

Part II

**Strategy for fisheries and aquaculture sector
development and management
in the Kyrgyz Republic
(2008–2012)**

Ministry of Agriculture, Water Resources and Processing Industry

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Chapter I

INTRODUCTION

This strategy for fisheries and aquaculture sector development and management in the Kyrgyz Republic (Kyrgyzstan) provides an outline for the development of the sector until and including 2012. The strategy was prepared by the Department of Fisheries (DOF) of the Ministry of Agriculture, Water Resources and Processing Industry (MAWRPI) of Kyrgyzstan and representatives of many fisheries and aquaculture sector stakeholder groups, with support from the European Commission (EC) and the Food and Agriculture Organization of the United Nations (FAO) under the Project EC/FAO Facility GCP/GLO/162/EC – Kyrgyzstan “Development of inland fisheries and aquaculture in the Kyrgyz Republic to reduce rural food insecurity”.

This strategy has been the subject of an intensive and complex policy development and planning process, which has included recognition of the need for policy development, adoption of a process approach, a review study of the sector, and consultations and discussions with all relevant fisheries and aquaculture sector stakeholders. The strategy should be considered a framework of policy guidance prepared by a core group of Kyrgyz fisheries and aquaculture experts, with inputs from national workshops held in Bishkek in June and September 2007 and on the shores of Lake Issyk Kul in November 2007. The draft strategy was distributed at various stages to all concerned with fisheries and aquaculture in Kyrgyzstan, and additional comments were received from a wide range of officials, experts and producers involved in the sector. These comments were taken into consideration, discussed and (where relevant) incorporated in the final draft strategy. After finalization, this was submitted by the DOF to the MAWRPI for approval. The strategy was approved by Minister A. Nogoyev on 25 February 2008, and the director of the DOF was instructed to lead the implementation of the strategy.

Chapter II

THE NEED FOR A STRATEGY

THE POLICY AND STRATEGY DEVELOPMENT PROCESS

Fisheries and aquaculture can contribute to the national economic development of Kyrgyzstan, and help to increase food security and alleviate poverty in rural areas of the country. Before independence, fisheries and aquaculture produced more than 1 300 tonnes of fish annually. However, since 1991, fish production has declined dramatically owing to: (i) the privatization of fishery activities, fish hatcheries and aquaculture farms; (ii) the withdrawal of Soviet investment; and (iii) the consequences of the transition of the country to a market economy.

The transition from a centrally planned economy to a market economy did not go as smoothly in fisheries and aquaculture as in some other sectors. Reasons for this include:

- the lack of experience and skills in essential disciplines needed for fisheries and aquaculture;
- the lack of fisheries education;
- limited access to credit;
- limited use of innovative techniques;
- the lack of an effective fish-health monitoring scheme.

As most of these issues are interrelated, it is important to address them in a coherent, comprehensive and structural manner.

The DOF of the MAWRPI has the mandate within the Government of the Kyrgyz Republic to organize, participate in and provide technical inputs to the development of national strategies on fisheries and to support the implementation of the sectoral development strategy. The DOF recognizes that, in the last decade, the fisheries and aquaculture sector has not received the attention it deserves from the state in order to enable the sector to develop sustainably.

The fisheries sector stakeholders in Kyrgyzstan, including private entrepreneurs and government institutions, also recognize that the above issues are detrimental to the sustainable development of the sector. Clear and comprehensive guidance is needed in order to: (i) develop the sector sustainably; (ii) enable Kyrgyz fishers and aquaculturists to develop their businesses profitably; and (iii) increase collaboration between government and private-sector entrepreneurs. Therefore, the DOF requested international assistance and started the process of formulating a strategy for the sustainable management and development of fisheries and aquaculture in Kyrgyzstan.

The DOF, like private entrepreneurs, needs to show that it is performing well, i.e. carries out the responsibilities assigned to it by the government in an efficient and timely manner. The achievements of the DOF and the impact of its work should be clear to society. In order for society to pronounce judgement on the MAWRPI, and the DOF in particular, measurable quantitative and qualitative targets that are timely, achievable, suitable and justified need to be set.

These targets or objectives are generally written into a policy document, where not only the rights and obligations of the ministry are detailed, but also those of the private sector and other stakeholders involved in fisheries, showing the synergy and coherence between them. Such a policy, where the government and the private sector collaborate, may be considered a kind of contract between the two.

A policy is a document, generally for the long-term, describing what should be achieved. It includes objectives and recommendations for the sustainable development of the sector. In the fisheries sector, a policy often provides an outline for development, including all subsectors (e.g. inland capture fisheries, aquaculture, fish processing, and fish trade and marketing). At present, Kyrgyzstan does not have a national fisheries policy. The only document developed by the DOF is the Draft Programme for Fishery Industry Development of the Kyrgyz Republic 2008–2012, which has been submitted for consideration and approval to the Government of the Kyrgyz Republic.

Within the process of policy development and planning, a policy document is generally prepared first, while a mid-term strategy and implementation programme for the strategy follow in subsequent steps. The goals, values and criteria generated in the policy document formulation earlier are reduced to more operational terms. For example, the goals are reduced to objectives – intermediate (with respect to goals as main objectives) or partial (with respect to goals as specific objectives). Objectives should be measurable, attainable, relevant and time-bound.

A strategy is an important part of the planning process, it lays out clearly the defined objectives and how the objectives are to be reached. A strategy is generally focused on the mid-term and includes a review and monitoring component. A strategy also identifies the appropriate resources – human, natural and financial – required and indicates how these may be combined and used to achieve the objectives.

THE STRATEGIC PLANNING PROCESS

This strategy for the sustainable management and development of fisheries and aquaculture in Kyrgyzstan was formulated in a participatory manner with key sectoral stakeholders, including the DOF of the MAWRPI, the State Agency for Environment Protection and Forestry, the Kyrgyz Hunting and Fishing Union (Kyrgyzzohotrybolovsoyuz – HFU), the Kyrgyz Aquaculture Association, the Ichthyology Laboratory of the National Academy of Science, and representatives of private fish farmers, fisherfolk, the retail sector and potential bilateral and international donor agencies. As such, the strategy includes the visions and aspirations of those involved in sectoral development. International technical assistance in the formulation of this strategy was provided by the EC and FAO.

