ALBANIA: FISHERY DEVELOPMENT PROJECT

Environmental Assessment
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Introduction

Currently the Albanian fishery sector is almost completely unregulated, and both marine and freshwater fisheries are in danger of being depleted by over-fishing and the use of destructive and unsustainable fishing methods. Ocean demersal stocks are particularly vulnerable due to heavy near-shore trawling, and the Koran fish, endemic to Lake Ohrid, is in danger of extinction if unlicensed fishing is left unchecked. Foreign vessels are fishing Albanian waters without reprisals, contributing further to over-fishing and depletion of stocks. In addition, fishing ports have been seriously neglected; leaving both grounds and waters polluted by solid waste, posing health and safety risks to humans.

Existing Environmental Issues that Need to be Addressed by the Project

Over-Fishing and Depletion of Ocean Demersal Stocks. Fishermen in Albania are currently using old bottom trawlers to catch demersal fish, and because their operations are unregulated, stocks have declined substantially in recent years, resulting in smaller and smaller harvests. Fishermen sometimes invest in new trawling gear and engines, wrongly believing that they can increase their catch using the same techniques with newer equipment. In addition, recent increases in oil prices have limited the areas fished to those nearest the shore, which are used as nursery grounds by demersal species. There are no controlled closed seasons for spawning, no minimum size of fish allowed for catch, and no conservation of nursery areas. Illegal fishing by foreign vessels is also rampant, contributing further to the depletion of stocks.

Over-Fishing and Depletion of Lagoon Fisheries. Lagoon fishing is popular in Albania, and reportedly some 500 families depend on lagoon fishing, mainly for eel and sea bass. However, during recent years lagoon fisheries have declined significantly. This is due partly to illegal (unlicensed) fishing and partly to the use of explosives as a method of fishing. Fishermen will be sensitized to the damage done by explosives and enforcement of regulations will be addressed through the institutional strengthening component (FMAs) proposed under the project. Under the project, FMAs would share the responsibility for the enforcement of fisheries regulations with the State.

Over-Fishing and Depletion of Lake Ohrid Koran. The rapid decline in the stock of the Lake Ohrid trout (Koran) is also becoming a major environmental concern. Koran is endemic to the lake, and has a strong domestic market. The decline is reportedly due partly to the large volume of illegal (unlicensed) fishing, and to less than successful efforts to restock the lake. Therefore the project would support the Government’s and the communities’ efforts to address these challenges through establishing FMAs, assisting FMAs in developing and enforcing fishing regulations, rehabilitating the restocking facilities in Lin to intensify the restocking effort, and exploring the financial and technical viability of aquaculture for Koran.

Project Objectives

The project has been designed to address these ecological and environmental issues. In summary, the key objectives of the proposed project are to:

- Improve the operation and management of fishing ports through rehabilitation and the introduction of community-based fishermen’s organizations (to be called Fishery Management Associations, or FMAs);
- Introduce an effective institutional framework for community-driven co-management of marine resources by involving FMAs and strengthening the public sector’s capacity; and
- Restore the country’s previous capacity in aquaculture, and explore the potential for further development of aquaculture, particularly for high value species.
Project Components

To achieve these objectives, the project will provide assistance through 3 components. Component 1 involves the rehabilitation of fishing ports and provision of initial support to FMAs. Component 2 involves the provision of support for restoring carp aquaculture and pilot programs on modern, high-value aquaculture. Component 3 will provide policy and institutional support for the Department of Fisheries and Fishery Research Institute.

The Government is under-resourced and institutionally weak, and currently lacks the capacity to enforce regulations and manage the sector. Close collaboration between the Government and fishing communities to develop the sector is therefore essential. The Fishery Development Project intends to assist the Government with developing a coherent sector strategy and planning, and supporting local fishing communities to manage port facilities and co-manage the fish resources. Improved data collection and monitoring, control and surveillance will help to improve the management of marine resources, and improved coordination by the state with regional organizations and neighboring countries will also assist in improving regional marine resource and environmental management.

The Government has no institutional or regulatory framework, and no monitoring or enforcement capacity for protecting and sustainably managing these demersal stocks. Therefore, the project would support the institutional strengthening of local Fishery Management Organizations (FMAs), and make them partners with the Government in co-managing fisheries resources. To develop the management capacity of FMAs, the project would raise fishermen’s awareness and knowledge of sustainable marine resource management, promote self regulation towards sustainable marine resource management, and set up programs for collecting information regarding catches and stocks of fisheries resources. The project would assist the FMAs in developing fishery management plans and local fishing regulations on allowable catch, off-limits seasons and areas, minimum sizes, and allowable equipment, as well as licensing and enforcement mechanisms.

Management of fishing port facilities is an important issue. Fishing ports were managed and owned by the fishing cooperatives during the socialist regime; but since the demise of the socialist regime these ports have been transferred to the respective port authorities. The fishing ports do not meet minimum sanitation and hygiene standards, access to potable water is severely limited and huge piles of rubbish and wrecks hinder normal operations. The Fisheries Development Project therefore aims to assist in the rehabilitation of a number of marine ports and inland fish landing sites. Improved management of fishing port facilities will not only improve efficiency within the fishery sector, but also will also potentially contribute to the future development of tourism along the coast.

Aquaculture is another area in which Albania has good potential, given its abundant land, climate, sufficient fresh water, and geographic proximity to Western Europe. Indeed, the development of aquaculture was one of the priorities of the socialist regime. However, since the demise of the socialist regime, these aquaculture cooperatives have collapsed, facilities have been abandoned and fallen into disrepair, and no new activities have developed. With a little assistance to organize the fishermen who used to work in these aquaculture cooperatives, it would be very possible to restart fresh water aquaculture for domestic markets. In addition, many irrigation reservoirs have recently been transferred to water user associations (WUAs), and aquaculture could be easily introduced to provide additional revenue for WUAs and their members to be used for operation and maintenance of their own irrigation facilities. Albania also has good potential in the marine aquaculture of high-value species such as shrimp and sea bass, very possibly for international markets. This could provide a lucrative alternative to harvesting natural fisheries, thereby easing the pressure on marine resources.

These project activities would contribute to the economically and environmentally sustainable development of Albania's fishery and aquaculture sectors by significantly strengthening capacity in fisheries resource management, the adoption of new fishing regulations, and by introducing alternative sources of income, such as the aquaculture of new high-value species and marine-based tourism.

Environmental Impact of the Project and Mitigation Measures

The conceptualization of this fisheries development project was carried out in accordance with Bank Guidelines and has included site visits, field surveys and consultation with stakeholders and Government officials. The potential
environmental impact likely to be raised by the project have been assessed to be low given the nature and scale of the proposed works, both within the sector of the proposed project and in terms of cross-cutting, multi-sectoral aspects.

- **Over-exploitation of existing fisheries**: The proposed project will not increase the fishing effort in existing fisheries that are already heavily exploited. The specific goal of the project is to reverse a decade-old decline in maintenance of the existing fisheries infrastructure.

- **Destruction of coastal areas**: The proposed project sites of the port component (4 coastal and 6 lakeshore) where physical intervention is proposed are all existing port/landing sites; However, 3 of the lakeshore sites are located on Lake Ohrid, which is a UNESCO world heritage site.

- **Pollution and other direct or indirect impacts of infrastructure elements of the project**: The proposed project will provide replacement infrastructure inside existing ports and landings and aquaculture sites. Full mitigation measures are included in the design of the physical infrastructure to deal with the impacts identified in the scope.

The project has been assigned to Category B. The assessment concludes that the overall impact on the environment resulting from the proposed development would be positive, due mainly to the fact that the project has been designed to redress environmentally damaging activities. Moreover, the infrastructure is mostly going to upgrade existing sites. Direct and indirect mitigation measures are built into the design of the physical infrastructure components and through the institutional strengthening component of the project.

**Safeguard Policies**

The project is in compliance with the following Bank's safeguard policy.

Environmental Assessment (OPs 4.01). The environmental assessment has been prepared in compliance with the OP 4.01. In addition, an Environmental Monitoring Plan has been prepared for each component. The EA and EMP have been discussed at the public consultation, which took place in Tirana on June 15, 2001.

Natural Habitat (OP 4.04). The project does not aim to have any investment plans in the lagoons which are considered of the precious natural habitats, such as Karavasta Lagoon (a Ramsar Site). Instead, the project would provide the local fishermen with technical assistance to facilitate the organization of their own associations and develop their own fishing regulations in order to increase sustainability of the fishing activities.

Forestry (OP 4.36). Not applicable

Pest Management (OP 4.09) Not applicable

Cultural Property (OPN 11.03) Not applicable

Involuntary Settlement (OD 4.30) Not applicable to the project. The proposed sites for the fishing ports and landing sites are state land, and no land appropriation is necessary.

Indigenous People (OD 4.20). Not applicable

Safety of Dams (OP 4.37). Not applicable

Projects in International Waters (OP. 7.50) The project plans to construct small landing sites in Lake Ohrid and Lake Shkodra. Correspondingly, the Government plans a letter informing about the proposed investment plan to the Government of FRY and the FYR Macedonia shortly.

Project in Disputed Areas (OP. 7.60) Not applicable
PART II – PROJECT DESCRIPTION

The proposed project aims to carry out the following components:

1. Support for Community-Based Co-Management of Fisheries
2. Aquaculture Development
3. Institutional Support for the Department of Fisheries and Fisheries Research Institute
4. Project Administration.

PROJECT COMPONENT 1: SUPPORT FOR COMMUNITY-BASED CO-MANAGEMENT OF FISHERIES

This component would mainly support the establishment of Fishery Management Associations (FMAs) in the development of community-based management of fishing ports and fishing grounds. Subcomponent 1 would mainly focus on the physical rehabilitation and improvement of the current fishing port facilities. Subcomponent 2 mainly aims to provide technical support to FMAs to enable them to take over managerial responsibilities for fishing ports, and later to develop and enforce fishing regulations. Detailed descriptions of these two subcomponents are provided below.

Sub-component 1: Rehabilitation of Fishing Ports

Albania has fishing ports at four major coastal towns and on two of its inland lakes, which serve a total of about 1,000 fishing boats, mostly ocean trawlers and motorized skiffs. However, facilities at these ports are currently in terrible condition and are not being managed at all. The port authorities under the Ministries of Privatization and Transport are officially responsible for managing fishing ports, but they tend to focus on commercial and passenger terminals, and pay little attention to the fishing terminals. Consequently, facilities are not properly maintained, and do not even meet minimum sanitation and hygiene standards. Access to potable water is very limited, and huge piles of rubbish and wrecks hinder normal operations. Needless to say, fishermen are not paying for operation and maintenance of these facilities.

To fill this management vacuum, the project aims to engage fishing communities in managing fishing ports separately from commercial ports. This sub-component would provide minor rehabilitation and make small improvements to facilities at Albania’s major coastal fishing ports of Durres, Vlora, Saranda, and Shingjin, and inland fishing landing sites ports on Lake Shkodra and Lake Ohrid. This work will be done in order to (a) meet the basic international standards of navigation safety and hygiene, and (b) support the FMAs’ management of these facilities. Rehabilitation of these ports and landing sites would reverse more than a decade of neglect in this sector and restore fishermen’s confidence in the Department of Fisheries. It would also provide an incentive for fishermen to cooperate on managing and maintaining these facilities. And by removing accumulated solid waste and installing sanitary and waste disposal facilities, it would also protect the environment from further pollution. In addition, it is hoped that rehabilitated and well-maintained fishing ports can become key centers for marine-related tourism in the future so that fishing communities can successfully diversify their activities.

Specifically, the project would clean up wreckage, repair damage to essential port facilities (e.g., quays and jetties), and provide essential infrastructure such as water supply, toilets, and offices for FMAs, and small storage facilities. Fences would be constructed to protect the fishing ports from the public and maintain hygiene standards. In Shiroka (on Lake Shkodra), and Udenisht (on Lake Ohrid), small landing facilities would be established to help fishermen land their harvests.

A. Port of Durres Fisheries Facility

General Description of the Site. The commercial Port of Durres is located 39 kilometers east of Tirana, situated on a sandy coastline directly opposite the town of Durres. The fishing port facilities are located inside the commercial port, between the ferry terminals and the floating dock. The ferry berths are currently under expansion eastwards, towards the fisheries area, and studies indicate that the entire fisheries area is likely to be taken over by the Port.
Authority for the expansion of ferry traffic. Construction of an alternative new fisheries port has been proposed, constructed away from the existing port, but this is unlikely to happen within the next 2 years.

All existing buildings at the fishing port appear to be dilapidated from the outside, although inside they seem to be in good repair. Each has its own frozen/chilled storage (12 x 6 x 3 meters high) and small 2-ton flake ice machines. Water is not available inside the facility and is brought in by individual boat owners in jerry cans. Larger vessels utilize road tankers.

**Proposed Works.** The current area occupied by the fisheries facilities would revert back to the commercial Port Authority in about 2 to 3 years from the time of writing, and fishery activities will hopefully be relocated to a proposed dedicated fishing port outside of the existing port. Thus, except for foundations and leveling works, a major part of the capital investment in infrastructure must be able to be relocated. Proposed works include:

- General clean-up of the area and setting up of a waste reception system in line with IMO recommendations;
- Installation of portable containerized offices and hygiene facilities;
- Rehabilitation of derelict areas into containerized portable lock-ups for fishing gear storage;
- Minimum storage and mobile supply of potable water;
- Minimum storage and mobile supply of fuel;
- Installation of missing fittings on the jetties and missing boundary walls.

At the head of one of the jetties an oily water separator would be installed to handle bilge water from all vessels operating out of the port of Durres. A billboard would also be erected at the entrance to the compound detailing the port regulations, hygiene laws and fines levied for infringement. The boundary wall would be re-instated and a steel gate would be installed at the entrance of the fisheries complex.

**B. Vlora Fisheries Port**

**General Description of the Site.** Vlora’s commercial port lies in front of the town center, but the fishing port complex, also known as Porto Nuovo, lies approximately 3 kilometers to the northeast. Porto Nuovo was intended to service a nascent chemical industry (the site is littered with now derelict factories), and the fisheries complex was to form part of this port. It was initiated prior to 1976 and halted in 1991 after the change in Government due to lack of funds. When the project was abandoned, the inner breakwaters and one half of the main breakwater had been completed, and three buildings—the engine workshop, the main office block, and the market hall—had been completed in shell form. All buildings are still in shell form and need to be completely refurbished inside. There is no water supply, as the water main stops at the derelict factories, and no lighting or fuel. All breakwater heads are unmarked. Quay walls are practically all incomplete. A variety of construction debris litters the site and two wrecks are located inside the inner basin. One of the wrecks is a piling barge that sank at one end of the existing quay, thereby negating its use. The main breakwater now stands half-complete with the navigation channel partly silted up. Lack of maintenance dredging, navigation beacons, and channel marker buoys makes entry into the port an arduous task for the larger vessels.

