced both significant reduction of water flow in the major river systems on both the Chinese and Korean side, as well as pollution of existing water resources, mainly from agriculture and industrial activities. There have been significant losses and modification of habitats in the region during the past 30 years. Increased industrialisation has attracted mass migration of the rural population to urban areas. This rapid population growth has resulted in the need to convert more lands for human settlement as well as an increase of discharge of harmful pollutants to the water bodies. At the same time, the population growth has increased the demand for food and agricultural products, resulting in the increased use of freshwater for crop production.

The Yellow Sea has been overexploited since the 1980s. Fishing with destructive methods is common throughout the region and many aquatic habitats in have been destroyed and fish stocks have collapsed. Common destructive fishing practices in the region include indiscriminate trawling along the coastal waters of Yellow Sea, fishing with explosives in lakes, and use of pesticides for fishing.

The transboundary issues that need to be addressed are the management of marine resources, industrial pollution, and ecosystem health. Progress is being made in the introduction of ecosystem-based management for the LME (Zhang & Kim 1999). The GEF is supporting a Yellow Sea LME project involving China and South Korea. The long-term objective of the project is to ensure environmentally sustainable management and use of the Yellow Sea LME and its watershed by reducing development stress and promoting sustainable development of the ecosystem (Yellow Sea Project Brief 2000). In order to achieve its objective this project will prepare a Transboundary Diagnostic Analysis (TDA), National Yellow Sea Action Plans (NYSAPs), and a regional Strategic Action Programme (SAP). The project will also initiate and facilitate the implementation of the SAP. It will also build upon the institutional and programmatic framework put in place by the Northwest Pacific Action Plan (NOWPAP), the Tumen River Area Development Programme (TRADP). Management of the transboundary environmental issues in the region may be hindered by the following problems:

- Ineffective measures for the control of the overexploitation of coastal and marine fisheries, particularly the shared stocks in the Yellow Sea;
- Lack of strong political will on the part of riparian states bordering the Yellow Sea to arrest the continued degradation and destruction of coastal and marine habitats;
- Ineffective existing national and international efforts to prevent continued or imminent loss of endangered and threatened species;

- Ineffective existing national and international efforts to arrest degradation of coastal water quality due to discharge of pollutants from land- and sea-based activities;
- Inadequate and/or inefficient enforcement and compliance of national and international legal instruments/conventions such as the United Nations Framework Convention on Climate Change, Convention on Biodiversity, Global Programme of Action (GPA);
- Lack of effective regional cooperation to address and resolve transboundary environmental issues.

Policy options and strategic action programmes

Suggested policy options and their associated strategic action programmes to address the key root causes as identified in the previous section were formulated and reviewed by a panel of experts previously involved in the GIWA scaling/scoping as well as causal chain analysis workshops. The policy options and strategic action programmes for each of the key root causes in each of the environmental problem areas of the region are described in the following:

Freshwater shortage

Technology: Poor crop irrigation systems

Options:

- Integration of the development and management of agricultural irrigation systems with integrated river basin management programmes.
- Adoption and promotion of water-saving technologies for crop irrigation.

Strategic Action Programme (SAP):

- Implementation of relevant irrigation system(s) within the framework of integrated river basin management programmes for crop production.
- Selection and introduction of modern and water-saving irrigation technologies for crop production.

Natural causes: Increased deforestation and incidence of natural disasters

Options:

- Adoption of the Natural Forest Protection Programme (NFPP) to cope with uncontrolled deforestation.
- Adoption of integrated forest management practices.

- Adoption of efficient law enforcement mechanisms to prevent illegal logging and other destructive practices.
- Adoption of programmes for raising public awareness and participation in forest management and restoration.

Strategic Action Programme (SAP):

- Development, harmonisation and enforcement of a legislative framework for the implementation of the Natural Forest Protection Programme (NFPP).
- Implementation of integrated forest management practices for sustainable management of forest resources.
- Implementation of integrated land management and integrated coastal management programmes to cope with the occurrence of natural disasters.
- Development of relevant measures and practices to encourage public participation in the planning and implementation of development activities associated with forest management and restoration programmes.

Economic: Insufficient investment in facilities for pollution prevention and wastewater treatment

Options:

- Promotion of market incentive systems to encourage the use of green production technologies in the industry sector.
- Enhancement of laws and enforcement mechanisms related to pollution prevention and wastewater treatment practices.