The process started with a review study of fisheries and aquaculture in Kyrgyzstan, aimed at providing information and analysis to allow for the formulation of the strategy. While the review study did not cover the official government perspective, this strategy does include the viewpoints of the state and, therefore, represents the commitment by the MAWRPI to the development of the fisheries and aquaculture sector and to the pertinent objectives outlined in this strategy.

In the formulation process of the strategy, the existing national and international relevant laws and regulations were taken into account, specifically the following laws of Kyrgyzstan: Fishery (June 1997); Nature Preservation (June 1999); Specially Protected Areas (May 1994); Steady Development of Ecologic and Economic System of Lake Issyk Kul (August 2004); Fauna (June 1999); Veterinary Affairs (March 1992). The 1995 FAO Code of Conduct for Responsible Fisheries was also taken into consideration.

The planning process started in June 2007, with the organization of a national strengths, weaknesses, opportunities and threats (SWOT) analysis workshop. At around the same time, a review study of fisheries and aquaculture in Kyrgyzstan started. The review study was aimed at diagnosing the sector and providing a basis for policy development and sectoral planning. The SWOT analysis workshop was held at the premises of the DOF. It was very useful for the fisheries and aquaculture sector as it was able to bring together key stakeholders from the sector, including

representatives from both public and private sectors, to exchange views on the current status and issues of fisheries and aquaculture in the country. The SWOT analysis identified strengths, weaknesses, opportunities and threats for the fisheries and aquaculture sector in Kyrgyzstan, which was a good start for the formulation of the strategy.

The first workshop was followed by a second strategic planning workshop held in Bishkek on 13 September 2007, where 50 key experts discussed a first draft of the review study of fisheries and aquaculture to be used for the draft of the fisheries and aquaculture development and management strategy in Kyrgyzstan. Following on from this second workshop, a seminar on the formulation of a fisheries and aquaculture sector development and management strategy was held on 14–15 September. This seminar was attended by 57 key experts from the public and private sectors as well as civil society. The outcomes of the seminar, plus those of the SWOT analysis, were used to prepare key elements for the formulation of the strategy. These were discussed at the seminar. At the seminar, it was decided to combine the policy and strategy for fisheries and aquaculture sector development and management into one planning document. Following the seminar, a draft strategy was prepared and distributed in advance to the participants in a final workshop on the technical adoption of the strategy, held in Issyk Kul on 29–30 November 2007, with the participation of representatives from the government, fisheries and aquaculture producers, fishery scientists, and fisheries and aquaculture social organizations. The comments received before the final workshop and its outcomes were incorporated in the final version of the strategy.

THE PURPOSE OF THE STRATEGY

The strategy, as well as the strategic planning process itself, has three overriding purposes:

- Support and guide the long-term fisheries and aquaculture sector development process.
- Mobilize financial resources for sectoral development from government sources, international cooperation (donors), and private-sector investors.
- Capacity building and increasing the efficiency of involved state institutions for the development and management of the fisheries and aquaculture sector.

This planning document consists of various chapters. Chapter III provides a summary overview of fisheries and aquaculture in Kyrgyzstan, followed by the actual strategy for the sustainable management and development of fisheries and aquaculture in Kyrgyzstan. Chapters IV–XII address: the vision and principles for the fisheries and aquaculture sector; the time frame; monitoring and implementation mechanisms of the strategy; overall goals; main and specific objectives; and performance indicators for the development of the sector and monitoring of the strategy. Annexed to this strategy document is the Priority Fisheries and Aquaculture Action Plan, which details the priority areas for intervention for the period up until 2012.

Chapter III

SUMMARY OVERVIEW OF FISHERIES AND AQUACULTURE IN KYRGYZSTAN

Fisheries started to develop in Kyrgyzstan in the nineteenth century, mainly in the principal lakes and rivers of the country, and exclusively for local consumption. In the 1930s, when Kyrgyzstan was a Soviet Republic, the government started to take measures to develop industrial fisheries and aquaculture. The first steps were the organization of fishery and aquaculture cooperatives, the introduction of exotic species, and the stocking of Lake Issyk Kul, which produced more than 80 percent of the fish harvested at that period in the country. The Issyk Kul fish factory in Grigorievka, established in 1931, enabled increased fish production, up to some 1 000–1200 tonnes/year in the 1960s.

Although the Issyk Kul endemic species (ide, moroco, carp, Issyk Kul marinka, and naked osman) were abundant, it was decided in the 1930s to introduce Sevan trout (from Lake Sevan in Armenia), which had formed a local fish population by 1960. In the 1960s, a complex of trout hatchery and fish-processing facilities was built around Lake Issyk Kul, with the objective of producing trout eggs and fingerlings for restocking the lake, and for processing the fish caught there.

In the same period, work started on the artificial reproduction of whitefish species at the Ton hatchery located on the southern shore of Lake Issyk Kul. In the period 1966–1988, it produced more than 90 million fingerlings of eastern bream, pikeperch, silver carp, tench, syrok and Baikal omul, most of which were released into Lake Issyk Kul to support a sustainable fishery. However, the introduction of these species did not produce the expected results. Currently, it is thought that the introduction of predator fishes, e.g. trout and pikeperch, had a negative impact on the indigenous fish fauna of the lake. The average fish catch in the lake was about 1 000 tonnes/year in the period 1965–1976, falling to 300 tonnes/year in the period 1979–1984. At present, the catches from Lake Issyk Kul consist of carp, bream, tench, ide, moroco, Issyk Kul marinka and Issyk Kul trout. Since 2004, there has been a moratorium on fish catches at the lake. In 2008, in accordance with a presidential decree, a moratorium on catches for all species was introduced for 2 years.

The culture of carp and other species in ponds reached their highest production levels in the final decade before independence. The hatcheries, the rearing ponds and the processing facilities built in the aquaculture complex of Chuy, Uzgen, Talas and Ton were used fully in the 1980s and were highly profitable. In this period, total aquaculture production exceeded 1 000 tonnes/year.

The changes that occurred after independence in 1991 affected the fisheries sector. The sector stopped receiving financial support from government. About 90 percent of the state fish farms were privatized as part of the transition of the country to a market economy. Fishery production fell to 44 tonnes in 1999 and has continued at the same low level (official recorded production [capture and culture] was 71 tonnes in 2006).