**Proposed Works.** The layout of the port would not be altered, but as the port basin is extensive, the project will focus on one quayside only at the land-ward end of the fishing port. The project would refurbish and complete the existing facilities within this area of the fishing port, upgrade the power supply, and install water and hygiene facilities. The facility would first be cleaned up of all scrap items that currently litter the area, and the sunken piling barge at the deep-water quay would be removed. Proposed works include:

- General clean-up of the area (including wrecks) and setting up of a waste reception system in line with IMO recommendations;
- Rehabilitation of existing office/workshop block;
- Conversion of existing out-building into hygiene facilities;
- Minimum storage and mobile supply of potable water;
- Minimum storage and mobile supply of fuel;
- New transformer for the substation;
- Navigation aids (channel markers and light towers);
- Rehabilitation of a stretch of existing quay wall;
- Installation of basic quayside lights for night operations;
- Rehabilitation of permanent fencing of the fisheries compound.

C. Port of Saranda Fisheries Facility

General Description of the Site. The town of Saranda lies practically opposite the Greek Island of Corfu, close to the Greek border with Albania. Saranda is the center of activity for a coastal area ranging from the town of Himara to Butrinti. The entire stretch of coastline forms an important tourist destination for the burgeoning international tourist market.

Like in Vlora, the fisheries complex does not lie inside the main commercial port but inside a cove approximately 1 kilometer west of the town center. This cove is shared with a small naval base that has since been shut down. The naval base has its entry on one side of the cove and the fishing facility on the opposite end. Various derelict warehouses are located behind the fisheries area which, together with a small jetty adjacent to the fisheries area, belong to the commercial port authority. Apart from the private chill rooms around the fisheries area, no real infrastructure exists. Quay space is non-existent and fish are now offloaded at the Port Authority’s jetty. Vessels then moor inside the cove as best as they can. A wreck at the end of the port authority’s jetty makes it difficult to offload anywhere else.

Proposed Works. The port at Saranda belongs to the commercial Ports Authority; however, part of the port has been set aside for fisheries operations and the project would formalize the boundaries. A strip of land approximately 5 meters wide would be reclaimed along the quay, and approximately 300 square meters would be reclaimed below the workshop. Starting from the edge of the Navy yard and proceeding towards the deepwater end, a new shallow-draft marginal quay wall would be constructed. The new slipway would be located at the bend in the quay wall. Proposed works include:

- General clean-up of the area (including wrecks) and setting up of a waste reception system in line with IMO recommendations;
- Construction of a marginal quay and reclamation, including slipway;
- Construction of office and hygiene facilities in masonry;
- Minimum storage and quayside supply of potable water;
- Minimum storage and quayside supply of fuel;
- Installation of basic lights for night operations;
- Permanent fencing of the fisheries compound.

D. Port of Shingjin Fisheries Facility

General Description of the Site. The commercial Port of Shingjin is situated near the town of Lezhe, 69 kilometers north of Tirana. The commercial port is situated at the foot of a mountain range at the northern end of a natural bay. The fisheries compound is located inside the commercial port, between the ferry jetty and the commercial jetty. The fisheries area is currently derelict land, unpaved and fronting the sea in an ill-defined manner. A light timber-decked jetty on steel piles juts out into the bay for approximately 120 meters. No services whatsoever are supplied to the jetty. There are no boat servicing facilities, although a rubber-tired facility is currently under construction under EU funding.

Proposed Works. The facility’s layout would be altered by the construction of a new marginal quay and much needed reclamation. A new building for three FMA offices, a meeting room, the fishermen’s rest-bar, the hygiene services, and a spare-parts outlet would be constructed at the entrance to the fisheries compound. Proposed works include:

- General clean-up of the area and setting up of a waste reception system in line with IMO recommendations;
• Construction of a marginal quay and reclamation;
• Construction of offices, hygiene facilities in masonry on reclaimed area;
• Installation of containerized portable fishing gear stores on reclaimed;
• Minimum storage and supply of potable water;
• Minimum storage and supply of fuel;
• Installation of concrete sinkers to enable the vessels to moor stern-to;
• Installation of basic lights for night operations;
• Permanent fencing of the fisheries compound.

E. Lake Shkodra Fisheries Facility

General Description of the Site. The town of Shkodra lies at the southeastern tip of Lake Shkodra, at the confluence of the Drini and Bunes Rivers. Albania shares the lakeshore with Montenegro. Fishing activities are centered around the tiny villages of Zogaj and Koplik and around the area of Shiroka. Shiroka is recognized as the center of activity. Zogaj is 6 kilometers from Shiroka, and Koplik is about 50 kilometers away, on the opposite side of the lake. The coastline from Shiroka to Zogaj is dotted with pebble beaches and at certain points littoral drift is clearly visible. None of these sites have any existing fisheries infrastructure except for a paved road. All establishments in the area draw potable water from shallow bore wells on the foreshore. However, electricity supply appears to be stable, except for the winter months when it is normally rationed during cold spells. Proposed works include:

• Ground water supply at sites at Zogaj, Shiroka, and Koplik;
• Installation of a 1,5 Ton/day ice plant at Shiroka;
• Construction of offices and hygiene facilities in masonry at Shiroka;
• Supply of 1 refrigerated truck to be based at Shiroka for distribution of ice and ice fish around the lake;
• Supply of HDPE fish boxes and cleaning equipment;
• Supply of Monitoring, Control and Surveillance equipment (1 night vision scope, 1 searchlight, life jackets, and uniforms).

F. Lake Ohrid Fisheries Facility

General Description of the Site. The town of Pogradec lies at the southern end of Lake Ohrid, which was declared a cultural heritage site by UNESCO in 1980. As part of this project, the jetty at the western end of Pogradec, also known as the GEF Jetty, has been designated as the center for enforcement of fishing regulations. The town of Lin is the center for reproduction of Koran. The lakeshore is accessible from the paved road running along the shoreline north of Pogradec. A rail line runs along part of the lakeshore but is intersected by crossings at most points. The only infrastructure currently available to the Fisheries Department is the GEF jetty for use as a center for monitoring, control and surveillance. The jetty lacks a power connection for nighttime operations and basic comforts for the boat crews. Although an inboard powered vessel is available for use, the operation lacks all basic equipment. The jetty deck itself also needs some strengthening/rehabilitating. The sites chosen for development are located along the lakeshore, one at Udenisht, between the railway line and the shore line, and one at Lin. Proposed works include:

• Installation of insulated storage unit at Udenisht and Lin;
• Handling/packing area and scales at Udenisht;
• Installation of a 1,5 Ton/day ice plant at Udenisht;
• Construction of offices and hygiene facilities in masonry at Udenisht and Lin
• Step down transformers at Udenisht and the GEF jetty;
• Supply of Monitoring, Control and Surveillance equipment (1 night vision scope, 1 searchlight, life jackets, uniforms) for the GEF jetty.
Sub-component 2: Technical Assistance to Fishery Management Organizations (FMAs)

Objectives

This sub-component aims to support the institutional strengthening of FMAs to improve their management of fishing port facilities, and to promote the concept of resource co-management, particularly by developing and enforcing sustainable fishing practices through local FMAs. This support would be provided for the duration of the project.

Background and Justification

There is currently a serious lack of information on the state of marine and freshwater natural resources in Albania. What little landing data is collected is not verified and may be grossly inaccurate. Indications from official data (including FAO) suggest that total landings have decreased by some 80% from a traditional annual production of some 14-17,000 tons in the late 1980s. A key question is whether this reduction in the recorded landings is due to unreported catches and landings by the Albanian fleet and/or illegal fishing by foreign vessels or due to a lower level of fishing effort by the Albanian fleet? It is difficult to assess from historical data what has happened to fishing effort in recent years, but indications (from published data) are that the yield per fishermen have decreased significantly in recent years, from 2.59 mt in 1990 to 0.68 mt in 1995. This suggests that there is serious unregulated over-fishing of the country’s aquatic resources. Recent official statistics are not available, but the sector reportedly employs some 2,000 (full-time equivalent) fishermen.

The Department of the Fishery (DoF) within the Ministry of Agriculture and Food (MoAF) is institutionally very weak, and has a permanent Head Office staff of only five people - one Director and two staff in each of the Fisheries Resources Department and Fisheries Inspectorate. There is also a network of inspectors at a number of fish landing sites/ports throughout the country, but again their resources are very limited (in most cases they have no mode of transport and only limited means of communication with the DoF in Tirana). The Fisheries Research Institute (FRI) based in Durres is also institutionally very weak, and despite the fact that it has a staff complement of 50, only 8 deal with fishery resource management. The limited fish landing data that is collected by the DoF in Tirana is not automatically passed on to the FRI for analysis.

There is almost no effective Monitoring, Control and Surveillance (MCS) of the fisheries sector. The Government has no resources for policing the Albanian 12-mile zone, and it is suspected that foreign vessels (primarily Italian) are fishing unchecked within this zone. No benefits are accruing to the Albanian economy from this illegal activity, and the MoAF appears to be powerless to stop it. Anecdotal evidence also suggests that there is increasing conflict within the domestic fleet between the coastal fishermen (who use static gear) and the demersal trawling fishermen. Illegal fishing is also a problem on a number of the inland lakes, in particular Lakes Ohrid and Shkodra. Because of this near-total absence of fishery sector law enforcement (Law on Fisheries and Aquaculture, and associated fishery regulations), there is great concern over the potential depletion of Albania’s fisheries resources. This includes both coastal and offshore marine fisheries, and inland freshwater lake fisheries. Consensus amongst those advising the MOAF is that the future of the fisheries sector depends on a combination of (a) strengthening the institutional capacity of the public sector, including fisheries policy and planning (see Component 3), and (b) the involvement of fishing communities in co-managing these resources with the Government.

The principle of fisheries co-management is the sharing of responsibility and/or authority for managing fisheries resources between the government and local resource users. Co-management represents a new approach to fisheries management, and as such is an alternative to the traditional ‘top-down’ management approach (i.e., the government makes all the decisions without consulting the resource users), which has failed in the past to resolve the problems inherent in managing an open access fishery.

There are a number of fisheries associations already in existence in Albania typically centered geographically on a fishing port or fishing village. Membership is voluntary, but as these associations have no formal status under the law, they do not have any substantive rights to co-manage their own aquatic resources. Currently there is little in the way of a legal framework in place in Albania to support co-management arrangements. This issue has been
addressed through the proposed establishment of Fisheries Management Associations (FMAs), which will be responsible for the operation and maintenance of the improved fishing ports and landing sites, after these are transferred to their control. The second main task of the FMAs will be to participate in the management of fisheries resources in partnership with the Department of Fisheries at the MoAF.

FMAs will be community-based bodies that will operate on a non-profit basis and be controlled by its members. In other words any surplus income will be retained within the FMA. The national network of FMAs will incorporate, but not necessarily supercede, the existing fishermen’s associations. In order to establish the FMAs and achieve the two key objectives, a number of amendments and additions will have to be made to the Law ‘On Fisheries and Aquaculture’ of 1994. First, a new chapter on FMAs would be introduced to provide for the establishment and operation of FMAs. Secondly the law would be modified so as to provide for the introduction of a formal system of co-management by conferring substantive rights and duties on the both Fisheries Directorate and the FMAs regarding the co-management of Albania’s fisheries resources. This work is currently on-going as part of the critical path to project implementation.

**Outputs and Key Activities**

The specific (immediate) objective of this sub-component is to establish and institutionally strengthen a national network of Fishery Management Associations (FMAs) to improve their management of fishing port facilities and to promote self regulation, through community co-management, towards sustainable aquatic resource management.

The outputs from this sub-component would be:
1. A total of 6 FMAs established, functioning and financially self-sustaining in order to manage fishing ports and fishing grounds;
2. Additional 5-7 FMAs established, functioning, and financially self-sustaining in order to manage marine coastal lagoons and reservoirs
3. All FMA staff trained to manage and undertake the roles of the organization
4. FMA members trained in the principles and practice of co-management
5. Improved aquatic resource management

To achieve these outputs, the following activities would be carried out under this sub-component, supported by the provision of an international part-time CTA (Chief Technical Advisor) to provide technical assistance on the establishment of FMAs and assist with project planning, monitoring and reporting, and the delivery of the training program.

1. **Provision of National Coordinators and Regional Promoters.** The IDA-funded Second Irrigation and Drainage Rehabilitation Project has successfully used a network of national coordinators and regional promoters to help establish and institutionally strengthen a national network of water-users associations. A similar model is proposed to support the establishment and management of the FMAs.

Because of the diverse geographic coverage of the FMAs, and fundamental differences in the nature of marine versus freshwater fisheries, it is proposed that the project will recruit and train 2 National Coordinators, both to be based within the PMU. The national coordinators would be responsible for the overall monitoring and supervision of technical support to the FMAs, including coordination of the FMA training program.

Regional Promoters (effectively Fisheries Extension Officers) would be based within each of the FMAs to provide a range of extension and training services to the local fishing communities, and would also be responsible for the day-to-day monitoring and follow-up on FMA operations and administration. They would also be expected to liaise closely with the local Fisheries Inspectors, the MOA Fisheries Directorate (through the Project Management Unit, PMU) and the FRI.

2. **Provision of Training for FMA Staff and Members.** The staff and members of the FMAs will require considerable support through a training program if the FMAs are to fulfill their (initial) dual roles of management of port facilities and resource co-management. A total of two man-months of international technical assistance are
envisaged to support the provision of training to the FMAs. A local Training Institute, selected through competitive tender, will deliver the training program most if not all of which will be done in Albania.

In the early stages of Phase 1 of the project (i.e., in Year 1), following establishment of the FMAs, a Training Specialist, supported by local TA, will be recruited to focus on assessing the training needs and preparation of a training plan for the FMAs. The training needs are likely to include topics such as:

- Assisting with the establishment and internal organization of FMAs
- Financial and general administration of FMAs
- Port management
- An introduction to the concepts of community-based fishery resource co-management
- Fishery management planning and implementation of these plans, and
- The role of MCS in fisheries management.

The CTA will, over the duration of the project, assist the selected Training Institute and PMU with preparing a standardized training program for each FMA, and to provide monitoring and evaluation inputs. Training inputs will include the provision of a regional study tour within the Mediterranean to experience existing fisheries co-management regimes already known to function in France and Spain.

