

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/236217514>

Environmental Impact Assessment Policy and Process for Aquaculture in the Kyrgyz Republic FAO Project Support to Fishery...

Article · November 2011

CITATIONS

0

READS

248

1 author:



[Richard Corner](#)

Longline Environment Ltd

22 PUBLICATIONS 402 CITATIONS

SEE PROFILE

Environmental Impact Assessment Policy and Process for Aquaculture in the Kyrgyz Republic



FAO Project Support to Fishery and Aquaculture Management in the Kyrgyz Republic
GCP/KYR/003/FIN



Environmental Impact Assessment Policy and Process for Aquaculture in the Kyrgyz Republic

Prepared by:
Dr Richard Anthony Corner
(International Consultant in Environmental Impact Assessment)

FAO Project Support to Fishery and Aquaculture Management in the Kyrgyz Republic
GCP/KYR/003/FIN

EXECUTIVE SUMMARY

Eager to sustainably develop fisheries and aquaculture industry further the Government of the Kyrgyz Republic has worked with the Food and Agriculture Organisation (FAO) project “*Support to Fishery and aquaculture management in the Kyrgyz Republic*”(GCP/KYR/003/FIN) funded by Government of Finland. As part of this programme a need was identified to develop a consistent approach to aquaculture applications, using a more standardised approach through Environmental Impact Assessment or EIA.

The Kyrgyz Republic has within its statutes laws on the need for EIA for planned major projects that will impact the environment. Fisheries activity is identified, although aquaculture is not specifically identified. Although the need for EIA exists, there are no specific written aquaculture related rules, regulations, helpful documentation, such as guidelines, or a process laid out that makes clear what is necessary when applications are made and development takes place. Within the current process, and where aquaculture licences are granted, there are few or no conditions applied to the licence. This renders monitoring difficult, with no specific means to limit or otherwise change a farmers activities in the event of impacts being found, difficulty in imposing management changes, and difficulty in revoking licences already granted where the environmental or other needs change. Alongside the need to increase aquaculture production capacity, the report highlights that the Kyrgyz Republic has specific requirements on the protection of habitats and species within its borders, and has a number of key sensitivities that aquaculture development needs to take account of. It was recognised more generally that the issues highlighted above would need to be addressed in the longer term and this report specifically addressed the need for an EIA approach and the development of guidelines and templates to enable this to be achieved. The EIA approach and the guidelines and templates recommended in this report were arrived through meetings and consultations with key actors and a participatory stakeholder workshop

The clearest definition of EIA is “*the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of development proposals prior to the major decisions being taken and commitments made*”. What the investigation and report proposes is a standardised method of application that applies to all types of commercial aquaculture development and activity including production in ponds, growth of fish in cages, tank-based hatchery production of fry for fishery re-stocking and pond/cage culture and where appropriate government research facilities. Specific guidelines and associated templates were provided that should enable the Kyrgyz Republic to apply a consistent and open approach. The guidelines identify the stages to go through; what each of the stages are and how they should be conducted; the responsibilities of the various stakeholders such as the developer/farmer and the Competent Authority, and the responsibilities of the other non-statutory stakeholders as they are involved through various consultations. The EIA approach and the associated guidelines follow an internationally recognised process. There is the addition of a pre-application consultation phase, as a means to discuss the proposed development and to informally consult stakeholders in order to highlight at an early stage the key factors to be addressed. The report highlights that there will need to be a period of

implementation, perhaps through test-case application(s) in which, through trial and adaptation, a more rigorous process can be finalised. Implementation is not likely to occur quickly, with errors made, but in the long term will provide a robust and workable process that will support aquaculture development. The report also includes a review of the current status of EIA for aquaculture in the Kyrgyz Republic.

Finally background to and a potential methodology for an assessment of the Carrying Capacity of Issyk-Kul Lake to take aquaculture production, where a controversy exist with respect to development of cage culture, is included in the report. What was outlined was an approach that takes account of physical capacity of systems to maintain a level of aquaculture that is not deleterious, takes account of production capacity at a more localised level within a water body so that the ecological capacity to assimilate wastes is not exceeded. Carrying Capacity is more specifically estimated using a modelling approach and an appropriate methodology was outlined.