The fish produced in the Issyk Kul and Son Kul lakes is sold mainly in Bishkek markets. Fish originating from other waterbodies, e.g. Toktogul, Bazar-Korgon, Kirov, Orto-Tokoy and Kara-Suu, is generally sold locally or in nearby towns and villages. There are no facilities for transporting frozen or chilled fish over long distances. Only the relatively large markets of Bishkek, Alamedin, Orto-Say and some other cities have special fish halls. They are equipped

with freezers and refrigerating boxes to freeze and cool fresh fish. At the markets, fresh fish is sold from counters. Specialized fish shops in Bishkek, such as “Antey” and “Ocean”, have special refrigeration counters, which allow the buyers to choose the fish products. Most fish, both national production and imports (mainly from neighbouring Kazakhstan), is sold as fresh fish. Small quantities of salted and dried fish and some smoked fish are brought to the Bishkek market from the Issyk Kul area. Most of the processed fish is processed and sold without sanitary controls being applied. The supply of fishery products (national production and imports) is far from sufficient to satisfy national demand for these products at present.

Kyrgyzstan has the necessary natural and climate conditions and water resources for fish culture, enabling it to develop profitable lake and pond culture practices. The country has a relatively long summer, a favourable temperature for cold-water fishes, suitable salinity levels of main waterbodies, appropriate concentration of hydrogen ions and other environmental conditions. There is also a good natural food base (phytoplankton and benthos) in many of the lakes and rivers, which will allow the country to increase fish exploitation in the lakes if the fisheries are managed properly. Important fisheries waters are the Issyk Kul, Son Kul and Kara-Suu lakes. There are several large reservoirs, e.g. Toktogul, Bazarkorgon, Ortotokoy and Kirov, and hundreds of hectares of ponds – and there is a scope to increase the pond culture area significantly.

In 2005, the combined hatcheries produced *inter alia* 26 million whitefish eggs and 6.6 million syrok eggs. Fishery reservoirs were stocked with 9.3 million small syrok, whitefish, carp and trout (about 3 million more than in previous years). Since 2004, there has been a moratorium on fish capture in the Issyk Kul and Son Kul lakes, which will remain in force until 2008. The only catches allowed in these lakes are aimed at obtaining broodstock for the restocking programme.

Interest in investing in aquaculture is growing again. Various companies, with support from foreign and national investors, have established trout production cage culture systems with an annual capacity of hundreds of tonnes at Lake Issyk Kul. Sale of cultured trout has begun, and more cage culture systems are being constructed. It is planned to produce about 1 000 tonnes of trout annually in the near future.

The legal basis for fisheries has been established. The Fishery Law (1997), Fauna Law (1999) and Nature Preservation Law (1999) were passed in the 1990s. The “Fishery and Biological Norms” and the rules for fish culture breeding in the reservoirs of Kyrgyzstan have been ratified. Furthermore, bills to amend and complement the Fishery Law, a programme for fishery development of Kyrgyzstan 2007–2010, and new regulations for the issuing of licences for fishing and fish culture are with the government for approval.

An institutional basis is available in support of the fisheries sector. The government has created the DOF of the MAWRPI as the main institution responsible for fisheries and aquaculture development and management. In 2005, the DOF was ratified within the new structure of the ministry, and the Scientific Fisheries Board to advise the DOF was established. The Scientific Fisheries Board includes among its membership representatives from the government, state organizations, the private sector, and scientists.

At present, fish consumption in Kyrgyzstan is less than 1 kg per capita per year, while specialized nutrition institutions recommend 12 kg per capita annually. Such consumption levels would require a supply of some 60 000 tonnes of fish a year to the Kyrgyz population.

The poaching of fish is common in most of the lakes and rivers of the country. Poachers vigorously catch trout in the mouths of rivers where the species concentrates before and during the spawning periods. Poaching is a major issue facing the DOF and other fisheries sector

stakeholders. Dealing with it requires new fisheries management approaches, improvements in fishing inspections, and greater financial support to the fisheries administration. The legal catch of fish by recreational fishers is also significant.

The state fisheries companies are suffering from an acute shortage of finances. As a result, the old equipment (from the Soviet period) has not been replaced, and the technical capacity of their staff has not been updated for many years. The companies lack means of transport, boats, boat engines and fish reproduction equipment. It is estimated that some 2.0 million (about US\$55 500) a year is required in order to reproduce and preserve fishery resources, to conduct fish stock assessments in state waterbodies, and to build capacity for fish breeding and fishery biology. Apart from the above entities, fish hatchery facilities under state responsibility are also short of finances. This means they are unable to buy modern fish hatchery equipment, aqua feeds and other essential inputs for aquaculture production. As a consequence, research into fish breeding is being undertaken at low levels.

The actions of the national government and regional authorities are not coordinated. There are contradictions and ambiguities in normative legal acts that are leading to the duplication of control functions by the DOF and the State Agency on Environment Protection and Forestry.

One factor that concerns the development of the fisheries sector in Kyrgyzstan is the repetition of mistakes committed in relation to the artificial change in the fauna of national waterbodies. In the last 50–70 years, serious changes have taken place in the fish biodiversity of Lake Issyk Kul. As a result of the introduction of new species, especially predatory whitefish and trout from Lake Sevan, as well as overfishing of indigenous species, the fish productivity of the lake has declined to 10 percent of what it was before.

In regard to opportunities for the development of the fisheries sector, some measures have recently been taken to attract investment in fisheries and aquaculture activities. In December 2005, the government passed a resolution exempting investors from paying value added tax (VAT) on imported fish-breeding equipment.

The possibilities for the construction of new pond culture facilities, and the rehabilitation of existing ones, are promising. The productivity of ponds is higher than that of lakes and reservoirs. Using intensive culture methods in the Chu Valley in the south of the country will make it possible to attain a production of 2 500–3 000 kg/ha. Such productivity figures will allow the country to produce in aquaculture more than 1 000 tonnes of valuable marketable fish – a production capacity comparable with the total estimated catch capacity of Lake Issyk Kul.

It is estimated that a total of 2 500 tonnes of marketable fish can be produced annually in the country by better use of the currently existing fish ponds, provided that biotechnical standards are increased and private investors are attracted. With appropriate investment support, it is also possible to create highly-profitable cage culture facilities near the cascade of reservoirs on the Naryn River, and to establish trout farms in the mountainous areas of many rivers, whose waters are rich in oxygen, clean and suitable for trout reproduction.

New fishery monitoring and surveillance methods make it possible to measure stocks and evaluate efforts more accurately than in the past. An improved system for collecting, processing and disseminating fishery statistics data and an improved scientific research programme would enable the potential biomass of species to be assessed and the total allowable catch in the main waterbodies to be established.