3. Preparation of Fishery Management Plans. A port management-planning consultancy in March-April 2001 has prepared port management plans for each of the six sites where the FDP is proposing to develop and/or rehabilitate local fisheries related infrastructure. These plans will help support one of the primary functions of the FMAs. The other primary function of the FMAs - co-management of resources - will require an estimated six man-months of international technical assistance, plus local consultancy support, during Phase 1 to develop a fishery management plan for each coastal and inland lake FMA. Each plan would include a strategy for management of each fishery, and an elaboration of the management tools required, including development of local fishing regulations, licensing and enforcement mechanisms. Preparation of a uniform portfolio of plans would incorporate the following information:

- An analysis the state of each fishery
- A review of the biology of the most important species targeted in the fishery
- An assessment of state of the discrete fish stocks
- Development of a strategy for fisheries management
- Fishery management options and plan (including cost implications of co-management, enforcement regime etc.)

These plans would provide an opportunity to strengthen the capacity of the FRI and integrate the latest findings from current regional fisheries research projects within the marine fishery (in particular work currently being undertaken through FAO). Implementation of these plans will be supported by the project during Phase 2.

4. Marine Eco-tourism Development. The Mediterranean Sea is a very important diving destination for the rapidly growing diving industry in Europe. Albania however, having been closed to diving until recently may still harbor diving sites that offer a glimpse of a relatively intact Mediterranean ecosystem, possibly in combination with unknown archaeological sites and ship- and air plane wrecks from the second world war. There is great interest among dive operators and divers in Europe in what Albania may have to offer in this regard. Therefore it is of the utmost importance that a survey be carried out to assess the attractiveness of the Albanian coastal waters for diving tourism and to protect the potentially attractive sites before they are spoiled by uncontrolled activities. The FMAs could play a valuable role in this regard and earn an extra income on a non-extractive basis from diving tourism as the fishermen would be the natural persons to transport divers to the diving sites and to keep an eye on illegal activities in the diving areas. In most popular diving sites, fishermen earn much more money from diving tourism (and protecting the dive sites from fishing) than from exploiting those areas for fishing.

The project will initially assist with a survey of the Albanian coast to assess its potential for diving tourism, and would aim to determine its relative attractiveness compared with other destinations in the region. A diving operator from the region (Corfu) together with a Marine Biodiversity Specialist will undertake the survey, supported by 2
Albanian divers and use of a locally chartered fishing vessel. An important component of the survey would be the documentation by underwater video and photography that could later also be used for promotion purposes.

5. Fishing Gear Technology & Marine Habitat Enhancement Pilot Demonstration Project. A small grant aid program will be made available to support and enhance fisheries co-management through the use of more appropriate and selective fishing gear. This program would finance: (a) the testing of alternative fishing gear such as set-nets, cages, and fish traps, primarily within the coastal lagoon and inland lake fisheries, and (b) the creation of artificial reefs within the coastal marine fishery. Development of this program will be an output from the preparation of the Fishery Management Plans.

6. MCS Planning, Training and Pilot Demonstration Program. Proper Monitoring, Control and Surveillance (MCS) is an essential element of effective fisheries resource management. Strengthening of MCS capacity across the sector therefore complements the project’s overall development objective of sustainable resource exploitation and improved resource co-management. MCS fundamentally involves the implementation of a plan or strategy, effected in line with an agreed fisheries policy and development plan. It is therefore necessary for this cluster of project activities to be phased appropriately, following on from the preparation of the Fishery Management Plans and in line with proposed assistance to the public sector in developing a sector policy and strategy.

There is currently almost no MCS within the fisheries sector (either the coastal or inland fishery), and the government has almost no resources for policing the 12-mile coastal zone, which in the Mediterranean Sea is the extent to which member coastal states currently legally have jurisdiction. Beyond the 12-mile limit, fish stocks are therefore shared resources. The case for improvements to MCS are made even greater by the fact that anecdotal evidence suggests that there is increasing conflict within the local fleet between the coastal fishery (using static gear) and the demersal trawl fishery. This is in part because of high fuel costs (and the use of old inefficient fishing vessels and fishing equipment), which means that in order to reduce operating costs, the demersal trawl fishing fleet is not fishing as far offshore as it might (or should).

The case for improved MCS is equally strong on the inland lake fishery, where illegal fishing is a problem, in particular Lake Ohrid and lake Shkodra. The pre-appraisal mission has however been informed by the EU Phare Office in Tirana of one inland lake (name unknown) where enforcement has been a success in the past year, and all formerly illegal-fishing activity is now legal.

A MCS consultancy report was prepared by FAO in 1994, and the report proposed a number of costed options. These included the use of inspectors at a number of ports and inland fish landing sites, deployment of fisheries observers, coastal surveillance (using a fisheries protection vessel), the establishment of a network of coastal radar stations, the use of air surveillance and electronic (satellite) surveillance. These options will be re-visited by the project, and an integrated approach taken (for example in conjunction with planned support from FAO to establish a fishing vessel register database) to strengthen the MCS capacity of the Fisheries Directorate, Fisheries Research Institute, local Port Fisheries Inspectors and the FMAs. The most obvious and easiest option to develop is to strengthen the position of the Port Fishery Inspectors (and those performing similar functions in the inland fishery). Careful consideration needs to be given in the project as to how this can be done effectively, particularly linked with the establishment of FMAs – vessel owners and fishermen would for example have to be convinced of the merits of 'self-policing.'

Technical assistance will be provided to assess the options for realistically improving MCS capacity within the country, preparing an MCS plan, and providing some training, particularly to the Fishery Inspectors. A pilot MCS demonstration program will also be implemented under this project, the concept of which would be developed as an output from preparation of an MCS plan, but could for example include an aerial surveillance demonstration and/or links with a proposed network of coastal radar stations.
PROJECT COMPONENT 2: AQUACULTURE DEVELOPMENT

This component would support the Government's efforts to re-develop the aquaculture sector in Albania. In the 1970s, Albania developed a large number of hatchery facilities (with assistance from China), mainly targeted for carp species. In addition, carp culture in the country’s 650 irrigation reservoirs was very popular during the socialist regime. However, aquaculture virtually ceased altogether after the demise of the communist regime, and very few activities have resumed, due mainly to the absence of clear user right to these reservoirs, and the collapse of fishery cooperatives at the large reservoirs. Given the country's geographic location and access to both marine and fresh water, Albania has the potential to re-develop aquaculture and, through exports and increased domestic consumption, make it an important contributor to economic development and the alleviation of rural poverty.

The Aquaculture Development Component would aim to restore the original capacity of fresh water aquaculture through support to FMAs at inland reservoirs, support the Government's restocking programs initiatives to explore the potential for the aquaculture of new, high value species through demonstration programs. In particular, the project would include a small grant program to FMAs to support the resumption of carp aquaculture, support to the Koran restocking program on Lake Ohrid, and a pilot program to test the aquaculture of species such as tilapia, shrimp, and sea-bass and sea-bream. The Aquaculture Department of the Fishery Research Institute would manage this component.

Sub-component 1: Carp Culture

This sub-component would provide small matching grants to groups of inland lake/reservoir FMAs and participating Water User Associations (WUAs) as start-up capital for purchasing carp fingerlings, restocking reservoirs, and resuming aquaculture activities. Under the communist era, carp culture was quite popular, and it was carried out extensively, using reservoirs and fishponds. Albania has developed some 800 hectares of fishponds and associated hatchery facilities mainly for the carp culture; however, after the demise of the communist regime, the carp aquaculture has collapsed, and to date little activities have been resumed. The main constraint to carp aquaculture is the absence of community-based organizations to control fishing activities and maintain the fish stock. State-owned hatcheries have been privatized; however, private business activities have not yet developed, as the demand for the carp fingerlings has not increased.

Under this subcomponent, small grants would be provided to FMAs/WUAs for two to three years, when the fingerlings could be harvested. About 10 FMAs will receive a grant of up to US$5,000 per year for three years. In order to receive a grant, fishermen will have to organize themselves into a FMA whose statute shall be approved by the Department of Fisheries, develop a management plan which shows licensed members and basic regulations, and annual matching financial contribution of 30 percent of the total fingering cost. During the first year, the grant program would be tried out in Kukes, Trapoje, and Elbasan, and will be expanded into other areas later. This component would then eventually develop FMAs that will be engaged in financially sustainable carp culture, and also provide post-privatization support for the emerging private business in hatcheries.

The small grant program would also be extended to WUAs. In order to eligible for the grant program, WUAs has to demonstrate the satisfactory financial and technical capacity through financial and technical audits to be carried out by the on-going irrigation rehabilitation project. Selected WUAs will then receive a grant up to US$2,000 per year for three years. Four WUAs in Kavaja and Lushnje have been identified as first year implementation. Eventually, it is expected that 20 WUAs will receive this grant eventually.

The selected WUAs and FMAs will purchase carp fingerlings from the private hatcheries through competition. Approximately 20 private hatcheries have recently begun operating, and this grant program would also stimulate the emerging private sector.
Implementation Procedures

This component shall be implemented in a demand-driven approach. In particular, the grant would be provided to the FMAs and WUAs on a request basis. In order to participate in the project, FMAs and WUAs should complete the following steps.

Fishery Management Associations

- Preparation of an initial proposal. Initiating members have to prepare a proposal showing: (a) commitment to develop FMAs, (b) target number of the members at the FMA, (c) proposed sites for aquaculture, (d) target numbers and species for released fingerings, and (e) proposed financial arrangement (contributions from members and grants). At least 50 percent of the initiating members shall be ex-state aquaculture farm employees or full time workers for carp aquaculture.
- Review and Approval of the Proposal. PMU will review and approve the request in conjunction with the Department of Fisheries. On approval, the PMU will advertise the organization of the FMAs through bulletin boards of the communes, and request an application to participate in the FMAs.
- Establishment of the FMAs. Once all initial members have been identified, a general assembly will be held to elect the Board Members. The Board member will then elect the representatives of the FMAs, including their chairmen and technical staff. FMAs will then be officially registered, and receive licenses for aquaculture from DoF.
- Contributions. The Chairman of each FMA will collect required contributions for this sub-component. The contributions will be kept in an account of the FMA. The Grant would be provided to the account directly once the due amount is collected.
- Purchase of Fingerings. Each FMA will purchase carp fingerings through national shopping under the supervision of the PMU.
- Reporting. After each year, each FMA will prepare a brief report showing: (a) financial summary of the FMA, (b) amount of purchased fingerings, and (c) record of output (harvest).

Water Users Associations

- Submission of an Application. WUAs who are interested in participating in the program would prepare a proposal showing: (a) proposed sites for carp aquaculture, (b) proposed financial arrangement, and (c) target species and numbers for fingerings, and (d) modalities through which the WUAs will be involved in aquaculture (i.e. concessions or direct participation).
- Review and Approval of the Proposal. PMU will review and approve the request in conjunction with the Department of Fisheries and Irrigation PMU. Irrigation PMU will provide information regarding overall capacity of the WUAs and make suggestions on whether the WUAs have adequate capacity or not. On approval, the WUAs will collect contributions from their members.
- Purchase of Fingerings. Each WUA will purchase carp fingerings through national shopping under the supervision of the PMU.
- Reporting. After each year, each WUA will prepare a brief report showing: (a) financial summary of the WUA, (b) amount of purchased fingerings, and (c) record of output (harvest), or outcome of concession.

Sub-component 2: Support for Restocking Lake Ohrid Trout

Introduction

This sub-component aims to support the Government's program to restock Koran in Lake Ohrid through rehabilitation of the state-owned hatchery in Lin (managed by the Fisheries Research Institute) and various technical assistance programs. Together with the technical assistance to the Pogradec Fisheries Management Association (FMA) under Component 1, the project aims to control fishing on the Albanian side of Lake Ohrid, and ensure sustainability of Koran fishing.

Koran has a strong domestic market, but the stock has declined drastically over the last 10 years. While destruction of near shore spawning areas and pollution from Pogradec are partly to blame, it is certain that uncontrolled fishing in Albania is the major cause. Koran is caught most easily during their spawning season (December-March), when
the fish are in shallow water. Of course this is precisely the time that Koran fishing should be prohibited. To maintain a fish population, female fish should spawn at least once during their lifetime.

However, for socio-economic reasons it is impossible to prohibit fishing during the spawning season. Thus for the short term, the restocking of Koran by the hatcheries in both Albania and Macedonia are critical to the future of this fishery. The hatcheries in both countries rely on female Koran caught during the spawning season for their supply of eggs. After being caught, the females are stripped of ripe eggs that are subsequently fertilized artificially with milt from males caught at the same time. The fertilized eggs are then taken to the hatchery where they are hatched and raised until the young are old enough to be released into the lake. The underlying idea of the program is not to let any eggs contained in females that are caught for consumption go to waste.

There are two hatcheries that are involved in this activity—one in the town of Ohrid on the Macedonian side of the lake, and one in the town of Lin (near Pogradec) on the Albanian side. The hatchery in Ohrid works very well and produces millions of fingerlings each year. The usual risk of disease seems to be absent at this hatchery. This is most probably due to their abundant supply of spring water of excellent quality, and maintaining the right temperature for the water that is continuously flushed through the fish tanks. Good quality pelleted food is imported, and is readily eaten by the Koran.

In order to determine the cost effectiveness of the hatch-and-release program, a tagging program would be implemented.

**Proposed Site and Description of the Hatchery Facilities**

The hatchery in Lin (west of the city of Pogradec) still functions, but on a much more limited scale due to serious deterioration of the facilities. However, the site is eminently suitable for a Koran hatchery, in particular because it has an abundant and reliable source of spring water of excellent quality and occupies a stretch of land that slopes gently down to Lake Ohrid, thus providing easy and natural drainage. The project aims to rehabilitate the hatchery to such an extent that one million fingerlings can be produced per year.

At present there is a hatchery building, an open ditch for water supply, and several concrete grow-out ponds of different sizes and in various stages of disrepair. However, the basic structures can be used in the new design of the hatchery. Inside the hatchery there are still a number of tanks that successfully hatch Koran, which are subsequently grown out in concrete tanks outside. There are still available personnel with experience in running the facilities.

**Institutional Arrangements**

This component would be carried out by the Fisheries Research Institute under the supervision of the MoAF and the PMU. Close cooperation should be established with the Pogradec Fisheries Management Organization, as they would be responsible for notifying the hatchery whenever ripe Koran are caught so the hatchery can send out a technician to strip and fertilize the eggs. In fact, the hatchery should issue licenses for Koran fishing in line with its capacity to grow out the eggs of caught females. This is the system employed in Macedonia and eventually a single hatch and release program should be run jointly by Albania and Macedonia.