Contents

EXECUTIVE SUMMARY	1
SECTION I: BACKGROUND AND INTRODUCTION	5
1.0 Background	5
2.0 Introduction	5
3.0 Introduction to EIA.....	7
4.0 Sensitivities in the Kyrgyz Republic	8
5.0 The current activity defined	11
SECTION II: REVIEW THE CURRENT STATUS OF THE EIA REGULATIONS AND PROCEDURES RELEVANT TO AQUACULTURE DEVELOPMENT ACTIVITIES/PROJECTS.....	14
2.1 Introduction	14
2.2 Review of current status.....	15
2.2 Legislative components.....	18
2.3 Stakeholders in Aquaculture	21
2.4 Synopsis of application process, set against an international context.....	23
SECTION III: GUIDELINES FOR A PRACTICAL EIA PROCESS FOR AQUACULTURE DEVELOPMENT ACTIVITIES/PROJECTS APPLICABLE IN THE KYRGYZ REPUBLIC.....	31
3.1 Introduction	31
3.2 Defining the EIA Process	31
3.3 Summarising the process.....	33
3.4 Guidance	38
3.4.1 Legal components.....	38
3.4.2 Stakeholders defined	39
3.4.3 EIA guidance	40
3.4.3.1 Pre-application Discussion	40
3.4.3.2 EIA screening (Initial Environmental Examination - IEE or need for EIA):.....	43
3.4.3.3 EIA Scoping assessment (scope of the EIA)	47
3.4.3.4 The Environmental Impact Statement	49
3.4.3.5 Delivery and reviewing the adequacy of the EIS	51
3.4.3.6 Consultation phase	52
3.4.3.7 Decision making phase	53
SECTION IV: TEMPLATES TO BE USED BY THE APPLICANTS FOR AQUACULTURE DEVELOPMENT PROJECTS AND ROLES AND RESPONSIBILITIES OF AGENCIES AND INDIVIDUALS TO IMPLEMENT THE EIA PROCESS.....	58

SECTION V: DEVELOPMENT OF AN OUTLINE METHODOLOGY/GUIDELINE TO DETERMINE THE CARRYING CAPACITIES OF ISSYK-KUL AND SON-KUL LAKES..... 89

5.1 Introduction 89

5.2 Carrying capacity 89

5.3 Approaches possible 90

5.4 Data provision 91

Appendix 1. List of main activities requiring EIA from Instruction on how to complete an [Environmental] Impact Assessment document (Registered in the Ministry of Justice Kyrgyz Republic July 4, 1997 Index 386)..... 93

SECTION I: BACKGROUND AND INTRODUCTION

1.0 Background

This report presents the key outcomes of an activity of the FAO Project Support to Fishery and Aquaculture Management in the Kyrgyz Republic (GCP/KYR/003/FIN) to assess the current status of and to determine a new process for Environmental Impact Assessment for Aquaculture in the Kyrgyz Republic. More specifically it is associated with development of aquaculture facilities in and around Issyk-Kul Lake in the east of the country, but is equally applicable to aquaculture developments in all parts of the territory.

The overall objective of the activity and the associated workshop/training initiative was to develop an appropriate policy and some guidelines to improve the environmental impact assessment capacity within the aquaculture sector in the Kyrgyz Republic, and through the workshop provide capacity building within and between the relevant stakeholders. This is not to say that there is not currently a system, with associated decisions, fees and follow-up.

However, it was generally recognised that there was a need for an increasingly professional and structured approach to the development of aquaculture within the Kyrgyz Republic, covering both the Farmers/Developers, State Agencies and other stakeholders. And within this to provide some guidelines and templates that may be used to improve this structured approach. In this context aquaculture refers to pond culture, raceway culture and cage culture of freshwater fish species, developed for both the marketplace and for fish stock enhancement and re-stocking.

This activity “Environmental Impact Assessment Policy and Process for Aquaculture in the Kyrgyz Republic” was an activity under the FAO Project *Support to Fishery and aquaculture management in the Kyrgyz Republic* (GCP/KYR/003/FIN) started in 2009 and due for completion in 2013.