Population growth and the increase in tourism create new opportunities for fish production development. The population of the Issyk Kul region is estimated to rise in the near future to up to 600 000 people, and the number of tourists visiting the region is estimated to grow to 1.5 million people. These changes will require an annual supply of 7 000–13 000 tonnes of fish.

In order to satisfy this demand, either more fish will have to be imported or aquaculture production will need to increase considerably.

The review study further notes that capacity building and training programmes could be established relatively easily for fishery management and aquaculture specialists at the national universities, colleges and vocational schools. However, regional and international cooperation is required in order to make such capacity building and training programmes successful and sustainable.

Chapter IV

THE LONG-TERM VISION

The long-term vision for the fisheries and aquaculture sector in Kyrgyzstan is to develop a diverse, competitive, economically viable and environmentally sustainable fisheries and aquaculture sector, of which the people can be proud. The aim is to develop a sector that will: (i) deliver high-quality, healthy food to consumers at home and abroad, and social and economic benefits to communities (particularly alternative employment opportunities in rural and remote areas); (ii) use, wherever possible, scientific evidence to operate responsibly, working within the carrying capacity of the environment, both locally and nationally; and (iii) use a supply chain approach.

Chapter V

THE GUIDING PRINCIPLES

The strategy for fisheries and aquaculture development and management in Kyrgyzstan will be based on the following guiding principles:

- Fisheries and aquaculture are important for economic, social, development and public resource purposes. Collaboration among all stakeholders including governments, public institutions and existing private-sector aquaculture and fishing industries is important to achieving environmental sustainability, economic viability and growth.
- Fisheries and aquaculture development and management should be founded on the results of fishery and aquaculture research, scientific advice and expertise. They should also be fostered in partnership (between private entrepreneurs, government agencies, research and education, and others involved in the supply chain), guaranteeing stakeholder participation in planning, implementation and monitoring of this national strategy, as well as in the development and improvement of best practices and standards.
- The Fisheries and Aquaculture Policy Framework of Kyrgyzstan and related programmes and procedures will adhere to international and regional standards and be harmonized on as wide a basis as possible.
- The DOF encourages the fisheries and aquaculture sector to apply sustainable production measures. Such measures include, but are not limited to, the use of best management practices, strengthening of associations, establishment and use of community-based management schemes, health certification, specific pathogen-free and high health stocks, biosecurity, and vaccination protocols. The aquaculture sector in particular should work in harmony with nature and follow the precautionary approach in order to minimize possible negative environmental impacts and avoid irreversible changes to ecological systems.
- Fisheries and aquaculture management will be based on the principles set out in the FAO Code of Conduct for Responsible Fisheries. The management measures will be effective, practical, cost-effective and utilize readily available resources. These resources will allow the development of appropriate national and regional policies and regulatory frameworks as required, increasing investments and reducing the risks incorporated in the fishing, culture, reproduction and movement of aquatic animals.
- Access to relevant national fisheries and aquaculture capacity (infrastructure and specialized expertise as available in the associations active in the sector) is crucial for development and management of the sector. Collaboration with international organizations and foreign countries will be sought wherever possible to further increase the capacity of Kyrgyzstan to develop its fisheries and aquaculture in a sustainable manner.

Chapter VI

THE TIME FRAME

The long-term vision for the sector and the guiding principles above, together with the overall goals (as detailed in Chapter IX) should be regarded as the policy for sustainable fishery and aquaculture development and management of the MAWRPI. This strategy is based on the policy and is designed to guide the development and management of fisheries and aquaculture in Kyrgyzstan for the period 2008–2012.

Chapter VII

MONITORING MECHANISM

The strategy for fisheries and aquaculture management and development in Kyrgyzstan will be monitored by the DOF of the MAWRPI, with the participation and cooperation of other MAWRPI departments and divisions, the State Agency on Environment Protection and Forestry, the relevant local governments, and the fisheries and aquaculture stakeholders associations. Other institutions involved in national economic development and natural resources protection will also cooperate with the DOF in monitoring the strategy.

AS most of these institutions are represented in the Scientific Production Council of the DOF (the Scientific Fisheries Board), established in 2004 and confirmed with renewed mandate in 2007 as the higher national forum to discuss and take decisions on matters concerning fisheries and aquaculture development and management in Kyrgyzstan, the Scientific Fisheries Board will be the main responsible institution for monitoring, reviewing, regulating and coordinating the implementation of the strategy for the period 2008–2012. Hence, the Scientific Fisheries Board will be the main responsible collegiate, advisory and recommendatory institution for the monitoring of the strategy, with the DOF as its lead implementing agency.

The Scientific Fisheries Board will be informed by the DOF, through annual reports, on the implementation of the strategy. The DOF will also be responsible for obtaining essential information on environmental issues from the State Agency on Environment Protection and Forestry for inclusion in the annual reports. The annual reports will also include the progress made towards achieving the goals of the strategy. Progress measurement will be by use of the defined performance indicators (Chapter XII). These performance indicators will be reported and reviewed at annual meetings convened by the Scientific Fisheries Board to monitor progress in the implementation of the strategy. The annual review meetings may also adjust specific objectives for achieving the overall goals in the light of new, revised or additional information that may be collected. These adjustments have to be made through a participatory approach.

Chapter VIII

IMPLEMENTATION MECHANISM

The daily implementation of the strategy will be carried out by the DOF, as the lead implementing agency at national level for fisheries and aquaculture development and management in Kyrgyzstan. The DOF will submit to the Scientific Fisheries Board all important matters concerning the implementation of the strategy (e.g. progress achieved and difficulties faced in the modernization of the capture fishery area; rehabilitation of hatcheries; production of restocking material; newly established aquaculture farms; fishery resources protection; and capacity building in fisheries and aquaculture). In turn, the Scientific Fisheries Board will examine these matters and provide guidance to the DOF and other relevant members involved in executing the strategic activities on issues that require improvement for the successful implementation of the strategy. The DOF will prepare and submit to the Scientific Fisheries Board an annual report assessing progress in implementation. This progress report should be reviewed and endorsed by the Scientific Fisheries Board, indicating the changes and corrective measures that should be taken to ensure the successful implementation of the strategy.

The terms of reference of the DOF will be reviewed and its budget allocation will be improved in order to enable it to carry out its duties in an efficient and effective manner.