**Outreach to Fishermen**

Coordination with Ohrid fishermen is crucial to the success of the restocking program, since they would have to supply the spawners. They would have to be equipped with plastic containers to keep the fish alive after they are caught, as well as communication equipment to notify the hatchery to send out technicians to collect and fertilize the eggs. The hatchery also needs a vehicle for transport of the eggs back to the hatchery.
Estimated Costs

Rehabilitation of the Hatchery. The rehabilitation works would include: (a) increasing the water supply from the spring; (b) rehabilitation of the hatchery building; (c) rehabilitation of the outdoor grow-out tanks; (d) installation of breeding tanks and other equipment in the hatchery; and (e) construction of a wetland for waste water treatment.

Improving the Management of Restocking Facilities. Four man/months of technical assistance is envisaged to help improve the current management of the hatchery. The technical assistance will cover technical issues (hatching and growing out), administrative functions (planning and monitoring), and environmental management.

Technical Program for a Restocking Impact Assessment. As stated above, continuing the release of Koran from the hatcheries in both Albania and Macedonia is critical to the future of this fishery. While it has been estimated that these releases may account for as much as 90% of recruitment to the stock (Ohrid Hydro-biological Station), there are no studies that prove the cost effectiveness of re-stocking Lake Ohrid with Koran. A research program in which the fish that are released are tagged could answer this question, and the proportion of tagged to untagged fish caught is determined when the released fish have grown to marketable size. Tags, tag screening equipment, demonstration materials, and technical assistance would be needed for tagging, releasing, and later screening the Koran that are caught.

Aquaculture Assessment. Using part of the rehabilitated hatchery, technical assistance would be provided for conducting experimental research on the potential of Koran for intensive cultivation to market size.

Sub-component 3. Pilot Aquaculture Development

This subcomponent would support the Government's initiative to explore the potential in the aquaculture of new marine and freshwater species. In particular, the project would provide support to the Fishery Research Institute (FRI) to carry out pilot programs for aquaculture of shrimp, eel, and tilapia.

A. Shrimp Aquaculture

Introduction

Under the pilot aquaculture sub-component, the project would support the establishment of demonstration aquaculture facilities for shrimp on the abandoned carp farms in Kavaja that were formerly operated by the state. These facilities would demonstrate the technical and financial viability of shrimp farming using mainly semi-intensive methods. The objective would be to stimulate renewed commercial interest in shrimp farming.

Shrimp farming in the Mediterranean region has had only limited success so far. This is largely due to the short growing season of six months, which restricts output to one crop per year. Currently the only viable candidate for cultivation is Marsupeneus japonicus. This species tolerates the cooler temperatures of the Mediterranean and finds a ready local market because of its similarity with the locally caught shrimp Melicertus kerathurus. Introduction of a faster growing cold-tolerant species for aquaculture, such as Fenneropeneus chinensis or Litopeneus stylirostris, could potentially boost productivity, but would pose ecological risks, and would require unequivocal assurance of the disease-free status of stocks. Marsupeneus japonicus, although not native, has extended its range to the Mediterranean via the Suez Canal.

In 1994, a joint venture between the Albanian Government and an Italian private company began the culture of Marsupeneus japonicus using the abandoned carp farm facilities at Kavaja. The company’s extensive culture methods have resulted in moderate success, though in recent years the incidence of disease and theft have increased. Still, there are significant opportunities to expand shrimp farming in Albania and increase profitability by using technology appropriate to Albania’s conditions. Albania has advantages over other Mediterranean countries for shrimp farming, such as cheaper land and cheaper construction costs. Cheaper labor would only a minor advantage because shrimp farming is capital intensive rather than labor intensive. On the other hand, Albania does not have experience in other shrimp farming or in any other type of marine or brackish water pond aquaculture.
Consequently, any prospective Albanian investor would need to pay (initially at least) for expensive foreign technical assistance. Albania is considered a high-risk country by foreign investors, who have serious concerns regarding the security of new investments. Indeed, the existing joint venture shrimp farm at Kavaja has serious problems controlling theft of its high value crop, and consequently is just breaking even.

The project would aim to overcome these problems and ultimately demonstrate the feasibility of shrimp culture in Albania. In particular, the project would assess the financial viability of the semi-intensive culture of *Marsupenaeus japonicus*. A semi-intensive method would likely produce higher yields and would require less space, which would be easier to protect from theft. However, because this is a relatively novel activity for Albania, the project would proceed cautiously using a phased approach, with the financing of each phase dependent upon the success of the previous one.

**Proposed Site and Description of the Proposed Semi-Intensive Farm**

The project would establish an Aquaculture Demonstration Unit at Kavaja to demonstrate semi-intensive shrimp farming methods and to provide a demonstration facility. The Demonstration Unit, as envisaged, could also supply shrimp post-larvae to new commercial ventures to stimulate the development of the industry.

The proposed site for the Aquaculture Demonstration Unit is a former carp aquaculture complex, adjacent to the facilities currently utilized by the Italian-Albanian joint venture shrimp farm mentioned above. The site is about 60 kilometers southwest of Tirana, on the Adriatic shore outside of the town of Kavaja. The Ministry of Agriculture and Food (MoAF) has reclaimed about 4 hectares of land from the joint venture, which would be shared, together with the unit’s facilities, with a demonstration of eel aquaculture. The shrimp section of the unit would comprise a small but well-equipped hatchery and four on-growing ponds (of a size to be determined).

**A Phased Approach**

Typically, shrimp aquaculture comprises the following two cycles:

- Development and operation of a hatchery, and the production of post-larvae (PL) for stocking the grow-out ponds; and
- The grow-out of the post-larvae in ponds to marketable size.

However, it is proposed that the project start first with growing out post-larvae using either imported PL, or PL from the joint venture, and later expand its activities to construction and operation of a hatchery. This approach is more appropriate for Albania and is designed so that financial exposure can be minimized. Shrimp aquaculture is still new in Albania, and technical and administrative capacity would need to be developed step by step. There are also climatic risks that the project cannot control for. In addition, construction and operation of a hatchery are technically the most difficult part of shrimp aquaculture, requiring extensive technical assistance, and incurring major costs. Moreover, if the project were to start with building the hatchery, the first year could be lost to construction and no actual aquaculture would take place. Construction of grow-out ponds is technically simple and cheap, and could be accomplished in a short amount of time. If the project begins with the grow-out stage, operations could commence very soon after the project is launched. Considering these factors, it is highly desirable that the viability of shrimp aquaculture begin by first testing the grow-out phase using either imported PL or PL from the joint venture.

In this context, it was decided that this activity would be carried out in a phased approach.

- **Phase 1** would begin in January 2002 with the primary objective of demonstrating the technical and financial feasibility of growing out shrimp using a semi-intensive method. This operation would also provide a sample financial model for prospective private investors, as they will very likely purchase PL from the hatchery (to be constructed during the third phase). The activities during this phase would include: (a) construction and operation of a nursery and three grow-out ponds for a semi-intensive grow-out of *Marsupenaeus japonicus* using imported post-larvae; and (b) construction and management of auxiliary facilities (offices and gated fences) and
utility networks, and installation of equipment. During Phase I and II, experience with pond management would be gained, and data on growth rates and on costs of production and marketing would be collected, enabling the project to make a decision on whether or not to proceed with Phase III. Implementation of Phase I could therefore proceed as follows.

October - December 2001  Detailed Design of Grow-out Ponds
January - April 2002  Construction of Grow-out Ponds
May 2002/3  Stocking of the Ponds with PL
August 2002/3  First Harvest
October 2002/3  Second Harvest
January - April 2004  Construction of Nursery (Phase III)

Following this schedule, it will be crucial to stock the grow-out ponds with PL in May to allow for two harvests, one in August and one in October. If there are delays in the start of the project, only one harvest may be possible. Depending upon the results of the grow-out trials in the first two years, construction of the hatchery could start in late 2003 to be ready for production of shrimp larvae in the spring of the following year.

- **Phase II and Phase III** would consist of construction and operation of the hatchery and possible expansion of the facilities if commercially justified.

**Institutional Arrangements**

This component would be carried out by the Fishery Research Institute (FRI) under the close supervision of the MoAF and the PMU. The FRI would establish a special unit for the Kavaja Demonstration Center for the duration of the project. During the first phase, the special unit would be staffed with a manager, a biologist, two workers, and two security officers (24 hours). Three more workers would be recruited during the second phase. In order to provide proper incentives, professional staff and workers would be recruited through a competitive process and would be paid competitive salaries on a contract basis.

**Phase I**

*Technical Assistance.* About two man-months (three trips) of technical assistance would be provided to support the initial set up of the grow-out ponds. The consultant would prepare an overall implementation plan for Phase I, prepare technical specifications for the equipment, and supervise the detailed design for the grow-out ponds and nursery construction. In addition, overseas training would be provided to the biologist on shrimp aquaculture. The project would also send a group of specialists from the Department of Fisheries and the PMU to an existing shrimp farm in the Mediterranean region to learn pond and hatchery operations and management. Detailed TORs will be prepared during appraisal.

**Phase II and III**

*Technical Assistance.* About four man/months (three trips) of technical assistance would be provided to support the setting up of the hatchery. The consultant would prepare an overall implementation plan for Phase II, prepare technical specifications for the equipment, and supervise the detailed design for the hatchery. Detailed TORs will be prepared during appraisal.

**Monitoring and Evaluation**

The PMU would monitor (a) overall progress of the project, (b) incurred costs, (c) progress in production, and (d) environmental impacts, and would provide results to the Bank in a quarterly report. The PMU would also carry out annual evaluations with assistance from an international expert, which would include (a), a summary of the financial and technical outcomes of the previous years’ activities, and (b), an activity plan for the forthcoming year. At the end of Phase I, the PMU would carry out a detailed assessment of the shrimp grow-out demonstration to determine
the financial and technical viability of private shrimp farming. Based on this assessment, the Project Steering Committee would make a decision on whether or not to proceed to Phase II.

**Outreach to the Private Sector**

As the objective of this activity is to demonstrate the viability of shrimp farming to potential private investors, the project would collaborate with the IFC to identify possible investors and disseminate information to them from the start of the project. After appraisal of the project, the PPU would carry out an initial workshop for potential investors and the IFC to explain the concept of the shrimp program. Subsequent workshops would be held annually to inform interested parties on the progress and results of the program. The demonstration center would be open at all times to inquiries from potential investors.

**B. Eel Aquaculture**

The European eel (*Anguilla anguilla*) is a high value species that is widely distributed in the waters of Albania, mainly in the lagoons and rivers along the Adriatic Sea. Eel have traditionally been caught and consumed in Albania and are currently being fished commercially, mostly in lagoons. The European eel spawns in the Sargasso Sea (adjacent to the Caribbean) and the young eel or elvers travel to Western Europe where they assemble in large schools in front of lagoons, rivers and fresh water outfalls to travel further inland. At this time they can be caught for aquaculture. According to information obtained during missions, elvers arrive in large numbers in Albania too and therefore the mission was asked to consider the possibility of eel culture in Albania.

However, eel culture at present does not fare well in Western Europe and is almost exclusively done in an intensive way that requires a high investment and is technically sophisticated and therefore Albania would not have a comparative advantage in eel culture. Moreover, it has not been possible to obtain definite information about the availability of elvers in Albania. The project will finance an inventory of elvers along the Albanian coast, carried out in two stages: One mission will be in November 2002 to organize the survey and train the fishermen in the use of the particular catching gear. One or two subsequent missions will be timed to sample catch elvers when they arrive in late winter/early spring of 2003. In the mean time the Fisheries Research Institute will gather all available information on elvers in order to be able to plan consultant’s mission to coincide with the arrival of the elvers and identify the fishermen who will participate in the sampling. An important goal of the elver inventory will be to determine if elver fishery could be sustainable, as elver numbers have been declining steadily in Western Europe over the last decades.

**C. Tilapia Aquaculture**

The project would support small-scale demonstrations of aquaculture of this species to test technical and financial feasibility and to monitor ecological impacts. Tilapia is known to be an easy and high-value freshwater aquaculture species, and it seems that this particular kind of tilapia cannot survive winter in Albania, thus would very unlikely cause ecological problems (in terms of the introduction of non-indigenous species into the Albania water courses). This species has been already introduced in Greece and Italy. Under this sub-component, a small hatchery would be developed at the Fishery Research Institute in Tapiza (Durres) to raise tilapia fingerlings. Grow-out would be tried out at cages to be installed at irrigation reservoirs managed by water user associations (WUAs). The participating WUAs will be selected based on the performance on the irrigation management and their willing to expand their activities.

**Implementation Procedures**

WUAs would participate in this activity according to the following procedures:

- **Submission of an Application.** WUAs who are interested in participating in the program would prepare a proposal showing: (a) proposed sites for tilapia aquaculture, (b) commitment to the required contribution (i.e. labor and feed cost), and (c) modalities through which the WUAs will be involved in aquaculture (i.e. concessions or direct participation).
• Review and Approval of the Proposal. PMU will review and approve the request in conjunction with the Department of Fisheries and Irrigation PMU. Irrigation PMU will provide information regarding overall capacity of the WUAs and make suggestions on whether the WUAs have adequate capacity or not. Upon approval, an agreement would be signed between the PMU and the participating WUAs to carry out this pilot program.

• Reporting. After each year, each WUA will prepare a brief report showing: (a) financial summary of the WUA, (b) amount of purchased fingerlings, and (c) record of output (harvest), or outcome of concession.

During the first year of implementation, five WUAs will be selected to participate in grow-out. These WUAs will assign their counterpart who will be responsible for the pilot program and purchase feed which are available from local markets. WUAs will then provide technical data (growth), test marketability and financial viability, and assess environmental impacts in collaboration with the project. After the pilot trial, the participating WUAs will retain the cages, and will purchase fingerlings at cost. It is expected that the contribution of the WUAs would amount to US$126,000, or about half of the total cost of activities.

D. High Vale Marine Species (Sea Bass & Sea Bream)

The culturing of sea bass and sea bream in the Mediterranean has, after an initial boom, declined considerably in economic viability due to increased production that has negatively affected their price. However Sea bass and Sea bream still fetch a high price in Albania and the FRI expressed considerable interest in trying to promote the cultivation of these species. Therefore, the project agreed to a cautious approach and to finance a trial of the grow-out of sea bass and sea bream in ponds in Kavaja to determine if it would be feasible to introduce these species for pond or cage-culture. If the grow-out were to prove successful, sea bass and sea bream could be propagated in the hatchery later, because the time of propagation of these species does not coincide with the time of propagation of shrimp. Sea bass and sea bream spawn in winter while shrimp spawn in spring. For the first year(s) of grow-out, fingerlings could be bought in Greece where they are readily available. Greece is one of the largest producers of sea bass and sea bream in the region.