This final report follows two missions to the Kyrgyz Republic. The first mission was completed over the period 10th July 2011 to 30th July 2011, with a visit to Kyrgyzstan (10th to 23rd July), mainly centred on Bishkek, and Karakol in Issyk-Kul Oblast. The second mission was completed over the period 26th September to 2nd October 2011, and encompassed a training workshop which took place over 29th and 30th September. At this training workshop there was an opportunity to discuss and gain feedback on the proposed guidelines and templates and to allow the final outcomes to be refined.

2.0 Introduction

From discussion held during Mission One there was a general perception that during the soviet era, through State control, the rules and regulation for aquaculture activity were more clearly defined than they are at present. More importantly there was a general consensus,

from all stakeholders, that there was a great need to improve the current system, in terms of application, licensing and monitoring. This can be achieved through the application of an Environmental Impact Assessment (EIA) process for aquaculture. The implementation of an EIA system has to take account of the situation within the country, the current processes, but recognising the lack of experience in this area as it relates to aquaculture, a lack of available funding, a lack of capacity and expertise in EIA in the aquaculture sector, but the willingness for overall improvement.

Aquaculture development in the Kyrgyz Republic has undergone a number of phases. Developed predominantly during the soviet era (pre-1991) since this time the system of farms of all types has reduced, production and productivity has reduced, as has appropriate regulatory control. At present the aquaculture sector in the Kyrgyz Republic is small, limited to a few hundreds of tonnes per annum but is capable of growing significantly as demand for fish products improves as per capita wealth increases.

Previous activity centred on pond culture, both for food and also for re-stocking of Issyk-Kul and other larger lakes, typically for a range of introduced species including Sevan trout and Pikeperch. Around Issyk-Kul Lake there are reported to be some 600 ha of ponds, with as many as two-thirds these in disuse (Alamonov, pers comm.). The ponds seen tend to be used for the polyculture of 2 or 3 carp species in a mix of native (Common carp) and non-native species (Silver carp and Grass carp). Through the UNDP/GEF project on Strengthening Policy and Regulatory Framework for Mainstreaming Biodiversity into Fishery Sector some Marinka and Naked Osman have been grown and added to Issyk-Kul Lake (Millington and Pavlova, 2010).

Cage culture was attempted during the Russian era prior to 1991, but generally failed mainly due to lack of expertise and suitable feed sources. Cage culture of Rainbow trout was attempted in the 1980's and it remains unclear what happened to the fish when the cage sites failed, and fish may have been released into Issyk-Kul Lake. Reproductive potential of these predatory fish is unknown. Most recently (since 2005) Rainbow trout has been re-introduced to Issyk-Kul Lake as a species cultured in cages. There is a general concern in Kyrgyz government agencies and elsewhere that this predatory piscivorous fish will further deplete endemic stocks, and more quickly. Rainbow Trout has not recently been added to the fishery stock as far as is known, but is grown in cages where escapes are possible. It was noted during meetings with various stakeholders that Rainbow Trout have been caught "regularly" in Issyk-Kul Lake over the last 3-4 years, evidenced by photographs, which suggests such escapes have nonetheless happened. At present four companies operate Rainbow Trout farms, and have 26 cages between them, mostly circular cages with cage diameters of 12-15m and depths of 8-12m.

The introduced species mentioned above are all predatory on otherwise generally non-predatory endemic fish species, and have likely added to the decline of endemic species and reduced fishery catches within Issyk-Kul Lake in recent years. It must be said that declines in catches were occurring well before the re-introduction of Rainbow Trout cage culture in 2005.

Legal fishing occurred in Issyk-Kul until 2008, when a moratorium was introduced. Continued illegal fishing will be playing a significant part with low fish populations, but will also be affected by the introduced species. This is a very simplified assessment of the situation, which is significantly more complicated than blaming one thing or the other for diminished native fish stocks. The UNDP/GEF project is attempting to reverse the species reduction trend.

