

# Policy options

**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.**

## Eutrophication in the Amur River Basin sub-system

### Problem definition

Eutrophication in the Amur River Basin sub-system has been caused by the increasing quantities of nutrients discharged in domestic and industrial wastewater, and by the run-off of chemical fertilisers from cultivated land in the catchment area. Population growth, economic development and the intensification of agriculture will exacerbate eutrophication in the future.

A range of institutional weaknesses are either promoting or failing to prevent transboundary pollution in the Amur River Basin sub-system. Economic planning does not incorporate environmental considerations or involve stakeholders. There is an absence of basin-wide institutional arrangements, and transboundary issues are not given attention in

national actions. Much of the data produced by the riparian countries is not presented in a format suitable for policy-makers, and information is often not accessible by the public or decision-makers, particularly beyond the national boundaries (GEF Concept paper 2005). Wastewater treatment infrastructure is frequently dilapidated due to insufficient funds for maintenance and a lack of investment in new facilities.

### Policy framework

The policy options for addressing eutrophication in the Amur River Basin should be based upon the principles established at the World Summit on Sustainable Development (WSSD 2002). There are also several other international conventions, as well as Chinese and Russian legislation, regarding environmental protection and sustainable development that should be considered. Asset 42 of the Constitution of the Russian Federation gives a human right to a propitious environment and calls for reliable information about its state to be collated.

In this respect, the policy options should aim at not only halting the increasing trends of eutrophication but also at gradually curtailing nutrient enrichment processes and rehabilitating ecosystems.

The main objectives of the policy options should include the following:

- Accurately calculate the water budget of the Amur River Basin, including the assessment of the freshwater dynamics;
- Assessment, protection and control of water quality in the Basin;
- Coordination of water management in the basin;
- Assessment of status and changes in relation to:
  - Forests and forest management and the connections with water and water management;
  - Land and land use and the connections with water and water management;
- Land use zoning in the basin;

- Coordination of natural resources management in the basin; and
- Development of a basin-wide management system for water resources.

### Policy options

There is a need to improve the social well-being of the population, restore the environment, promote the sustainable use of natural resources, and to develop an integrated regional policy regarding river basin management in Priamurye (Russia), and between Russia, China and Mongolia.

*The establishment of an international monitoring programme to regularly assess the current ecological status of the freshwater environment within the Amur River Basin involving institutions of China, Mongolia and Russia. The components of such a monitoring programme should include:*

- Environmental monitoring;
- Assess the resource potential of the Amur River Basin;
- Develop criteria/indicators for evaluating environmental change in the Basin;
- Create maps showing zones which represent the various degrees of anthropogenic-induced environmental change in the Amur River Basin; and
- Predict future environmental changes.

*Conduct transboundary environmental impact assessments before undertaking infrastructure development, such as hydroelectric plants, nuclear power plants, flood-control systems, and land reclamation schemes. The results of such assessments should be incorporated into development strategies so that not only the environmental changes within a country are considered but also those in the other countries sharing the Amur River Basin. The following should be considered:*

- Problems of water consumption, wastewater treatment, surface run-off and changes to the hydrological regime;
- Impact of agriculture, forestry and mining development;
- Impact of fishing and aquaculture on ecosystems, migrating species and rare species of flora and fauna;
- Develop a basin-wide network of protected areas;
- Multi-national and coordinated monitoring of environmental quality; and
- Prepare and adopt an agreement between China, Mongolia and Russia which establishes the principles of river basin management in the Amur River Basin.

## Oil spills in the Okhotsk Sea sub-system

### Problem definition

The exploitation of oil and gas fields in southern Sakhalin is resulting in the release of oil products in concentrations above maximum permissible limits into shallow bays. Oil contamination has been recorded along the northeastern coast of Sakhalin Island. Further oil and gas development on the Sakhalin shelf will increase the risk of oil spills in the future. While government authorities, international companies, and public financial institutions have focused their attention on developing Sakhalin's oil and gas fields as rapidly as possible, they have given little attention to preparing the region to prevent and respond to oil spills (Lawn et al. 2001).

### Policy framework

Russia has ratified the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78). The Regulations for the Prevention of Pollution by Oil (1983) provides a legislative framework for oil spill prevention. In Russia, legal provisions for the prevention of oil spills are found in the Law No. 2060-1 of 1991 of the RSFSR on Environmental Protection which guarantees citizens Constitutional rights to a healthy environment.

The government of the Russian Federation has converted these legislative provisions into concrete actions and programmes through a number of resolutions:

- Resolution of the Russian Government No 613 on Immediate actions on oil spill prevention and response, 2000;
- Russian Government Resolution No 240 on the Order of oil spill prevention and response activities organisation on the territory of the Russian Federation, 2002; and
- Russian Government Resolution No 794 on the Unified state system of emergencies prevention and response, 2003.

The first of these resolutions includes technical and organisational measures for preventing oil spills, including:

- Monitoring of potential oil spill accidents;
- Number of emergency services and facilities needed for clean-up operations following an oil spill;
- Organisational arrangements for cooperation between emergency services;
- System of control and early warning;
- Securing constant readiness of all emergency services;
- System of information exchange;
- Procedures for immediate action after an emergency alert;

- Surveillance of geographic, navigational, hydrographic, hydro-meteorological and other environmental conditions of the area surrounding the oil spill in order to plan clean-up operations; and
- Safety of the population and provision of medical aid.