During the second phase of the aquaculture operation in Kavaja (2003) 6 ponds will be constructed for the grow-out of sea bass and sea bream. These species will be cultivated in a semi-intensive manner. This means that the water will be exchanged once per day per pond and supplementary feed will be provided.

PROJECT COMPONENT 3: INSTITUTIONAL STRENGTHENING FOR THE PUBLIC SECTOR

This component aims to support the fisheries sector through the institutional strengthening of the public sector within the Ministry of Agriculture and Food (MoAF). Component 3 is divided into 2 sub-components - the provision of technical assistance (TA) to the Department of Fisheries, DoF and the provision of TA to the Fisheries Research Institute, FRI. This support will be provided throughout the duration of the project.

Background & Justification

The DoF is the sole government institution responsible for managing both the marine and freshwater fisheries sector. It is institutionally very weak, and has a permanent Head Office staff (based in Tirana) of only five people – one Director and two staff in each of the Fisheries Resources Department and Fisheries Inspectorate. At least 2 of these 4 staff below the Director function purely as administrators. The Fisheries Inspectorate in turn has a network of some 7 inspectors at a number of the more important inland lake fish landing-sites and coastal ports throughout the country. Some of the key institutional issues that need to be addressed by the project include the following.

• The staff has very little incentive for good performance and the newly appointed director has limited experience on the fishery management. In addition, resources for the DoF is strictly limited to undertake their duties. Currently there is more fisheries-trained expertise and human resources working outside the public sector than within the DoF.

• Only the Director is computer literate and trained to graduate level, although the other Head Office staff has had some computer training.
Many (if not all) of the regionally based Fishery Inspectors are under-resourced and unable to do very much to perform their duties – in most cases the inspectors are confined to monitoring landings on a part-time basis only. Institutional links with the Head Office are also very poor.

There is no fisheries policy or strategic development plan for the sector.

The DoF has no means of enforcing the fisheries law in terms of capacity in MCS and has no formal charter agreement with the FRI concerning fisheries research and resource management.

The information system used by the DoF to register fishing vessels, their fishing licenses, catches and landings is based largely on paper transactions and is ineffective as a tool to improve management of the sector.

The FRI was established in 1958 in Durres, with the primary functions of exploring and introducing new technologies in the fishery and aquaculture sector, and to carry out stock assessment in Albanian waters. However, like other institutions in the MoAF, the FRI is institutionally very weak. It has about 50 staff, of which only 7 are scientifically qualified. Indeed, the Institute has two departments, Fisheries Resources, with a total staff of 8, and Aquaculture, with a staff of 40. In terms of the capacity of the FRI to perform its primary functions, a number of institutional issues need to be addressed:

- Lack of Incentives. Most of the staff, including technical staff, is paid a very low wage (in line with other public servants) and there is no incentive for the staff to work efficiently or indeed full-time. Recruitment of new technically qualified staff is also difficult.

- Limited Budget and Activities. Because the institute has a limited budget, the focus of the institute's work is rather on the routine (commercial) work than the scientific research. For example, the majority of the Aquaculture Department is involved in the cultivation of carp fingerlings.

- Limited Resources for Research Work. The institute has no research vessel to undertake one of its primary functions, and much of its analytical (laboratory) facilities are inadequate. There is therefore little in the way of applied research undertaken on fish stock assessment.

- Lack of Formal Administrative Arrangements. The FRI's charter (statute) is non-existent, and although it appears that the FRI comes under the DoF, there is no formal charter agreement between these two institutions.

Because of this almost total absence of enforcement of the existing Law on Fisheries and Aquaculture and associated fishery regulations, there is therefore great concern over the potential depletion of Albania's fish resources. This includes both coastal and offshore marine and inland freshwater lake fish stocks. Consensus amongst those advising the MoAF is that the future of the fisheries sector depends on a combination of institutional strengthening of the public sector and the involvement of fishing communities in the co-management of their own resources (see Project Component 1 - Sub-component 2).

**Outputs and Key Activities**

The outputs from this component would be:

**Sub-component 1 - Technical Assistance to the DoF**
- All DoF Head Office staff and Fisheries Inspectors trained to improve management of the sector, including the capacity to support the proposed FMAs.
- Senior DoF and MoAF staff trained to prepare technical documents and strengthening of inter-ministerial legislation.
- Improved data collection and management of information from the sector.
- Improved capacity for planning within the sector.

**Sub-component 2 - Technical Assistance to the FRI**
- All FRI staff trained as appropriate to improve the performance of the institute in line with agreed objectives.
- Improved management of the FRI and limited rehabilitation of the institute's existing facilities and equipment.
- Improved data collection and management of information from the sector.

The identified combined activities within these two sub-components to achieve these outputs are as follows.
Preparation of a Training Plan and Delivery of a Training Program for the DoF and FRI. The aim of this activity is to provide the MoAF with a Human Resource Development (HRD) Plan for all government staff within the DoF and FRI. This HRD plan will focus specifically on the training needs of the staff of these institutions during the 5-year duration of the FDP. The key objective of this project sub-component is to prepare a plan to support government fisheries institutions in developing their institutional capacity through human resource development.

Implementation of the training plan prepared as an output of the TNA (see above) will be undertaken over the duration of the FDP. Preliminary results from interviews with staff from these institutions, undertaken as part of the project pre-appraisal (March 2001) suggest that the training needs are likely to be very diverse. Training may include general language and computer training, training in the latest techniques in fish stock assessment, fisheries management, policy and planning, financial administration, human resource management, Training of Trainers for extension work, and an introduction to community-based fishery resource co-management and MCS.

The probable diversity of needs will call for the development of a range of short in-country courses on a wide variety of subjects, through to specialist overseas courses for key government officials. The local Training Institute, selected through competitive tender for delivery of a training program for the FMAs, should also be involved in delivery of some of the local training inputs. Provision should also be given to investigating the possibility of establishing a permanent fishery training facility for the sector.

It will however be important to identify and describe any mechanisms that may help to ensure the sustainability of the training program within the FDP. One or more institutions within government may need to be bestowed with the responsibility of maintaining the training program following completion of the FDP, so ensuring that they are offered to (and possibly a pre-condition to) new officers entering the relevant posts. The sustainable impact of the project will therefore not just be the trained personnel, but also the development of training packages that can be duplicated for new staff, plus guidelines and procedures to institutionalize fisheries development issues in future sector planning and project design.

Preparation of a Fisheries Sector Policy, Strategy & Management Plan for the MoAF. The MoAF and DoF currently have access to a Fisheries Management Plan, prepared in 1999 under an EU Phare Program. Whilst containing a useful amount of technical, biological and some micro-economic information, unfortunately the document is little more than a descriptive sector review. For example there is no macro-economic assessment of the contribution of the sector to GNP, no mention of Coastal Zone Management (CZM) issues, socio-economic issues or human resource development needs. The document certainly does not constitute a management plan for the sector.

The Green Strategy is the government strategy for agricultural development in Albania, within which there is a section defining the policy objectives for the fisheries and aquaculture sub-sectors. Unfortunately the strategy paper action plan lacks quantifiable indicators for the above stated objectives and policy actions, plus there is no mention of the need for capacity building and institutional strengthening within the public sector to support these plans. There also appears to be some confusion in the Green Strategy between what is viewed as the government’s objectives for, and policy towards, the sector and how is will actually achieve these sectoral objectives through an agreed sector strategy and plan.

Although a number of proposed activities within the FDP do address many of the above-stated sectoral objectives in the Green Strategy, the government lacks a longer-term strategy and development plan for the sector. There is therefore a need within the project to redefine and develop a new sector policy, strategy and management plan for the period 2005-2010. The output from such work must also be translated in full into the Albanian language so that it can be used as a tool in the resource co-management process, particularly given the importance being placed on co-management and stakeholder participation by the FMAs. This work will require a range of international TA, including the CTA, an economist, and fisheries policy and planning and management specialists.

Other international TA requirements linked to the general discipline of policy and planning include the provision of TA for preparing technical documents to negotiate international agreements with neighboring countries. This is important given the multi-species nature of the demersal fish stocks in the Adriatic and the shared fish stocks on inland lakes bordering with Montenegro and Macedonia. Legal assistance will also be provided to support the
Fisheries Directorate in reviewing various inter-ministerial laws, particularly in relation to the strengthening legislation for improved Integrated Coastal Zone Management (ICZM) and MCS.

**Preparation of a Business Management Plan for the FRI.** The FRI is recognized as institutionally weak and lacks a formalized linkage with the DoF. There is urgent need for a management plan for the institute to both define its role within the sector and set clear objectives for its continued operation. This would incorporate a new statute to formalize the relationship between the FRI and the DoF, and provide an action plan for developing the FRI's key competencies.

It would also include the need to identify and develop opportunities for seeking funding from the private sector (in terms of collaborative research and operation or partial sale/privatization of the state owned hatcheries). Strategies will need to be considered that are in line with the increasing trend within Europe of state owned research establishments becoming less and less reliant on public sector funding. Areas that will be covered in this work include an analysis of its strategic role within Albania and the region, definition of agreed Mission Statement and Objectives, preparation of an operational plan, research plan, human resources planning and financial analysis, planning and budgeting for 3 years. This work will be undertaken by international and local as a priority in the first phase of the project (late 2001 – early 2002).

The project should as an output of the management plan, also make a provisional budget for minor refurbishment works and equipment for the FRI. This will compliment planned interventions by the EU Phare Program. The precise details of what work will be required will be elaborated in the management plan for the institute.

**Training and Equipment for Development of a Fisheries Management Information System (FMIS).** There is considerable scope for improving the collection and use of fisheries data by the DoF as a tool for improving resource management. Collection of fisheries data and information is not an end in itself but is essential for informed decision-making. It is therefore important for any management authority (in this case the DoF and FMAs) to ensure that the data collected are analyzed correctly, disseminated to where they can best be used, and used appropriately in decision-making. Data and information are generally required at the three levels, policy formulation, formulation of management plans, and the determination of management actions to implement the policy and plans (the latter particularly in association with the FMAs). These requirements overlap considerably and each of the three steps will be influenced by what has happened or is happening at the other two levels. Nevertheless, the three processes are distinct, occur on different time scales and require different information to different levels of detail.

The verification or validation of data is also essential to ensure that it is accurate, complete and gives a true indication of the state or value of the factors under consideration. The problems associated with the collection of fisheries data mean that the risks of collecting erroneous or inappropriate data are very high without careful and statistically valid design. It is likely that the validity of much of the data currently being used to assess the volume (and value) of fish landings in Albania is questionable.

Promoting the concept of resource co-management will also be made much easier and more effective if there the data collection is done in accordance with agreed common definitions, classifications and methodologies and in a pre-agreed, standardized format, enabling all data to be combined and compared as required. Collection of such standardized data will require that the DoF, FRI and FMAs meet periodically to agree on the data requirements, the methods to collect the data, the amount of data to be collected and to review the sample design. Lastly, given the continually limited resources of the public sector, the collection, collation and dissemination of data needs to be carried out in a cost-effective manner possible so as to minimize costs whilst at the time ensuring the required information. Duplication in data collection and analysis also needs to be avoided.

There is currently no uniform mechanism to formally transfer information between the private sector and Fisheries Inspectors, other stakeholders, DoF and FRI, and between government ministries. Information on the topics such as the impact of regional agreements, EU regulations, legal issues, budgeting, vessel-registration, catches and landings, cost control rent agreements and licensing issues all needs to be disseminated, particularly to support co-ordination of sector development strategies.
This work will complement the MCS planning and training proposed in Component 1 (Sub-Component 2) of the FDP. A FMIS related project has recently started, funded only for one year through the FAO ADRIAMED Program, and the project intends to follow on from this work. It is also advisable that this work should also be aligned in compliance with European Commission requirements, in view of the government's foreign policy to seek accession to the European Union at the earliest opportunity. This is particularly with regard to incorporating as appropriate a fishing vessel registration database and a landing data collection system into the FMIS. Inputs would include international and local TA, networked computer equipment (desktop computers, printers, modems, scanners, software), and training for MoAF, DoF, FRI and FMA staff.

**PROJECT COMPONENT 4: PROJECT MANAGEMENT**

A Project Management Unit (PMU) will oversee implementation of the above activities. Considering the various agencies involved in each of the components, this provides a considerable challenge. The PMU will ensure an efficient implementation of the activities proposed under the proposed project. It is intended that the Project Preparation Unit (PPU), which is actively involved in the project preparation, will take-over the responsibility as the PMU. The project team currently consists of a Director, Financial Management and Procurement Specialist (who will be jointly working for the Agriculture Service Project and the proposed fishery project), Aquaculture Advisor, and FMA staff (National Coordinators). The team will be strengthened through engagement of an international consultant to act as a Chief Technical Advisor, who will work primarily to assist in the establishment of FMAs, but also support the PMU in the implementation of the remainder of the project.
PART III – PROJECT’S ENVIRONMENTAL IMPACT

*Environmental Category: B (Partial Assessment)*

**A. Existing Environmental Issues to be Addressed by the Project**

Currently the Albanian fishery sector is almost completely unregulated, and both marine and freshwater fisheries are in danger of being depleted by over-fishing and the use of destructive and unsustainable fishing methods. Ocean demersal stocks are particularly vulnerable due to heavy near-shore trawling, and the Koran fish, endemic to Lake Ohrid, is in danger of extinction if unlicensed fishing is left unchecked. Foreign vessels are fishing Albanian waters without reprisals, contributing further to over-fishing and depletion of stocks. In addition, fishing ports have been seriously neglected; leaving both grounds and waters polluted by solid waste, posing health and safety risks to humans.

The project was designed to address these ecological and environmental issues. One of the two main objectives of the proposed project is to achieve the sustainable use of fisheries resources through:

(a) Developing a regulatory and institutional framework for fisheries
(b) Involving fishing communities in ports and fisheries resource management
(c) Training Department of Fisheries and Fishery Research Institute personnel
(d) Establishing programs for collecting information on fisheries stocks
(e) Strengthening the Koran restocking program, and
(f) Testing alternative, ecologically sustainable fishing techniques and gear

In addition, the project would assist in rehabilitating and cleaning up Albania’s major sea and lake port facilities, and would engage fishermen in managing fishing ports.

