Conclusions and recommendations

The Sea of Okhotsk region contains a wide range of natural resources, including one of the richest fisheries of the world and vast hydrocarbon resources. The fisheries industry of both the Okhotsk Sea and Amur River Basin is well developed. In the Okhotsk Sea sub-system, fishing fleets from not only the riparian countries of Russia and Japan but also other parts of the world are unsustainably exploiting the Sea's bioresources. Stocks of the most commercially valuable species on the international market are considerably depleted. Despite a number of international conventions and the adoption of national laws, the fisheries remain vulnerable. The GIWA regional experts, therefore, found the overexploitation of the fisheries to be a priority issue for the Okhotsk Sea. They also found oil spills to be a considerable future threat to the Sea because, although there has been rather limited oil contamination to date, the extensive oil and gas development, particularly on the continental shelf of Sakhalin (Russia), and increased shipment of oil across the Sea will significantly increase the risk of spills. There has been considerable effort made to rapidly develop the oil and gas industry in the region but, unfortunately, progress in establishing emergency contingency plans was considered unsatisfactory. Other than spills, some of the oilfields encroach upon the feeding areas and migratory corridor of the critically threatened western Gray whale. Disturbances caused by hydrocarbon exploitation activities may force the whales to change migration route and their feeding and reproductive behaviour.

The Amur River Basin sub-system is characterised by great geographical and cultural diversity. The Basin has experienced rapid economic development, especially in the Chinese section, which has placed increasing pressure on its ecosystems and living resources. The GIWA regional experts considered the overexploitation of the fisheries and eutrophication to be the priority issues of the Amur River Basin sub-system. Overfishing has caused the populations and physical size of Chum and Humpback salmon, and sturgeon, among other species, to decrease in the Amur River and its tributaries. At the same time, the habitats of many fish species, including important migratory fish, have been destroyed or altered. Large areas of wetland have been drained to form pastureland affecting biodiversity and threatened species in the Basin, notably several migratory bird species. The nutrient enrichment of the Amur and its tributaries by agricultural run-off containing artificial fertilisers and by the discharge of untreated wastewater is causing severe eutrophication. The River's ecosystems are now being affected by eutrophication not only during periods of low water in the summer and autumn but also during the period of ice formation. The Songhua River, which has experienced rapid agricultural, urban and industrial development, is the major source of pollutants in the Amur River. The benzene spill in the Jilin province of northeast China in 2005 which polluted the Songhua River and later the Amur illustrated the transboundary nature of the region's pollution problems.

There are a number of institutional weaknesses which are either promoting or failing to prevent transboundary pollution in the Amur River Basin sub-system. Each riparian country explores its own economic development and/or conservation of ecosystems, with limited basin-wide cooperation. There is, however, recognition of the need to work together to address transboundary issues. There is limited stakeholder involvement in the decision-making process and public awareness of pollution issues is rather rudimentary. A major hindrance for policy-makers when setting priorities for remediation is the lack of knowledge of the ecological characteristics and their reaction to human activities. A technical problem is the poor condition of wastewater treatment infrastructure.

The overcapacity of the fishing fleet is resulting in the overexploitation of the region's commercial stocks. Globally, there has been increased demand for fish products which has intensified the pressure on the region's fisheries resources. The introduction of auctions of fish

quota-rights, in addition to a burdensome tax system, has reduced the profitability of the fisheries, resulting in fishermen undertaking poaching and illegal fishing to supply the large international black market for fish products. Regional cooperation in combating illegal fishing is limited and national laws and regulations are undermined by deep-rooted corruption and weak enforcement. There is a lack of fisheries statistics and monitoring programmes, and fishermen lack awareness of the long-term impacts of overfishing. According to the GIWA regional experts, many of the problems affecting the fisheries of the Sea of Okhotsk region stem from economic hardship in the Russian Far East and economic and social reform in Russia during the 1990s.

Recommendations

International level

- Prepare and implement an intergovernmental agreement between the countries sharing the Amur River Basin's transboundary water resources;
- Establish an international system of environmental monitoring in the Amur River Basin;
- Prepare and implement an intergovernmental agreement between Russia and Japan regarding the protection of the marine ecosystems of the Okhotsk Sea sub-system;
- Prepare and enact Russian federal laws on nature conservation and water resources management in the Amur River Basin and the Okhotsk Sea sub-system;
- Establish a commission responsible for the management of ecosystems within the Amur River Basin sub-system;
- Create inventories of the natural resources of the Amur River Basin sub-system, the coastal zone and the Okhotsk Sea sub-system; and
- Implement research programmes.

Regional level

- Establish a coordination committee for nature management within the Amur River Basin sub-system;
- Coordinate environmental monitoring systems within the Amur River Basin sub-system and the Okhotsk Sea sub-system; and
- Carry out environmental monitoring of oil and gas production on the Sakhalin shelf.