With respect to research, the Scientific Production Centre on aquaculture and fishery, with the cooperation of the National Academy of Science of Kyrgyzstan, will be supplied with a budget allocation sufficient to carry out basic research on fishery resources assessment, aquaculture development, and fish-processing and fish-marketing techniques. In order to assist the Scientific Production Centre in its tasks, the DOF will strengthen its capacity by appointing a senior fishery research specialist, assisted by at least three scientific researchers: one specialist in fishery resources; one specialist in aquaculture; and one specialist in fish processing and marketing.

With respect to fisheries statistics, the DOF, with the concurrence of fish restocking plants, fish catch enterprises, fish processors and fish vendors, the HFU and the aquaculture farmers – which are obliged to report on their activities – will gather, process and disseminate statistical data and information on fisheries and aquaculture, according to the performance indicators set forth in Chapter XII of the strategy. In order to carry out these tasks, the DOF will strengthen its capacity to collect process and disseminate fisheries and aquaculture statistical data by appointing a senior statistical specialist, assisted by a junior statistical specialist and a clerk.

Chapter IX

OVERALL GOALS

The overall long-term goals are what the policy aims to achieve and what the strategy will work towards in the mid-term. The strategy itself will not be able to achieve the overall long-term goals but it will contribute towards them. The overall goals for fisheries and aquaculture sector development and management in Kyrgyzstan are:

- Use the aquatic resources of Kyrgyzstan to contribute to the national economy, poverty alleviation and food security.
- Augment the contribution of fisheries and aquaculture in generating socio-economic benefits and improving the well-being of the rural population.
- Improve the economic viability of aquaculture farms through diversification of production in accordance with market demand.
- Increase the availability of high-quality fishery products for the domestic market, including increased production of low-price fish for popular consumption.

Chapter X

DEVELOPMENT OBJECTIVES

The development objectives provide the situation, condition and behaviour that need to be changed in order to contribute to the overall goals. The following development objectives for fisheries and aquaculture sector development and management in Kyrgyzstan are considered:

1. Review and update fishery legislation to introduce reforms enabling modern fishery and aquaculture management and development.
2. Ensure the protection and responsible management of fishery resources in Kyrgyzstan.
3. Ensure implementation and further development of the restocking programme.
4. Develop diversified and multipurpose fisheries and aquaculture enterprises.
5. Improve the market supply chain and processing of fishery products, and ensure the safety and quality of these products.

Chapter XI

SPECIFIC OBJECTIVES

The aim of the specific objectives is to support the achievement of the development objectives of the strategy, within the time frame of the strategy. The following specific objectives are designed to achieve each of the development objectives of the strategy for the development and management of fisheries and aquaculture in Kyrgyzstan.

DEVELOPMENT OBJECTIVE NO. 1. REVIEW AND UPDATE FISHERY LEGISLATION TO INTRODUCE REFORMS ENABLING MODERN FISHERY AND AQUACULTURE MANAGEMENT AND DEVELOPMENT

- 1.1 Review the fishery legislation and introduce changes to make it comply with agreements of CIS and international legislation including:
 - the CIS Agreement on Rational Management and Protection of Transboundary Waterbodies¹, the FAO Code of Conduct for Responsible Fisheries, the Ramsar Convention on Wetlands², the Convention on Biological Diversity³, and the Convention on the Protection of the World's Cultural and Natural Heritage⁴.
- 1.2. Review and introduce changes in fisheries-related legislation to avoid duplications of permissive control functions of different governmental institutions.
- 1.3. Introduce changes in fisheries-related legislation to avoid uncertainty over property or water rights in pond aquaculture.
- 1.4. Improve regulations for the protection of fishery resources and include these in the legislation: closed seasons, establishment of fish reserves, protection of spawning zones, and regulation of fishing gear.
- 1.5. Develop the regulations for the establishing, licensing and registration of aquaculture enterprises.⁵

DEVELOPMENT OBJECTIVE NO. 2. ENSURE THE PROTECTION AND RESPONSIBLE MANAGEMENT OF FISHERY RESOURCES IN KYRGYZSTAN

- 2.1. Establish an adequate national system for gathering, processing, analysing and disseminating fishery data, statistics and information.
- 2.2. Ensure the realization of scientific research as required for fisheries management and aquaculture development.

¹ Regional agreement between: Armenia; Azerbaijan; Belarus; Georgia; Kazakhstan; Kyrgyzstan; Moldova, Republic of; Russian Federation; Tajikistan; Turkmenistan; Ukraine; and Uzbekistan. The treaty covers all transboundary waterbodies that delimit, cross or are located within the boundaries of two or more parties.

² International agreement on the conservation and wise use of wetlands (details available at www.Ramsar.org).

³ International agreement on the conservation and sustainable use of biological diversity (details available at www.biodiv.org).

⁴ International agreement on the conservation of the world's cultural and natural heritage (details at <http://whc.unesco.org/>).

⁵ Information materials that clearly specify and explain all requirements and procedures necessary to obtain a licence must be worked out.

- 2.3 Prepare for and implement management measures that will prevent overfishing and will remove excess fishing capacity.
- 2.4 Promote education and training of government staff and the private sector in all subjects related to fisheries management, aquaculture development and fish processing and marketing.
- 2.5 Improve the coordination of fishery activities between different governmental agencies and between national and local governments, under the leadership of a strengthened DOF.
- 2.6 Unify the system of fishery inspection with the DOF as the leading institution for fishery inspection.
- 2.7 Combat illegal, unregulated and unreported fishing in the lakes, rivers and reservoirs of Kyrgyzstan.
- 2.8 Increase the capacity of fishery inspection by improving the means of transport and monitoring, control and surveillance (MCS) of fishing grounds.
- 2.9 Establish a coordinated monitoring system to record the violations of the fishery law and regulations and the quantity of illegal fishing gear and volumes of fish confiscated.
- 2.10 Increase regional and international cooperation on fisheries and aquaculture issues through membership of Kyrgyzstan in relevant regional and international fisheries bodies, such as the FAO Committee on Fisheries (COFI), and a yet-to-be-established regional fishery body (RFB), EUROFISH or INFOFISH in the field of marketing and trade of fishery products, and in the area of research and general advice on aquaculture through membership of a network of aquaculture centres.
- 2.11 Ensure that water is managed in a way that is compatible with conserving biodiversity and ensuring natural fish production.
- 2.12 Ensure that fisheries stakeholders are consulted when decisions relating to water management are taken.
- 2.13 Preserve fish biodiversity and enhance production by restoring and reconnecting key fish habitats and maintaining natural flow patterns.
- 2.14 Develop cooperative mechanisms for transboundary fisheries management of shared rivers and waterbodies with neighbouring countries, including also stakeholders for other key aquatic resource using sectors such as the irrigation sector, agriculture and tourism.