*Over-Fishing and Depletion of Ocean Demersal Stocks*

Fishermen in Albania are currently using old bottom trawlers to catch demersal fish, and because their operations are unregulated, stocks have declined substantially in recent years, resulting in smaller and smaller harvests. Fishermen sometimes invest in new trawling gear and engines, wrongly believing that they can increase their catch using the same techniques with newer equipment. In addition, recent increases in oil prices have limited the areas fished to those nearest the shore, which are used as nursery grounds by demersal species. There are no controlled closed seasons for spawning, no minimum size of fish allowed for catch, and no conservation of nursery areas. And illegal fishing by foreign vessels is rampant, contributing further to the depletion of stocks.

The Government has no institutional or regulatory framework, and no monitoring or enforcement capacity for protecting and sustainably managing these demersal stocks. Therefore, the project would support the institutional strengthening of local Fishery Management Organizations (FMAs), and make them partners with the Government in co-managing fisheries resources. To develop the management capacity of FMAs, the project would raise fishermen’s awareness and knowledge of sustainable marine resource management, promote self regulation towards sustainable marine resource management, and set up programs for collecting information regarding catches and stocks of fisheries resources. The project would assist the FMAs in developing fishery management plans and local fishing regulations on allowable catch, off-limits seasons and areas, minimum sizes, and allowable equipment, as well as licensing and enforcement mechanisms.

In addition, the project would assist the Government in developing regulatory and institutional frameworks and a management plan for the sector. The project would also provide technical assistance to prepare the Government for negotiating bi-lateral treaties on fisheries. It would also provide a Fisheries Management Information System (FMIS) and help to develop the capacity of the Fishery Research Institute in collecting information regarding catches and stocks of marine resources, and in conducting research on new species for aquaculture.
Increased ghost fishing from abandoned nets or lost fishing nets and traps could also be a problem, so the project is only providing set nets, although fishermen based at the project sites could still abandon trawl nets. The fishermen will be sensitized to the problems associated with abandoned nets. Enforcement of regulations will be addressed through the institutional strengthening component (FMAs) proposed under the project. Under the project, FMAs would share the responsibility for the enforcement of fisheries regulations with the State.

**Over-Fishing and Depletion of Lagoon Fisheries**

Lagoon fishing is popular in Albania, and reportedly some 500 families depend on lagoon fishing, mainly for eel and sea bass. However, during recent years lagoon fisheries have declined significantly. This is due partly to illegal (unlicensed) fishing, and partly to the use of explosives as a method of fishing. Fishermen will be sensitized to the damage done by explosives and enforcement of regulations will be addressed through the institutional strengthening component (FMAs) proposed under the project. Under the project, FMAs would share the responsibility for the enforcement of fisheries regulations with the State.

As these lagoons provide important habitats for migratory birds, such as pelicans and herons, it is critical that lagoon fishing is controlled and fisheries stocks are maintained. The project would support the management of lagoon fishing by organizing local fishermen into Fishery Management Organizations, establishing fishing regulations and enforcement mechanisms, and assisting efforts to restock lagoons. The project plans to help establish lagoon FMAs in Narta, Karavasta, and Butrinti.

**Over-Fishing and Depletion of Lake Ohrid Koran**

The rapid decline in the stock of the Lake Ohrid trout (Koran) is also becoming a major environmental concern. Koran is endemic to the lake, and has a strong domestic market. The decline is reportedly due partly to the large volume of illegal (unlicensed) fishing, and to less than successful efforts to restock the lake. Therefore the project would support the Government’s and the communities’ efforts to address these challenges through (a) establishing FMAs that would co-manage the fishery with the Government, (b) assisting FMAs in developing and enforcing fishing regulations, (c) rehabilitating the restocking facilities in Lin to intensify the restocking effort, and (d) exploring the financial and technical viability of aquaculture for Koran.

**Pollution from Fishing Ports**

The project would carry out minor rehabilitation and improvements to fishing port facilities in order to meet very basic international standards of navigation safety and hygiene, and to support the FMAs’ management of these facilities. Specifically, the project would clean up wreckage, repair damage to essential port facilities (e.g., quays and jetties), and provide essential infrastructure such as water supply, toilets, and offices for FMAs, and small storage facilities. In addition, the project would finance the preparation of management plans for fishing port and grounds, which will be carried out jointly by the FMAs and the Department of Fisheries.

Compliance with a number of international conventions also need to be addressed by the project. In accordance with the recommendations of the Committee on Fisheries (COFI) at its Nineteenth Session in March 1991 and the subsequent International Conference on Responsible Fishing, held in Cancun (Mexico) in 1992, the Food and Agriculture Organization (FAO) of the United Nations prepared a voluntary Code of Practice for Responsible Fisheries (1994). The Code was formulated so as to be interpreted and applied in conformity with the relevant rules of international law, as reflected in the UN Convention on the Law of the Sea, 1982 (UNCLOS).

The Twenty-eighth Session of FAO in Resolution 4/95 adopted the Code of Conduct for Responsible Fisheries on 31 October 1995. The same Resolution ushered in appropriate precautionary (as opposed to reactionary) technical guidelines for the procedures for the development and management of harbors and landing places for fishing vessels. Some of the provisions in these guidelines may be or have already been given binding effect by means of legal instruments or third country directives, such as:

- UNCLOS 82 (UN Convention on the Law of the Sea, December 82);
- MONTREAL PROTOCOL (Montreal Protocol to the Vienna Convention);
B. Potential Environmental Risks from Project Activities

Environmental assessments were carried out for port rehabilitation component at each of the six major ports selected for the project’s first phase. Environmental assessments were also carried out for the aquaculture component for Koran, shrimp, and eel. The aquaculture of tilapia will be tested on a small scale in irrigation reservoirs that have no outlets to natural lakes or rivers.

There are two major project activities that may potentially present risks to the environment and ecology: (a) the larger-scale aquaculture activities for Koran, and high-value marine species; and (b) construction works for the rehabilitation of the fishing ports. There are also some environmental risks associated with the possible increase in fishing activities that result from the project’s ports rehabilitation and fisheries management activities.

Aquaculture

The second major objective of the project is to restore the country’s original capacity in traditional fresh water aquaculture, and explore Albania’s potential in the aquaculture of high-value species in order to provide new opportunities for income generation and take pressure off diminishing stocks of wild species. The aquaculture development component would mainly aim to: (a) restore the original capacity of fresh water aquaculture through support to FMAs at inland reservoirs, (b) support the Government’s program to restock Koran in Lake Ohrid, and (c) support the Government’s initiatives to explore the potential for aquaculture of new, high value species through demonstration programs. Specifically, the project would include: (a) Support to restocking of carp in reservoirs, (b) support to the Koran restocking program, and (c) a pilot program to test the aquaculture of new marine and fresh water species.

In principle, the preliminary assessments found that the potential environmental impacts of the proposed aquaculture programs are not significant and can be mitigated sufficiently. The primary impacts would come from: (a) organic waste water from hatcheries and grow-out ponds, and (b) organic sedimentation (sludge) in the grow-out ponds. There are also risks associated with the accidental introduction of new species into the wild, such as disease, unfavorable changes in the genetic pool, and competitive pressure on indigenous species. The project is designed to minimize these environmental risks associated with aquaculture.

Restocking Koran in Lake Ohrid. The Ohrid trout, or Koran, (salmo letnica) is endemic to Lake Ohrid, and its stocks are being depleted mainly due to over-fishing. The Government is already operating, at low capacity, a hatchery in Lin for restocking Koran. This subcomponent would mainly consist of rehabilitation of and minor improvements to the existing hatchery, and technical assistance programs to improve the management of the restocking facilities.

The primary environmental risks associated with this subcomponent would be from the organic wastes discharged from the hatchery into the lake, which could lead to the build-up of organic matter on the lake bottom, causing eutrophication. To mitigate this risk, the project would utilize specially formulated fish food containing limited amounts of phosphorus, which would minimize the amount of phosphorus in the effluent discharged into lake. The project would also construct a purification wetland in the area between the hatchery and the lake. The wetland or “pond” would function as a bio-filter, using specific plant and fish species that are able to utilize the organic waste from hatchery operations. A plan for regular monitoring of water quality is being developed, and technical assistance would be provided to hatchery staff for environmental management.

There is no risk from the release of mature Koran into the lake. Usually there is a reluctance to release animals bred in captivity into wild populations because they may be genetically less vigorous or lack the imprint necessary to find...
their spawning grounds. This is not a concern in this case because the Koran fry will come from wild parents that spawn in the area where the hatchery-raised fish are being released.

**Demonstration of Shrimp Aquaculture.** Under this subcomponent, the project would establish an aquaculture demonstration unit, including a hatchery and some on-growing ponds, to demonstrate semi intensive shrimp farming methods and to provide a training center. The demonstration unit will utilize existing carp farm facilities in Kavaja that were formerly operated by the state.

The environmental impact of the demonstration farm is limited because of its siting in an area already converted to aquaculture, near a commercial shrimp farm already in operation. The risks of introducing *Marsupeneus japonicas* into Albanian waters are considered insubstantial since the species already exists in the Mediterranean, and there are no reported cases of it displacing the native species, *Marsupeneus kerathurus*. The hatchery's main impact would be the discharge of effluent into the sea in front of the farm. This discharge will contain organic waste, but otherwise no toxic or non-biodegradable substances. Thus far, there have not been adverse environmental impacts of the existing shrimp farm in Kavaja and the canal conveying the outflow from the ponds and hatchery is full of fish, which means that the water is sufficiently oxygenated. Nevertheless, to ensure that the wastewater is of acceptable quality, a purification wetland from which filtered water can flow into the sea will be constructed. The sea is shallow in front of the farm, so the receiving waters will be well aerated, which is conducive to a speedy breakdown of the remaining organic material. In addition, the management practices described in a document called "Codes of practice for responsible shrimp farming" issued by the Global Aquaculture Alliance would be adopted by the project.

To limit the spread of diseases, the project would use strict quarantine procedures with new brood stock. Also, the area for releasing effluents will be carefully situated so that effluents do not mix with the water supply of the same and other shrimp farms.

**Demonstration of Sea Bass and Sea Bream Culture.** The environmental impact of Sea Bass and Sea Bream culture is practically identical to the environmental impact of shrimp culture. The only impact will be the discharge of waste water from the grow-out ponds and eventually the hatchery. Waste water from the culturing of Sea Bass and Sea Bream will be treated in the same way as the waste water from the culturing of shrimp, using the same purification wetland. Monitoring of BOD and COD of the effluent according to standard methods will be carried out by the FRI every 2 months during reproduction and grow-out season. Although the existing farm does not report any accumulation of sludge, (the ponds are periodically dry and the bottom is plowed and disinfected with quick lime), eventual sludge will be used as fertilizer in the adjacent agricultural land after being put in one of the numerous unused ponds first to leach the salt from it.

**Demonstration of Tilapia Aquaculture.** Aquaculture of tilapia is currently underway on a pilot basis under the IDA-financed irrigation project, for which water user associations are using cages to conduct grow-outs of tilapia fingerlings provided by the Fishery Research Institute. It has been found that the particular species of tilapia proposed for this project very likely cannot survive in the wild because water temperatures are too low during the winter in Albania. Tilapia would therefore not pose any threat to native species. This would be confirmed during the first year of the project before the Fishery Development Project sets up a demonstration of tilapia aquaculture at a state-owned hatchery facility at Durres. The other potential environmental impacts of this activity is evaluated negligible, as the project would involve mainly indoor works. The hatchery is currently under operation without any major environmental issues, and incremental effluent is also considered negligible. Therefore, no mitigation measures are considered necessary.

**Rehabilitation/Upgrading of Fishing Port Facilities**

Because Albania's shore-based fisheries infrastructure has been neglected for more than a decade, much of it has fallen into disrepair, and solid waste materials have accumulated near the jetties. Therefore, the project would provide FMOs with basic fishing port infrastructure or would rehabilitate existing facilities to international standards in order to improve navigational safety and hygiene standards. It would also set up waste reception systems in line with International Maritime Organization (IMO) recommendations, and carry out substantial clean-up works to
remove the many wrecks and accumulated rubbish. Construction for the proposed rehabilitation and/or upgrades to the port facilities would not be substantial, and would not alter any of the ports’ locations or capacity.

A comprehensive Environmental Assessment of the proposed port development work was undertaken in March-May 2001. The following is a list of issues addressed (and mitigating measures proposed) in the EA Report with regard to the physical works proposed under the project.

- Physical intrusion on the environment of the FMO buildings
- Loss of shoreline habitat
- Pollution of aquatic environment from vessel operations (oily bilge water, spent engine oil, hazardous waste, non-toxic voluminous wastes, wet wastes and Refueling)
- Generation of Wastes on an Industrial Scale
- Generation of Objectionable Odors
- Generation of Increased Traffic Within City Limit
- Increased Demand for Public Utilities (in relation to water, electricity and sewerage treatment), and
- Increased Demand for Forest Products

Physical intrusion on the environment of the FMA buildings. Overall, the visual impact will be enhanced since most sites will be cleaned up of existing debris and wrecks that litter the areas of the development project. The sites for the new FMA buildings are practically all within the fishing port areas, themselves within the commercial ports. The only exceptions are the lakeside project sites. The buildings at Durres will consist of purpose built containerized offices and stores in order that these may be relocated to the new fisheries port in 2 to 3 year’s time. The buildings at Saranda will be reinforced concrete structures with plastered hollow-block walls and partitions in line with current local building architecture. Both buildings (office and hygiene blocks) will be single story. The buildings at Vlora will consist of rehabilitated existing shell structures with no changes in external layout. The buildings on the lakesides will consist of both office and hygiene blocks and containerized chill stores. The office and hygiene buildings will be finished in an eye-pleasing natural stone, typical of old buildings in the area. The containerized structures will be housed between stone buildings and false partition walls also finished in stone. No external mechanical parts will be left patently visible to the casual eye. The area around the root of the GEF jetty at Pogradec was put forward as a potential site for a complex but was rejected as it is currently a bathing area.

Mitigation. All the project’s buildings will be designed by local architects and made conformant with local building practices, especially around the lakeshores.

Loss of shoreline habitat – The construction of the quays at Shengjin and Saranda will entail the loss of both inter-tidal habitat and bottom habitat. With a tidal variation of around 300mm, the loss of inter-tidal habitat will be around 40 square meters at each of the port sites. The loss of bottom habitat will be around 1,000 square meters at Saranda and 1,500 square meters at Shengjin. Both areas are currently inside existing port boundaries. Alternative structures on piles may not be feasible at Shengjin and will be too costly overall when compared to the benefit since both areas are inside active port environments.

Mitigation: Some loss of habitat is inevitable. However, with good construction site management, this loss will be kept down to the bare minimum required for the construction.