The following unresolved problems have been taken into consideration during the formulation of the policy options:

- Lack of appropriate equipment for the decontamination of oil spills during fast-ice consolidation;
- Sakhalin Basin Agency lacks the technical equipment and facilities to clean-up large and/or remote oil spills;
- Lack of double-hull tankers; and
- While the increasing volumes of oil being transported across the Okhotsk Sea will heighten the risk of oil spill incidents, emergency services remain under-developed.

## Policy options

### Economy

- Improve economic and financial mechanisms for environmental protection;
- Provide funds for the rehabilitation of ecosystems in the event of an oil spill;
- Evaluate the long-term environmental and socio-economic costs of oil and gas infrastructure development;
- Compensate the local population and other economic sectors for the negative effects of oil and gas extraction, and in the event of an oil spill;
- Accurately assess the economic value of the natural resources of the Okhotsk Sea, particularly those along the coast of Sakhalin.
- Provide economic incentives (and disincentives), such as discounted (or increased) ports fees, to oil companies which use (or do not use) environmentally sound practices, like double hulled tankers.

### Legal

- Legislation should be comprehensive and consistent;
- The use of regulations, restrictions and prohibitions needs to be balanced with the promotion of operational safety and environmental protection using appropriate technologies; and
- Industry self-regulation, independent monitoring and regular auditing of internal control systems should be encouraged, in addition to State control and monitoring provisions.

### Governance

- Minimise the adverse effect of oil and gas production on other economic sectors;

- Establish regular forums for stakeholders, such as the indigenous population and local industries, to discuss with government authorities and oil companies their concerns over problems related to the oil and gas development;
- Create mechanisms to compensate businesses or individuals for damages caused by the oil and gas development;
- Review operational procedures and create an operational safety system to reduce the risk of spills; and
- Ensure presence of independent technical and environmental inspectors at the offshore oil and gas fields to ensure compliance with Russian law.

### Technology

- Use surveillance technologies, such as radar, to monitor tanker traffic;
- Modernise transport and oil distribution infrastructure to comply with highest environmental standards;
- Use appropriate navigational aids to minimise the risks of spills; and
- Phase in double hulls for all vessels using the tanker ports and offshore terminals.

### Education and knowledge

- Support regional scientific research into the ecological consequences of oil and gas operations in the region;
- Build capacity in the institutions responsible for environmental monitoring;
- Ensure high standards of training for employees of oil companies and the crews of tankers;
- Conduct regular and independent (subject to peer review) Environmental Impact Assessments (EIAs) for the entire Sakhalin coastline;
- Monitor shipping activity;
- Estimate the carrying capacity of the region's ecosystems prior to developing oil and gas fields;
- Carry out constant environmental monitoring during the entire period that the oil and gas fields are exploited; and
- Develop environmental awareness campaigns to encourage public engagement in the development of the region for oil and gas.

The proposed options can be implemented on different scales: (i) internationally, e.g. multi-lateral investigations into the risks of oil spills and the adoption of internationally recognised best technologies; (ii) nationally e.g. strengthen the enforcement of Federal laws related to pollution; and (iii) locally e.g. develop operational safety and environmental protection measures based on accurate scientific and technical information.

# Overexploitation of fish and other living resource in the Sea of Okhotsk region

## Problem definition

Overfishing is threatening the sustainability of the most commercially valuable fish stocks in the Sea of Okhotsk region. The bioresources in most demand on the global fisheries market, such as sea urchin and King crab, are at risk of disappearing completely from the region. Further, the spawning grounds and habitat of salmon and other fish have deteriorated due to eutrophication and other pollutants in the Amur River Basin and the rivers of Sakhalin. Overfishing of the main commercial species has destabilised the ecosystems of the Sea of Okhotsk region.

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 in order to supplement their income. The reduction in economic returns has also prevented the modernisation of the fleet and fishing gear. Russian and international fisheries laws and regulations are undermined by deep-rooted corruption and ineffective enforcement. The illegal export market to Japan is more valuable than the legal market (Okey 2003). There is a lack of fisheries statistics and monitoring programmes, and fishermen lack awareness of the long-term impacts of overfishing. Further, the countries fishing in the Sea of Okhotsk region insufficiently exchange fisheries information and rarely conduct joint research activities (Ozolinsh & Spiridonov 2001, Novomodny et al. 2004). There is, however, a growing recognition that the current trends in the fisheries sector of the region need to be halted.

## Policy framework

The marine jurisdictional boundaries and hence the fisheries boundaries of Russia were determined by the United Nations Convention on the Law of the Sea (UNCLOS 1982), which Russia ratified in 1997. The Federal Law on the Continental Shelf of the Russian Federation (1995) defines the status of the continental shelf of Russia in accordance with UNCLOS. The Law on Internal Seas, The Territorial Seas and Adjacent Zone of the Russian Federation (1998) revised Soviet-era legislation to take into account the new area occupied by Russia.