DEVELOPMENT OBJECTIVE NO. 3. ENSURE IMPLEMENTATION AND FURTHER DEVELOPMENT OF THE RESTOCKING PROGRAMME

- 3.1 Review and amend as necessary the current restocking programme with regard to its accomplishment, economic feasibility, species and financial resources, ensuring that restocking activities are based on scientific evidence.
- 3.2 Optimize the operations of state-owned hatcheries and research facilities according to the revised restocking programme.
- 3.3 Provide support to the private-sector stakeholders (hatcheries and transporters) involved in the restocking programme.
- 3.4 Improve the quality of stocking material (fry and fingerlings) to be produced by state-owned and private hatcheries, through improved selection and introduction of proper broodstock strains.

DEVELOPMENT OBJECTIVE NO. 4. DEVELOP DIVERSIFIED AND MULTIPURPOSE FISHERIES AND AQUACULTURE ENTERPRISES

- 4.1 Facilitate the establishment of aquaculture farms and enhance the production capacity of existing farms.

- 4.2. Collect data and information on the social and economic relevance of small-scale fisheries.
- 4.3. Allocate fishing rights to groups of private small-scale fish business units through comanagement arrangements, and through their representation in the Scientific Fisheries Board.
- 4.4. Facilitate the access of fishery and aquaculture sector entrepreneurs (including also those involved in marketing and processing) to credit, subsidies and relevant financial services in support of the sustainable development and management of the sector.
- 4.5. Introduce low-cost technologies for the production of aqua feeds at local levels, and increase the provision of technical and extension services to aquaculture development.
- 4.6. Increase diversification of species cultured to better address the market demands.
- 4.7. Ensure that aquaculture farms meet environmental standards and avoid pollution from their operations.
- 4.8. Develop and promote the application of best management practices and integrated technologies for aquaculture and fisheries.
- 4.9. Support the improvement of farm-level record-keeping of all operations, fish health and indicators of water quality.
- 4.10. Increase the participation of and collaboration between the private sector and the DOF in support of sustainable development of the sector by involving the representatives of their associations in decision-making processes and bodies at national and local levels, as well as in capacity building and training activities.
- 4.11. Assist the Kyrgyz Hunting and Fishing Union in its aims to improve the habitats for aquatic wildlife, to protect the rights of recreational fishers and to develop codes of good practice for recreational fishing.

DEVELOPMENT OBJECTIVE NO. 5. IMPROVE THE MARKET SUPPLY CHAIN AND PROCESSING OF FISHERY PRODUCTS, AND ENSURE THE SAFETY AND QUALITY OF THESE PRODUCTS

- 5.1. Promote the consumption of fishery and aquaculture products and emphasize the diverse range of fishery products and the health benefits associated with fish consumption to the domestic population.
- 5.2. Establish and promote the application of fish-processing technologies for fisheries and aquaculture products (to increase value addition) suitable for the small-scale entrepreneurs.
- 5.3. Develop and promote national monitoring, quality and safety standards that are in line with international practices.
- 5.4. Promote the supply of aquaculture products to guest houses, hotels, cafeterias and restaurants.
- 5.5. Promote collaboration in the fishery products market supply chain between producers, fish processors, wholesalers and retailers, aiming at developing and introducing innovative technologies, new products and markets, adding value to the aquaculture products, and assuring quality and safety standards.

Chapter XII

PERFORMANCE INDICATORS

The performance indicators are means to be used for measuring the extent to which the different components of the strategy are being achieved. They will measure progress towards each of the overall goals for fisheries and aquaculture management and development in Kyrgyzstan. The following performance indicators will be monitored and reported on annually:

- Legal and institutional indicators:
 - number of licences given for fisheries;
 - number of licensed and registered aquaculture establishments;
 - number of environmental investigations and assessments carried out and reported upon;
 - number of standards of water quality for aqua farms established;
 - number of regulations issued for protection of fishery resources.
- Responsible fisheries management indicators:
 - fish production, in tonnes, by type of production (capture fishery, pond aquaculture, cage aquaculture and recreational fishing);
 - number of statistical bulletins issued;
 - number of research projects carried out;
 - number of infractions of illegal, unregulated and unreported fishing;
 - amount of illegal fishing gear forfeited, its number by type of fishing gear;
 - quantity of illicit fish confiscated.
- Restocking programme performance indicators:
 - number of state-owned hatcheries in operation;
 - number of private hatcheries operating;
 - quantity of fingerlings (or fry) released, by species.
- Aquaculture and fisheries development indicators:
 - number of aquaculture farms operating (and licensed);
 - aquaculture production (in tonnes);
 - number of loans issued for fishery/aquaculture sector activities (by type);
 - total volume of the loans to the sector;
 - total volume of subsidies received by the sector;
 - quantity of aqua feed produced nationally;
 - the area of aquaculture ponds (hectares) and productivity (kilograms per hectare);
 - the number and volume or area of tanks, basins and cages for aquaculture and productivity (kilograms per square metre or per cubic metre);
 - use of water in aquaculture enterprises (total and per production unit);
 - nutrient loading (phosphorus and nitrogen) in waterbodies from aquaculture enterprises;
 - number of disease incidences in aquaculture.
- Market for fishery products, and socio-economic indicators:
 - fish and fishery products sold in the domestic market (in tonnes, by species and by product);
 - quantity of fishery product processed, by type of product;

- fish consumption (in kilograms per capita per year) at national level;
- fish imports and exports by volume (tonnes) and value (US dollars or som);
- number of persons employed in capture fisheries and aquaculture;
- number of persons receiving education/training in fisheries and aquaculture;
- number of projects in fisheries and aquaculture carried out by public funds.

These indicators will be assessed on a regular basis and revised when considered necessary for their effectiveness in monitoring and evaluation by the Scientific Fisheries Board and the DOF.