Pollution of aquatic environment from vessel operations. Although the project is not funding any new vessels, the current fleet may eventually increase sailings to cover pelagic species as well. The increased use of the vessels may lead to increased pollution levels. Pollution of the aquatic environment from vessel operations typically falls into two broad categories, i.e. those from the repair of the vessels and those from the vessels themselves. Under this project, only the slipway at Saranda will be upgraded. However, the ports of Shingjin and Vlora are both destined to receive rubber-tyred mobile boat gantries under EU funding. Hence, overall, it is anticipated that 3 ports will eventually increase vessel repair operations. These repair operations will give rise to solid wastes, which will include antifouling paint scrapings and cans and machine spares and oily rags that may be considered toxic to the marine environment. Vessel operations in all harbors give rise to a variety of wastes all of which are deemed toxic or detrimental to the marine environment such as of oily bilge water, spent engine oil, hazardous solid wastes such as starter batteries and engine components and non-toxic solid wastes such as nets, fenders and other fittings.
Mitigation: Waste reception facilities will be provided for each operation separately.

- **Oily bilge water** - Except for the lakeside sites (which only use outboard engines) all the four port facilities will be equipped with an oily water separator and suction pump. Bilge water will thus be pumped ashore during refueling operations and treated via the separator to remove the oil portion (5ppm of PHC standard discharge effluent) and the clean seawater returned back to the sea.

- **Spent engine oil** - Special receptacles will be provided inside the same port areas for the disposal of used engine oil that will then be collected by authorized collectors for proper disposal. The current practice of using it to oil the trawling gear will be phased out in favor of more environment-friendly products, such as non-toxic waterproof grease.

- **Hazardous waste** - Receptacles will also be provided for hazardous solid wastes, such as starter batteries, oil filters, oily rags, etc. These will be disposed of in accordance with national environmental legislation.

- **Non-toxic voluminous wastes** - Skips or enclosed dumping enclosures will be provided for the disposal of large objects. These will be collected for disposal elsewhere in accordance with local Council legislation.

- **Wet wastes** - Airtight PVC containers will be provided in areas where wet fish wastes will be produced. However, most facilities do not process or clean fish but move it on to the market as soon as possible.

- **Refueling** - The refueling of vessels, were appropriate, will also be done in accordance with internationally accepted standards. This will involve providing the appropriate infrastructure at the jetties, which will then be operated by the FMAs. Where required (Shengjin and Saranda) the fuel tanks will be stationary and above ground to prevent leakages from going unnoticed and potentially reaching the water table. The tanks will sit inside a containment tray large enough to hold the entire contents of the tank. All fittings will be in accordance to accepted API (American Petroleum Institute) standards. At Durres and Vlora, where stationary tanks are not suitable (the Durres facility has to move in about 2 year’s time and the distances in Vlora are too large), mobile tankers will be made available. These will be towed to the refueling area by small multipurpose tractors. Once all the waste reception hardware is installed, it is proposed to implement the FAO-IMO Cleaner Harbors Program in each of the project sites. This program of environmental awareness and house keeping inside fishing harbors will be run in conjunction with the FMAs.

**Generation of Wastes on an Industrial Scale.** Apart from the wastes mentioned above, the other types of waste which may increase are wet wastes and polystyrene foam from single-use fish boxes, especially at the lake shore sites.

**Mitigation.** The project will introduce receptacles for the proper disposal of wet waste that will go a long way in solving potential hygiene and odor problems. All fish receiving centers will be equipped with heavy duty washable HDPE plastic boxes to prevent further use of polystyrene boxes on the local market. Wet wastes in appreciable quantities will increase only when the pelagic fisheries start again.

**Generation of Objectionable Odors.** No fish processing, including gutting, takes place at any of the fishing harbors as most landings are high value low volume. Only packing on ice is envisaged. Should the pelagic fisheries restart (subject to the availability of a fish processing factory opening up in Albania), a closer look at the volumes of wet fish wastes will be needed to avert the odorous conditions similar to those obtaining at the Shingjin anchovy bottling plant from being repeated.

**Mitigation.** None necessary.

**Generation of Increased Traffic Within City Limits.** All the development sites are rehabilitations of existing sites and no radical change in traffic patterns is anticipated except during construction.

**Mitigation.** This will be limited to normal working hours through the use of good construction management principles.

**Increased Demand for Public Utilities.** The fisheries development project will place a greater demand on public utilities (power, potable water and sewage treatment), but the introduction of chlorinated potable water (supply and short term storage) and sewage treatment in all the project sites will have an overall beneficial impact on personal hygiene and the environment as a whole.
Mitigation.

- **Water** - On the lakeside sites, enough water may be drawn from shallow bore wells driven in the foreshore. After chlorination the water will be stored in 17,000 Lt water tanks. Should the need for more water storage arise, ample space will be provided for the addition of extra tanks. In other municipal areas, where the supply is either erratic or does not reach the fishing port, water will have to be either piped in over a short distance or delivered by tanker from municipal sources. The water will be chlorinated and stored for use. Although water is generally plentiful, outdated and corroded pipes as well as illegal tappings make water shortages a common occurrence in most areas. Water storage infrastructure will be installed in all sites. All water supplies will be metered and the FMAs will charge for the supply. To limit the volume of water used to hose down fish boxes and the handling floors and fish stands, high-pressure cleaners (which consume only a fraction of the water from a normal hose) will be specified in each area.

- **Sewage treatment** - Sewage treatment is very problematic throughout Albania, even in large urban areas. Consequently, each project site will be equipped with a proper septic tank in reinforced concrete and all outflows from the project’s buildings and hygiene facilities will be treated on site before being discharged into percolation fields or into the sea.

- **Electricity** - Although Albania’s hydroelectric supply may be adequate for the country’s current needs (depends largely on the amount of rainfall), the transmission network is outdated and under-designed and cannot cope with the rapid increase in the use of personal household electrical appliances. As a result, frequent brownouts occur during the winter months. The project’s demand for power is low, requiring power mainly for the FMA offices and quayside public lighting. Only 2 sites (Shiroka and Udenisht) will require substantial power to run ice plants (75 kVA each). Both sites will be provided with standby generators.

Increased Demand for Forest Products. The project intends to re-introduce fish smoking as an alternative means of income for the lake fishermen at Shkodra. In addition, approximately 1,50 cubic meters of timber planking will be required for the landing jetty at Udenisht.

Mitigation. The fish smoking will only be approved once wood for smoking from sustainable sources has been identified.

Impacts on the Environment During Construction of the Facilities. During the construction phase of the facilities, some impact on the environment is to be expected. Typically, these impacts will consist of the following:

At Durres:
- Minor increase in traffic due to vehicles delivering construction materials and taking away waste materials and disruption of movement patterns to and from the jetties due to stationary construction equipment.
- Minor increases in noise levels.
- Minor adverse impacts on water quality during clean up and repair of jetties.

At Vlora:
- Minor localized deterioration in air quality from dust generation during refurbishment of port buildings.
- Minor adverse impacts on water quality during removal of wrecks resulting in re-suspension of sediment and organic matter.

At Shingjin:
- Moderate negative impacts on water quality resulting from reclamation work and construction of new quay wall.
- Minor localized deterioration in air quality from dust generation.
- Minor increase in heavy traffic due to vehicles delivering construction materials and taking away waste materials and disruption of movement due stationary construction plant.
- Moderate adverse noise impacts at nearby residential properties.

At Saranda:
- Minor localized deterioration in air quality from dust generation.
- Minor increase in traffic due to vehicles delivering construction materials and taking away waste materials and disruption of movement due to stationary construction plant.
- Moderate increases in noise level potentially impacting nearby houses and hotel.
• Moderate adverse impacts on water quality during construction of new quay wall and slipway and the removal of wrecks.

At Shkodra:
• Minor to moderate disruption to access to fishing boats and equipment (Zogaj).
• Moderate noise impacts at nearby houses (Zogaj). Minor impacts at Shiroka and Koplik.

At Ohrid:
• Minor noise impacts (all sites).

Mitigation. Given the scale and type of interventions on the environment, most of the impacts are transient in nature and implementation of good construction site management practice (use of appropriately sized equipment, equipment and material storage areas fenced off, prompt removal of waste from site to appropriate disposal, watering of access roads to limit dust, working at sea during calm weather to limit dust plumes and site working hours confined from 8.00 AM to 4.00 PM Monday to Friday, etc.) should limit these to a minimum.

Issues relating to the environmental impact during the construction and operational phases of the port rehabilitation component of the project are summarized in the following Tables (see overleaf):
PART IV – ENVIRONMENTAL MANAGEMENT PLAN

This section sets out mitigation measures and a monitoring plan for the identified environmental risks presented in the previous section.

Environmental Risks and Mitigation Measures

A summary of the primary and secondary environmental risks associated with the physical development components of the project, plus proposed mitigation measures, is presented overleaf in Table 1. This environmental risk assessment attempts to define the wider environmental impact of the project components, particularly with regard to any increase in fishing activities (both in the marine and freshwater lake fisheries) and economic activities resulting from rehabilitation of the ports and the development of aquaculture facilities. These are in line with the key environmental issues that the project is attempting to address, as detailed in Part III, namely:

- Over-Fishing and Depletion of Ocean Demersal Stocks;
- Over-Fishing and Depletion of Lagoon Fisheries;
- Over-Fishing and Depletion of Lake Ohrid Koran; and,
- Pollution from Fishing Ports.

A summary of the environmental impact of the construction and operational phases of specific physical outputs of the project, and the associated mitigating measures, and detailed overleaf in Tables 2-7.

Koran Aquaculture. The primary environmental risk from the Koran hatchery would be from the organic wastes discharged from the hatchery. To mitigate this risk, the project would utilize specially formulated fish food containing limited amounts of phosphorus, which would minimize the amount of phosphorus in the effluent discharged into lake, and would construct a small purification wetland in the area between the hatchery and the lake. The wetland or “pond” would function as a bio-filter, using specific plant and fish species that are able to utilize the organic waste from hatchery operations. A plan for regular monitoring of water quality is being developed, and technical assistance would be provided to hatchery staff for environmental management.

Shrimp Aquaculture. The hatchery's main impact would be the discharge of effluent into the sea in front of the farm. To minimize the impact of this discharge, the project would construct a purification wetland from which filtered water can flow into the sea. For the grow-out ponds, the soil would be tested for permeability and clay would be added to seal pond beds and prevent seepage of seawater. Filter screens would be installed at the pond outlets to prevent the escape of cultured shrimp into the wild. To prevent disease, strict quarantine procedures would be used for new brood stock received by the project. In addition, the management practices described in a document called “Codes of practice for responsible shrimp farming” issued by the Global Aquaculture Alliance would be adopted by the project. Eventual sludge would be used as fertilizer in the adjacent agricultural fields or dumped in one of the unused carp ponds first for some time to leach out the salt.

Sea Bass and Sea Bream Aquaculture. The wastewater from Sea Bass and Sea bream aquaculture will be treated together and in the same way as the wastewater from shrimp culture.

Tilapia Aquaculture. This activity would be limited during the first year to small cage cultures in irrigation reservoirs, and would be monitored very carefully by the Fisheries Research Institute. Fingerlings would be carefully controlled by the FRI. Experience has shown that Tilapia cannot survive the winter in Albania so there is no risk of accidentally introducing a non-indigenous exotic species into Albania rivers.

Carp Aquaculture. Carp has been stocked in reservoirs in Albania for many years and therefore there is no need for the monitoring of environmental impact, other than to ensure that fish stocking densities are kept within acceptable limits. This will be done by the Fisheries Research Institute.
Rehabilitation of Ports. Infrastructure works would be designed in conformity with all the relevant codes and conventions. In addition, the project would install waste reception hardware and implement the FAO-IMO Cleaner Harbors Program at each of the project sites in conjunction with the FMAs. The project would also introduce receptacles for the proper disposal of wet waste that will go a long way in solving potential hygiene and odor problems. Receptacles would also be provided for hazardous solid wastes, such as starter batteries, oil filters, and oily rags.

Monitoring Plan for Key Environmental Risks

Over-fishing of Marine, Lagoon and Freshwater Lake Fish Resources. The project aims to establish a network of Fishery Management Associations (FMAs). One of their primary functions will be to co-manage, with the state, the fish resources. The FMAs will therefore be responsible for implementing and enforcing the amended Law on Aquaculture and Fisheries and its related regulations. Monitoring indicators for the environmental management plan include the following:

- Data on fish landings (by species, gear type, and zone)
- Trade statistics (fish exports)
- FMA records (membership fees, port dues paid, number of foreign vessels visiting ports etc)
- Vessel registry and number of licenses issued, and local employment records
- Number of new regulations and local bye-laws to co-manage resources
- Number of infringements of local fisheries regulations and bye-laws, and associated prosecutions
- Monitoring, Control and Surveillance records

A fundamental aim of the project is to build up the capacity within the fishing communities themselves, through the establishment of FMAs, to co-manage their fish resources. The project will be providing on-going support to the FMAs, and regular monitoring of the above indicators will therefore be the responsibility of the National Coordinators and Regional Promoters working with the FMAs.

Pollution from Ports. The FMAs will monitor the handling of waste via the reception facilities provided under the project. It will be an integral part of their management of port facilities. Port management plans will be prepared for each port detailing environmental monitoring indicators.

Restocking of Koran on Lake Ohrid. The effluent of the purification wetland will be analyzed for Biochemical Oxygen Demand (BOD) according to standard methods every 2 months throughout the year. Monitoring equipment will be provided under the project. The technical personnel of the Lin hatchery will be trained in BOD analysis by the consultant from the Hydrobiological Institute in Ohrid who will assist the project. Monitoring of the effectiveness of the restocking program will be assessed through the tagging program that will be carried out as part of the Koran restocking component.