Strategic Action Programme (SAP):

- Formulation and implementation of public awareness campaign programmes for good practices in agriculture.
- Development and implementation of market incentive programmes to encourage the use of green production technologies and to reduce discharge of polluting wastes.

Knowledge: Lack of awareness of environmental impacts due to excessive use of fertilisers and pesticides

Options:

- Adoption of laws, regulations and enforcement mechanisms to control the use and disposal of fertilisers and pesticides.
- Adoption of educational and public awareness campaign programmes for good agricultural practices.
- Adoption of sustainable soil management system(s) to improve the soil fertility and productivity.
- Adoption of efficient soil fertility improvement technology and crop irrigation systems to improve soil productivity.



Figure 14 Ricefield at dawn in Jiangsu Province, China.
(Photo: Corbis)

Strategic Action Programme (SAP):

- Development, harmonisation and enforcement of a legal framework to control the use and disposal of fertilisers and pesticides.
- Development and implementation of public education and awareness campaign programmes on good practices in agriculture.
- Analysis and selection of relevant sustainable soil management system(s) as well as development and implementation of the system(s) for improvement of soil fertility and productivity.
- Development and implementation of suitable soil fertility and irrigation improvement technologies to enhance soil productivity.

Habitat and community modification

Demographic: Mass population migration to urban areas

Options:

- Adoption of laws, regulations and enforcement mechanisms to restrict the population migration.
- Adoption of the development of small, rural-oriented urban centres in rural areas to cope with population migration.

Strategic Action Programme (SAP):

- Development and enforcement of a suitable legal framework to restrict mass migration of population from rural to urban areas.
- Development and implementation of small, rural-oriented urban centres in rural areas to cope with population migration.

Legal: Lack of or insufficient regulations, policy or enforcement mechanism

Options:

- Adoption of laws, regulations and enforcement mechanisms to promote good practices in agriculture including minimisation of the discharge of agricultural run-off high in harmful pollutants.
- Adoption of laws, regulations and enforcement mechanisms to restrict the introduction of alien and invasive species for aquaculture.
- Adoption of programmes related to raising public awareness of and participation in good practices in agriculture and recognizing the environmental impact of introducing exotic and invasive species for aquaculture.

Strategic Action Programme (SAP):

- Development and enforcement of suitable laws and regulations to promote good practices in agriculture and to restrict the introduction of alien and invasive species for aquaculture.
- Creation and implementation of public awareness campaign and education programmes on good practices in agriculture and on recognising the environmental impact of introducing exotic and invasive species for aquaculture.

Knowledge: Profit-oriented farmers who disregard environmental impacts

Options:

- Adoption of programmes to raise public awareness of and participation in good practices in using fertilisers and pesticides.
- Adoption of sustainable agriculture production technologies that would minimise the use of fertilisers and pesticides.

Strategic Action Programme (SAP):

- Creation and implementation of public awareness campaign and education programmes for the effective use of fertilisers and pesticides.
- Selection and implementation of sustainable agriculture production technologies that could minimise the use of fertilisers and pesticides.

Unsustainable exploitation of living resources

Knowledge: Profit-oriented enterprises that disregard environmental consequences

Options:

- Enhancement of laws, regulations and enforcement mechanisms to restrict the entry of excessive fishing fleets and fishermen into the fishing industry.

- Adoption of alternative livelihood programmes for fishermen and other fisheries operators.
- Adoption of public awareness and education programmes on the environmental and social consequences of overexploitation of the fish resource.

Strategic Action Programme (SAP):

- Development of relevant policy and legal framework to restrict the practice of destructive fishing methods.
- Development and implementation of alternative livelihood programmes to reduce the entry of excessive number of fishermen into the fishing industry.
- Development and implementation of public awareness and education programmes on the environmental and social consequences of overexploitation of the fisheries resource.

Economic: Increased market demand for seafood

Options:

- Adoption of sustainable production practices to enhance fisheries and aquaculture production.

Strategic Action Programme (SAP):

- Development and promotion of sustainable fisheries and aquaculture production methods to enhance fisheries production to meet market demand for seafood.

Knowledge: Lack of public awareness of the consequences of destructive fishing practices

Options:

- Enhancement of law enforcement mechanisms to restrict destructive fishing practices.
- Adoption of public awareness campaigns and education programmes on the environmental and social consequences of destructive fishing practices.

Strategic Action Programme (SAP):

- Development and implementation of policy and law enforcement mechanisms to restrict destructive fishing practices.
- Development and implementation of public awareness and education programmes on the environmental and social consequences of destructive fishing practices.