Annex A

PRIORITY FISHERIES AND AQUACULTURE ACTION PLAN

A. TIME FRAME

The Priority Fisheries and Aquaculture Action Plan (PFAAP) will guide the activities of the Department of Fisheries (DOF) and other sectoral stakeholders towards management and development of fisheries and aquaculture for the period 2008–2012.

The PFAAP contains the priority activities to be undertaken by the Ministry of Agriculture, Water Resources and Processing Industry (MAWRPI), the Scientific Fisheries Board and the DOF, private fisheries and aquaculture entrepreneurs, research and educational institutes, and international agencies (donors) involved in providing assistance to sustainable fisheries and aquaculture development and management in Kyrgyzstan.

B. MOBILIZATION OF FINANCIAL RESOURCES

The DOF will need additional funds in order to overcome the challenges involved with implementing the strategy. Although part of these funds must come out of the national budget, it is not realistic to expect that implementation of the strategy will be fully funded this way. Therefore, it is important that the MAWRPI identify alternative sources of revenue. For example, income could come from the sale of licences and services provided by the DOF. Fines collected for violations related to fisheries could be another source of earnings. However, most important is the establishment of public–private partnerships and international cooperation with partners inside and outside the Central Asian Region.

C. MONITORING AND REVIEW

Monitoring and review of the PFAAP will be carried out as stipulated in the Strategy for Sustainable Development and Management of Fisheries and Aquaculture in Kyrgyzstan.

D. PRIORITY OBJECTIVES FOR THE MINISTRY OF AGRICULTURE, WATER RESOURCES AND PROCESSING INDUSTRY

There are three priorities for the MAWRPI with regard to the fisheries and aquaculture sector that outrank all others. Without urgent decision-taking by the ministry on these priority issues, it will be impossible to manage and develop the fisheries and aquaculture sector in Kyrgyzstan. These three priority issues are:

- Confirmation that the DOF will continue to exist in its present structure and will be further strengthened with competent staff to deal with the requirements for fisheries and aquaculture development and management.
- Agreement on and approval of the Strategy for Sustainable Development and Management of Fisheries and Aquaculture in Kyrgyzstan by the ministry and other relevant governmental stakeholders.
- Existing and new (prospective) fisheries and aquaculture entrepreneurs will be assisted in accessing financial resources in a transparent, comprehensive and not unreasonably time-consuming manner.

E. METHODOLOGY OF IMPLEMENTATION

Within the drafting process of the strategy and the PFAAP, use was made of the logical framework approach, which had proved very useful in earlier planning exercises. While the strategy is focused on the medium term and, therefore, includes a medium-term vision, principles and overall and specific objectives, the PFAAP details the concrete and pertinent outputs that should contribute directly to the achieving of the specific objectives.

In order to enable the DOF and other sectoral stakeholders to make progress towards the achieving of the earlier identified specific objectives, the outputs that have the highest priority are listed in the following section. The intended outputs are formulated as projects to facilitate their implementation.

Once the strategy has been approved by the Scientific Fisheries Board and the MAWRPI, clear and comprehensive proposals will be drafted for the priority projects, and the required budget will be calculated in more detail.

The projects in the following section are considered the main priorities for the fisheries and aquaculture sector in Kyrgyzstan for the period up to and including 2012. They are presented in order of priority.

For each of the projects, the following information is listed:

- title of project;
- project aim;
- reference to main or specific objective of the strategy;
- main activities to be undertaken;
- ongoing activities in this field;
- prior activities required;
- inputs required in order to carry out activities;
- responsible agency;
- supporting agencies;
- timetable for project;
- indicators of achievement;
- means of verification of project achievement;
- assumptions (and/or risks);
- priority ranking;
- estimated budget;
- possible source of budget.

F. PROPOSED PROJECTS

Project 1

Title of project: Strengthening fisheries and aquaculture research and improvement of fisheries monitoring, control and surveillance (MCS)

Project aim: Create capacity to carry out research to support the development and management of fisheries and aquaculture and establish a monitoring, control and surveillance (MCS) system in fisheries, jointly with other relevant authorities.

Reference in strategy: Specific objectives: 1.1, 1.2, 1.4, 2.2, 2.3, 2.6, 2.7, 2.8, 2.9 and 4.3.

Main activities:

- a) Allocate funds to activate the Scientific Production Centre on aquaculture and fishery already established jointly by the DOF and the National Academy of Science.

- b) Appoint: one senior fishery research specialist; one research specialist on fishery resources; one research specialist on aquaculture; and one research specialist on fish processing and marketing.
- c) Set up a laboratory with appropriate equipment for fishery, aquaculture and fish-processing research.
- d) Prepare and disseminate reports on fishery and aquaculture research.
- e) Create physical infrastructure.
- f) Review legislation and regulations.
- g) Design a fisheries MCS system.
- h) Appoint staff for implementation of MCS at the DOF.
- i) Acquire land transport and surveillance boats to carry out inspections at the main fishery waterbodies.
- j) Coordinate MCS activities with relevant institutions.
- k) Test the MCS system in Lake Issyk Kul.
- l) Implement the MCS system in other fishery waterbodies.

Ongoing activities: None.

Prior activities required: Institutional changes implemented to avoid duplicate functions.

Inputs required: Laboratory equipment; vehicles and boats; modern equipment.

Responsible agency: DOF.

Supporting agencies: National Academy of Science; Scientific Fishery Centre of the State Agency on Environment Protection and Forestry.

Timetable: 2008–2012.

Indicators:

- a) Staff appointed.
- b) Number of research projects carried out.
- c) Number of reports written and disseminated.
- d) Number of infractions of illegal, unregulated and unreported fishing.
- e) Number and type of illegal fishing gear forfeited.
- f) Quantity of illicit fish confiscated.

Means of verification:

- a) Contracts.
- b) Annual report submitted by the Fisheries Research Centre.
- c) Logbooks.
- d) Number of protocols.
- e) Fines levied.

Assumptions:

- a) Qualified staff available.
- b) There is a demand for fish.
- c) It will be possible to make the necessary changes to the legislation.
- d) Institutional changes will be implemented.

Priority ranking: 1st.

Estimated budget: To be determined.

Source of budget: Donors, state budget.

Project 2***Title of project: Rehabilitation of demonstration fishery facilities***

Project aim: Support the development of fishery and aquaculture through the establishment and rehabilitation of demonstration and training facilities.

Reference in strategy: Specific objectives: 2.4, 3.1, 3.2 and 3.4.