Kavaja Fish and Shrimp Farm. The effluent from the Kavaja fish and shrimp farm will be analyzed and monitored in the same way and with the same frequency as the effluent from the hatchery at Lin.
### TABLE 1: Summary of Primary & Secondary Environmental Risks of the Project Components and Long-Term Mitigation Plan

<table>
<thead>
<tr>
<th>Environmental Parameter</th>
<th>Type of Impact</th>
<th>Overall Significance of Potential Impact</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] Over-exploitation of fish stocks</td>
<td></td>
<td>X</td>
<td>Port facilities will not be expanded. Existing facilities rehabilitated for safety and hygiene purposes only. Only set nets will be provided. Stock assessment to re-start through Fisheries Management Associations. Closed seasons and areas to be introduced.</td>
</tr>
<tr>
<td>[2] Capture of non-target species</td>
<td></td>
<td>X</td>
<td>Co-management plans will aim to limit environmental damage by trawlers and impact on the coastal zone/ecologically sensitive areas.</td>
</tr>
<tr>
<td>[3] Habitat damage</td>
<td></td>
<td>X</td>
<td>Institutional strengthening through Fisheries Management Associations. Fishermen sensitized to damage through resource management input. Limited Monitoring Control &amp; Surveillance equipment will be provided.</td>
</tr>
<tr>
<td>[4] Use of explosives</td>
<td></td>
<td>X</td>
<td>Institutional strengthening through Fisheries Management Associations. Strengthening of legislation and links between DoF and enforcement agencies. Fishermen sensitized to damage through resource management input. Limited Monitoring Control &amp; Surveillance equipment will be provided.</td>
</tr>
<tr>
<td>[5] Ghost Fishing</td>
<td></td>
<td>X</td>
<td>Institutional strengthening through Fisheries Management Associations. Fishermen sensitized to damage through resource management input. Only set nets will be provided under this project.</td>
</tr>
<tr>
<td>[6] Increased demand for fish</td>
<td></td>
<td>X</td>
<td>Stock assessment to be improved through Fisheries Management Associations. Non-capture fisheries to be strengthened through technical input. Other income generating activities to be introduced (boating and diving tourism) to ease the pressure on the marine capture fisheries.</td>
</tr>
<tr>
<td>[7] Visual intrusion on environment</td>
<td></td>
<td>X</td>
<td>Design of buildings to conform to local building practices. All buildings single story. The rehabilitation works will not affect existing breakwaters or other heavy construction.</td>
</tr>
<tr>
<td>[8] Loss of shoreline habitat</td>
<td></td>
<td>X</td>
<td>Reclamation reduced to bare minimum to make up for lack of space at existing sites. During construction, best construction site management practice to limit additional loss of habitat through contractor negligence. The rehabilitation works will not affect existing breakwaters or other heavy construction.</td>
</tr>
<tr>
<td>[9] Water quality degradation</td>
<td></td>
<td>X</td>
<td>During construction, best construction site management practice to limit water quality degradation due to contractor negligence. In operational phase, installation of waste reception facilities in compliance with IMO regulations. Outflow from aquaculture facilities will be treated by the construction of purification wetlands.</td>
</tr>
<tr>
<td>Environmental Parameter</td>
<td>Type of Impact</td>
<td>Overall Significance of Potential Impact</td>
<td>Mitigation Measures</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>----------------</td>
<td>------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>[10] Aquatic ecology degradation</td>
<td></td>
<td>Low Indirect</td>
<td>During construction, best construction site management practice to limit additional degradation of aquatic ecology due to contractor negligence. In operational phase, installation of waste reception facilities in compliance with IMO regulations. Previous trials confirm that introduction of exotic species unable to over-winter</td>
</tr>
<tr>
<td>[11] Generation of wastes on industrial scale</td>
<td></td>
<td>Moderate Indirect</td>
<td>No mitigation required at this stage as no fish processing will take place inside any of the port area that is managed by the FMAs.</td>
</tr>
<tr>
<td>[12] Generation of objectionable noise</td>
<td></td>
<td>Moderate Indirect</td>
<td>During construction, best construction-site management practices will be enforced to limit inconvenience (strict working hours).</td>
</tr>
<tr>
<td>[13] Generation of objectionable odors</td>
<td></td>
<td>Moderate Indirect</td>
<td>No mitigation required at this stage as no fish processing will take place inside any of the port area that is managed by the FMAs.</td>
</tr>
<tr>
<td>[14] Generation of increased traffic</td>
<td></td>
<td>Moderate Indirect</td>
<td>During construction, best construction site management practice to limit inconvenience due to construction plant. In operational phase, traffic will be more or less equal to current levels. Parking areas have been set aside at all the sites to improve neighborhood traffic management.</td>
</tr>
<tr>
<td>[15] Increased demand for potable water</td>
<td></td>
<td>Moderate Indirect</td>
<td>Water storage tanks will be installed at all the sites to make up for inadequate infrastructure and to bring up the ports in line with current hygiene standards.</td>
</tr>
<tr>
<td>[16] Increased demand for electricity</td>
<td></td>
<td>Moderate Indirect</td>
<td>Some ports will be provided with new transformers to replace obsolete equipment. Overall power requirements are for offices and small public lighting systems.</td>
</tr>
<tr>
<td>[17] Increased demand for sewerage treatment</td>
<td></td>
<td>Moderate Indirect</td>
<td>Three stage septic tanks and percolation fields will be provided at each of the ports to handle sewage wastes.</td>
</tr>
<tr>
<td>[18] Increased Demand for forest products</td>
<td></td>
<td>Moderate Indirect</td>
<td>Project requirements kept to bare minimum (planking on small lakeshore jetty). Fish smoking at the lakeshore sites will only be approved when alternative sources (plantations) of timber have been secured.</td>
</tr>
<tr>
<td>[19] Impact on Cultural Heritage</td>
<td></td>
<td>Moderate Indirect</td>
<td>No mitigation necessary as most port and aquaculture development is inside existing sites.</td>
</tr>
<tr>
<td>Environmental Parameter</td>
<td>Type of Impact</td>
<td>Overall Significance of Potential Impact</td>
<td>Mitigation Measures</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------</td>
<td>-----------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>[20] Impact on Land Use</td>
<td>X</td>
<td>X</td>
<td>No mitigation necessary as improved port layouts and additional paving has a positive impact on land use inside the existing port areas. Reclamation at two of the port sites also increases land area for storage. Aquaculture development only provides for the rehabilitation of existing disused facilities. No negative impact to existing wetlands. Enhancement of terrestrial ecology through improvements in water quality in lagoons and development of wetland areas.</td>
</tr>
</tbody>
</table>
TABLE 2: Predicted Impact and Mitigation Plan – Port Rehabilitation at Durres

<table>
<thead>
<tr>
<th>Environmental Parameter</th>
<th>Type of Impact</th>
<th>Magnitude of Impact</th>
<th>Duration</th>
<th>Overall Significance</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct Indirect</td>
<td>Low Moderate High</td>
<td>Short Medium Long</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality</td>
<td>X - X</td>
<td>X</td>
<td>X</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Best Construction Site Management Practice - Fencing of site, use of appropriate equipment, immediate removal of spoil, proper disposal of spoil.</td>
</tr>
<tr>
<td>Aquatic Ecology</td>
<td>X - X</td>
<td>X</td>
<td>X</td>
<td>Low</td>
<td>Unlikely to be any significant seabed habitats due to location within commercial port.</td>
</tr>
<tr>
<td>Terrestrial Ecology</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Air Quality</td>
<td>X - X</td>
<td>X</td>
<td>X</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Noise</td>
<td>X - X</td>
<td>X</td>
<td>X</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Landscape &amp; Visual</td>
<td>X - X</td>
<td>X</td>
<td>X</td>
<td>Negligible</td>
<td>None</td>
</tr>
<tr>
<td>Cultural Heritage</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Land Use</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Traffic/Access</td>
<td>X - X</td>
<td>X</td>
<td>X</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Operation Phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality</td>
<td>X + X</td>
<td>X</td>
<td>X</td>
<td>Moderate</td>
<td>Project provides IMO standard Waste Collection System</td>
</tr>
<tr>
<td>Aquatic Ecology</td>
<td>X + X</td>
<td>X</td>
<td>X</td>
<td>Low</td>
<td>None</td>
</tr>
<tr>
<td>Terrestrial Ecology</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Air Quality</td>
<td>X + X</td>
<td>X</td>
<td>X</td>
<td>Low</td>
<td>Slight improvement due to paving of the site thereby reducing dust generation</td>
</tr>
<tr>
<td>Noise</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Landscape &amp; Visual</td>
<td>X + X</td>
<td>X</td>
<td>X</td>
<td>Low</td>
<td>None</td>
</tr>
<tr>
<td>Cultural Heritage</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Land Use</td>
<td>X + X</td>
<td>X</td>
<td>X</td>
<td>Moderate</td>
<td>The new project layout will result in improvements in the operation of the site No additional measures necessary.</td>
</tr>
</tbody>
</table>

1 Denotes positive or negative impact
# TABLE 3: Predicted Impact and Mitigation Plan – Port Rehabilitation at Shengjin

<table>
<thead>
<tr>
<th>Environmental Parameter</th>
<th>Type of Impact</th>
<th>Magnitude of Impact</th>
<th>Duration</th>
<th>Overall Significance</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct</td>
<td>Indirect</td>
<td>+/-</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Construction Phase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Ecology</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terrestrial Ecology</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Quality</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landscape &amp; Visual</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Heritage</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land Use</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operation Phase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Quality</td>
<td>X</td>
<td>+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Ecology</td>
<td>X</td>
<td>+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terrestrial Ecology</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Quality</td>
<td>X</td>
<td>+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landscape &amp; Visual</td>
<td>X</td>
<td>+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Heritage</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land Use</td>
<td>X</td>
<td>+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 4: Predicted Impact and Mitigation Plan – Port Rehabilitation at Saranda

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### TABLE 7: Predicted Impact and Mitigation Plan – Development of Koran Aquaculture (Lake Ohrid)

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MINUTES OF ENVIRONMENTAL CONSULTATION

On Friday, June 15, 2001, it was organised the Public Environmental Consultation (hereinafter called "Consultation") of the Albanian Pilot Fishery Development Project. The consultation took place in the meeting room of the institute where are based the project offices, in the following address:

Projekti Pilot i Zhvillimit te Peshkimit  
Rr. Muhamet Gjollesha Nr. 56  
Prane Instititit te Kerkimeve Ushqimore, Kati III  
Tirane

The aim of this consultation was to have the public opinion, reaction and recommendations about the environmental impacts of the project activities. This consultation was organised after the World Bank appraisal mission and prior to negotiations as a condition to be accomplished based in the World Bank Guidelines.

The following procedure was set up and followed for a successful and effective organising and completion of the consultation:

An advertisement was published in three national daily newspapers indicating the title of the activity, the possible participants (specifying that it was an open consultation), date, time and place. A copy of the advertisement is herein attached. Furthermore, PPU made a lot of notifications via other ways of communications (telephone, e-mail, fax or verbal) to potential individuals, NGOs and Institutions asking for their participation and feedback.

Participation in the Consultation was of a wide range from profession, institutional representation and age point of view. A list of participants is herein attached. Copies of the Environmental Assessment report, prepared by the World Bank appraisal mission and translated in Albanian, were available all the time for the participants. Members of PPU staff were present during consultation in order to explain and clarify the project concept and in details different issues concerning the real physical interventions in ports/landing sites rehabilitation and aquaculture component and the need for such changes/rehabilitation and interventions.

The general opinion of the participants was a total agreement on how were described the possible environmental impacts and mainly the planning of mitigation measures. They expressed themselves that the report was totally completed, with all the necessary explanations and clarifications for different activities. The participants fully supported the project concept as being suitable for the actual situation of fishery sector in Albania as well as in line with Albanian conditions and the international standards.

Participants expressed their positive opinions on the mechanisms that have been established to monitor and evaluate the impact of the project on the environment, such as preparation of port management plans and a periodic monitoring of the effluents from aquaculture activities. On the other hand, the participants indicated that the mitigation measures planning would create more opportunities for enforcement of the Law for Fishery and Aquaculture and supportive by-laws and local regulations.

Participants in the consultation expressed themselves positively for the link between the physical interventions in ports/landing sites and the legal frame for successful implementation of these activities. In this point a big success of the discussion was the explanation and understanding of the draft amendments on the Law, especially the issues related to the transfer of port management to the FMAs and the determining of the boundaries and activities within Co-management Areas.
The National Environmental Agency was not present in the consultation due to the availability of its representatives that day. However, the PPU received its opinion on the Environmental Assessment and the whole project concept. The NEA agrees on what the project is going to achieve and supports its activities for every project component.

Department of Fisheries

National Environmental Agency

Director

Jaspar Dedej
Director
A copy of the advertisement

Press Release on the
Public Environmental Consultation

NEWSPAPERS:
KORRIERI
KOHAJONE
EKONOMISTI

Please publish in two editions the following advertisement:

"Albanian Pilot Fishery Development Project" (AL-PE-P069479), financed by World Bank, organises the Public Environmental Consultation for the Environmental Impact Assessment of the project activities mainly in the following components:

a. Rehabilitation/upgrading of fish ports and landing sites
b. Aquaculture development

There are invited to participate representatives of NGOs working in the environment sector, academics and researchers of the scientific research institutions, pedagogues, students and individuals interested in the environmental issues. Consultation will be held on Friday, June 15, 2001, from 9.00 till 16.00, in the meeting room in the following address:

Projekti Pilot i Zhvillimit te Peshkimit
Rr. Muhamet Gjollesha Nr. 56
Prane Institutit te Kerkimeve Ushqimore, Kati III
Tirane

NOTE: The advertisement should be spread in a quarter of the newspaper page and published in the editions of the dates 9 and 12 June 2001.
**List of participants**

In the Environmental Consultation participated the following persons:

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<tr>
<th>Name</th>
<th>Representative of</th>
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<tr>
<td>Roland Kristo</td>
<td>General Director of Fisheries</td>
</tr>
<tr>
<td>Ilia Poci</td>
<td>Teacher</td>
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<tr>
<td>Merita Makri</td>
<td>Specialist in the Department of Fisheries</td>
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<tr>
<td>Taulant Bino</td>
<td>Researcher in the Museum of Natural Sciences</td>
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<tr>
<td>Andrian Vaso</td>
<td>Aquarius NGO</td>
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<tr>
<td>Valbona Shutina</td>
<td>Local representative of Milieukontakt</td>
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<tr>
<td>Ferdinand Bego</td>
<td>Pedagogue – Faculty of Natural sciences</td>
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<tr>
<td>Suzana Diamanti</td>
<td>Aquaculture specialist in the Irrigation Project</td>
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<tr>
<td>Harrillaq Vjeri</td>
<td>Fishermen Association in Saranda</td>
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<tr>
<td>Mezan Mezani</td>
<td>Fishermen Association in Vlora</td>
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<tr>
<td>Selim Hoxha</td>
<td>Water Engineer, Retired</td>
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<tr>
<td>Granit Shehu</td>
<td>Rainbow NGO</td>
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<tr>
<td>Mihal Dhima</td>
<td>Besa Scout Association</td>
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<td>Leke Gjiknuri</td>
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<td>Gezim Hoxha</td>
<td>Specialist, Private Water Supply Company</td>
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<td>Ilia Mikerezi</td>
<td>Biologists Association</td>
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<tr>
<td>Enkelejda Velo</td>
<td>Specialist for urban wastes – ECAT</td>
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<td>Elda Kamani</td>
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<td>Luan Sejdini</td>
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