In 2004, the Federal law on Fishery and Preservation of Biological Resources was passed. Although this may improve the status of the Russian fishery, the new law does not resolve many of the problems

faced by the fisheries. It is believed that the law will be fully effective only if it is further developed (Zilanov 2005).

In addition, other international agreements and recommendations aim to improve and better coordinate international efforts aimed at addressing overfishing, e.g. the FAO Code of Conduct for Responsible Fisheries (1995). The United Nations Conference on Environment and Development (UNCED 1992) and the World Summit on Sustainable Development (WSSD 2002) also established principles regarding the preservation of biodiversity, the protection of the marine and the coastal environment, and the protection and rational use of marine living resources.

Despite the adoption of a number of global and regional initiatives aimed at addressing the problem of overfishing, the fisheries of the Sea of Okhotsk region remain highly vulnerable. The following outlines the main achievements and obstacles facing the fisheries sector.

### *Achievements:*

- The United Nations Fish Stocks Agreement of 1995, applying to straddling fish, dictates that nations shall apply the precautionary approach (Article 6). The principles, parameters and models used in stock assessments of the Sea of Okhotsk need to be revised in order to execute this agreement, (Kotenev & Zaytseva 2003, Korelsky 2004);
- In 2002, to reduce the negative effects of overfishing, time limits for vessels at sea and satellite monitoring of bioresources were introduced in Russia (Bliznezov 2002);
- In 2003, the future development of the Russian fisheries sector was defined until the year 2020 (Governmental Resolution 2003). The resolution presented an analysis of the current status of the Russian fisheries sector. The policy aims to increase the sustainability of fish stocks in the Sea of Okhotsk through:
  - The development of a legislative and organisational framework to enable the sustainable exploitation of fish based on the precautionary approach;
  - The reduction of the capacity of the fishing fleet to a sustainable level;
  - Practical actions to implement the FAO Code of Conduct for Responsible Fisheries (FAO 1995);
  - The reduction of by-catch and discards;
  - The mitigation of socio-economic problems caused by the reduction of fish stocks in the Sea of Okhotsk;
  - The control of poaching, illegal markets and corruption; and
  - The elimination of gaps in knowledge concerning aquatic ecosystems and the fisheries.

#### *Unresolved problems:*

##### a) International (general) issues:

- Increased demand for fish products;
- The impact of anthropogenic factors and natural variability on the fisheries, which increases the financial risks for the fisheries industry;
- Overcapacity of the fishing fleet resulting in the overfishing of commercial stocks;
- Lack of efficient international mechanisms and coordination between the concerned countries to combat illegal fishing;
- Gaps in fisheries statistics and low quality of collected data on which scientific conclusions are based; and
- Gaps in knowledge needed in order to establish TACs based on an ecosystem approach.

##### b) Russian issues:

- Economic crisis caused by market reforms following the collapse of the Soviet Union.
- Lack of governmental support for unemployed fishermen and the coastal fishery which is resulting in the stagnation of social standards in coastal settlements where the fishery is the dominant economic activity;
- The fisheries industry of the region is characterised by deteriorating fishing gear and processing facilities, an obsolete fishing fleet, and the widespread use of non-selective fishing gear;
- Increased export-oriented fishery;
- Lack of efficient policy to control by-catch and discards and insufficient financial support for the processing of fish with a low market value; and
- The lack of transparency in the fishing quota allocation system allows corruption, illegal transactions and provokes conflict among fishermen.

## **Policy options**

### **Economy**

- Reduce the capacity of the fishing fleet by compensating fishermen if they voluntarily decommission their fishing vessels;
- Invest in facilities to process less commercially valuable fish caught as by-catch, which are currently discarded; and
- Review and reform the credit and taxation systems to reflect the specific characteristics of the fisheries sector.

### **Legal**

- Enforce legislation more stringently;
- Strengthen legislation and enforcement capacity in order to eliminate corruption in the quota allocation system;
- Improve international legislation in order to reduce poaching and illegal landings of fish in other countries.

### **Governance**

- Formulate policies that promote the adoption of more sustainable fishing practices;
- Implement the FAO Code of Conduct for Responsible Fisheries;
- Ensure economic and social sustainability in the fisheries sector;
- Develop a national social strategy for the fisheries sector aimed at securing optimal employment and stable incomes for those employed in the fisheries sector;
- Strengthen the capacity of national fisheries control and enforcement agencies;
- Incorporate accurate fisheries statistics into the decision-making process;
- Adjust quotas according to the capacity of fishing vessels;
- Increase the transparency and equality of the Russian quota allocation system, taking into account the financial constraints of the small-scale coastal fishery; and
- Develop international sturgeon restocking programmes.

### **Technology**

- Provide incentives and disincentives to encourage the use of selective fishing gear; and
- Develop alternative fishing gear.

### **Education/knowledge**

- Improve the knowledge of fisheries dynamics and initiate fish stock assessments based on an ecosystem approach;
- Set TACs based on more accurate fisheries statistics; and
- Disseminate information to fishermen and the local population to build awareness of the environmental and socio-economic benefits of sustainable fishing.