Main activities:

- a) Rehabilitate two pilot demonstration facilities at existing state-owned and private hatcheries for the production of restocking material (including reconstructing ponds, re-establishing water supply, repairing incubation and nursery sections).
- b) Develop a practical training programme for the production of restocking material.
- c) Assist interested entrepreneurs with training, fish reproduction, fish grow-out, pond management, fish health, economic analysis, and business planning.

Ongoing activities: Some activities are already being implemented and the facilities are partly functioning. Staff are already in place.

Prior activities required: None.

Responsible agency: DOF and private fish hatcheries.

Supporting agencies: Ministry of Finance and local state administrations.

Inputs required: Equipment.

Timetable: 15 months (Ton hatchery); 12 months (Karakol hatchery).

Indicators:

- a) Fish production at demonstration plants.
- b) Number of entrepreneurs trained.
- c) Number of fingerlings (or fry) released, by species.

Means of verification:

- a) Annual reports submitted by demonstration facilities.
- b) Training reports.

Assumptions:

- a) Rehabilitation of existing plants is feasible.
- b) Private entrepreneurs are interested in receiving training.

Priority ranking: 2nd.

Estimated budget: US\$100 000 per facility.

Source of budget: State budget; donor organizations.

Project 3***Title of project: Fish feed production***

Project aim: Establish domestic production of high-quality fish feed at reasonable prices.

Reference in strategy: Specific objective 4.5.

Main activities:

- a) Assess the demand for fish feed.
- b) Establish a laboratory to test quality of feed.
- c) Train staff.

Ongoing activities:

Prior activities required:

- a) Establish an agreement with a feed production plant (Tokmak).
- b) Restore the ichthyopathological service.

Responsible agency: Private investors and fish farmers.

Supporting agencies: DOF and the MAWRPI.

Inputs required: Equipment for fish feed production.

Timetable: 2008–09.

Indicators: Volume of feed produced.

Means of verification: Statistics on fish feed production.

Assumptions:

- a) There is a demand for locally produced feed.
- b) Pesticide-free raw materials available.
- c) Appropriate plant available.
- d) Feed specialists available.

Priority ranking: 3rd.

Estimated budget: US\$500 000.

Source of budget: Donors and private investors (domestic and international animal-feed companies).

Project 4

Title of project: Strengthening the capacity for fisheries and aquaculture statistics

Project aim: Improve the capacity of the DOF to gather, process and disseminate fishery and aquaculture data and information.

Reference in strategy: Specific objective 2.1.

Main activities:

- a) Appoint: one senior statistic specialist; one junior statistic specialist; one clerk; and field statistics personnel (enumerators or the fishery inspector).
- b) Create capacity for a database on fishery and aquaculture (an office with computer and communication equipment).
- c) Train the statistical personnel in their duties.
- d) Prepare and issue periodic bulletins on fisheries statistics.

Ongoing activities: None.

Prior activities required: None.

Responsible agency: DOF.

Supporting agencies: State Statistical Agency.

Inputs required: Office space, computer and communications equipment.

Timetable: 2008–2012.

Indicators:

- a) New staff appointed.
- b) Staff trained.
- c) Number of statistical bulletins issued.

Means of verification:

- a) Contracts.
- b) Training reports.
- c) Availability of bulletins.

Assumptions: Qualified staff available.

Priority ranking: 4th.

Estimated budget: US\$200 000.

Source of budget: Donor organizations and state budget.

Project 5***Title of project: Development of fish marketing in Kyrgyzstan***

Project aim: Identify and document opportunities for improvement and investment needs in fish marketing, and improve the marketing situation for fish products.

Reference in strategy: Specific objectives: 5.3 and 5.5.

Main activities:

- a) Analyse the current marketing system (structure, conduct and performance).
- b) Analyse the fish supply chain and the opportunities for improving this chain.
- c) Identify shortfalls in regard to international market requirements.
- d) Analyse the investment and policy needs for further improvement of fish marketing.
- e) Establish network of shops.
- f) Improve transportation facilities.
- g) Improve fish storage.
- h) Formulate an investment project proposal for fish marketing.
- i) Become a member of the Globefish fish marketing network.

Ongoing activities: None.

Responsible agency: DOF.

Prior activities required: Establishment of a marketing unit under the DOF.

Supporting agencies: MAWRPI; Investment Department.

Inputs required: Consultant to produce analyses.

Timetable: 5 years.

Indicators:

- a) Analyses performed and reported.
- b) Data on the activities of all fish farms available, by species.
- c) Data analysed.

Means of verification: Availability of reports.

Assumptions: None.

Priority ranking: 5th.

Estimated budget: US\$5 million – depending on the extent of infrastructure improvements; without infrastructure improvements, the estimated budget would be about US\$500 000.

Source of budget: Donor organizations and private-sector investors.

Project 6***Title of project: Increase the fisheries sector's access to financial services.***

Project aim: Provide fisherfolk, fish processors, fish wholesalers and retailers, and aquaculture entrepreneurs with access to credit and insurance.

Reference in strategy: Specific objectives: 4.2 and 4.4.

Main activities:

- a) Carry out a financial services needs assessment in the fisheries and aquaculture sector.
- b) Investigate the constraints on accessing credit and investment, and identify opportunities to increase access to credit, investment and insurance.
- c) Discuss with microfinance institutions and non-governmental organizations (NGOs) the possibilities for fisheries sector stakeholders to access microfinance schemes.
- d) Train fisheries sector stakeholders in financial analysis and business planning for accessing credit and other financial services schemes.
- e) Encourage financial institutions to provide credit and other financial services to the fisheries sector.

Ongoing activities: None.

Responsible agency: Private sector; Ministry of Finance.

Prior activities required: None.

Supporting agencies: DOF, national and international banks, and microfinance institutions.

Inputs required: Training and financial infrastructure, including good financial laws and regulations.

Timetable: 2008–2012.

Indicators:

- a) Needs assessed and constraints identified.
- b) Number of loans and insurance policies issued for fishery/aquaculture sector activities (by type).

Means of verification:

- a) Report on needs and constraints available.
- b) Annual statement from NGO/bank.

Assumptions:

- a) NGOs and financial institutions prepared to cooperate.
- b) Banks and insurers willing to assume some risks and to enter new businesses.

Priority ranking: 6th.

Estimated budget: US\$50 000.

Source of budget: Donor to provide funds to cover research and promote the findings among financial institutions.

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