3.0 Introduction to EIA

The EIA process is an internationally recognised method of investigating the likely impacts of a development on the surrounding environment before the development has taken place, and for providing structured and defined environmental management and monitoring programmes. It provides a system of investigation, in which the risks of impacts happening are assessed and evaluated; of having decisions based on sound scientific information; mitigation and management measures applied; and a basis for monitoring developed to ensure the proposed impacts do not exceed defined environmental standards. Importantly it is a process that should allow all relevant stakeholders to make their comments on a proposal, and have their concerns and observations responded to, in the process of coming to a decision to approve or not approve a development.

Globally, EIA is generally well implemented for large infrastructure projects, such as oil installations, power generation projects, mining and road development, for example. In the Kyrgyz Republic recent projects that have undergone at least Initial EIA include the Issyk-Kul Sustainable Development Project ADB TA No. 7228 KGZ to improve waste disposal in Issyk-Kul Oblast (Ministry of Transport and Communications of the Kyrgyz Republic, 2010) and the CAREC Transport corridor 1 (Bishkek to Torugart Road) Project 3 (2009).

Less well developed globally is application of EIA within the aquaculture sector. This is, however, improving all the time as more countries recognise the benefits of EIA in developing a sustainable aquaculture industry (FAO, 2009). Many countries now implement EIA for aquaculture developments to varying degrees.

The decision to enact EIA depends mostly on the production type. Intensive culture systems, such as shrimp culture and cage culture systems in particular tend to have a more developed EIA process than other sectors. It is an accepted view that more intensive production systems, or development in areas that are environmentally sensitive, are more likely to require EIA. This is because the risks associated with impacts are liable to be greater. It is important in this context to fully understand these risks and provide mitigation against them.

Many countries now have aquaculture-specific EIA legislation. Where aquaculture-specific laws are not in place, often the requirements are met through regulations, which hold less force in law, but are accepted by all parties as being of benefit to the development of the sector. In many cases countries have both.

Some countries have laws defining what circumstance will definitely require an EIA (e.g. Europe), but nearly all define aquaculture as an industry that may or may not require EIA. Size of development, sensitivity of the area, species being grown and level of impact and risk, are all reasons to trigger an EIA process. Whether or not a full EIA is required, there is generally a minimum obligation to provide an initial investigation or “screening” of developments to determine whether or not more detailed assessment is required. Importantly a simple screening, whether or not an EIA is subsequently required, allows Governments and Regulators to maintain control over development and have a database of aquaculture facilities. Such information is particularly useful for aquaculture statistics, such as those produced by FAO (e.g. Fishstat).

It is important to recognise that globally the majority of fish-based production occurs in small, local, often family based extensive systems and full EIA is not implemented. But such production is not unregulated and alternate standards are nonetheless applied, mostly through “soft” means such as Best Management Practice, Codes of Practice or Codes of Conduct or a combination of these (e.g. in S.E Asia, Europe, USA,). These are often managed through the production of associated practical guidelines generated typically through a Department of Fisheries and Aquaculture and / or Environmental Agencies. Such guidelines not only define the minimum standards expected, but also often state which types of activity will require EIA or more significant investigation before approval, based on sound criteria.

A recent publication, “Environmental Impact Assessment and monitoring in Aquaculture” (FAO, 2009) provides a good summary of the key requirements of EIA in aquaculture, and provides various global syntheses (case studies) which are a good source of further information.

4.0 Sensitivities in the Kyrgyz Republic

In the Kyrgyz Republic this project is centred on Issyk-Kul Lake in the eastern province of Issyk-Kul Oblast.

Biosphere Reserve

Issyk-Kul is a world heritage site, recognised by UNESCO through their Man and Biosphere Programme, becoming a Biosphere Reserve in 2001. Covering 4.3 million hectares, and being approximately 50% of the land/water area of Issyk-Kul Oblast, the designation comes from the many and varied ecosystems present and the many endemic and indigenous plant and animal species therein. The general UNESCO description of the Biosphere Reserve is thus:

“Semi-desert and desert ecosystem in foothill zone (1,600-2,400 m above sea level) characterized by halophyte genera such as *Artemisia*, *Acanthus*, *Ephedra* etc.; foothill steppe ecosystems; meadows with Kentucky blue grass, sea buckthorn, short-awned barley etc.; Juniper and spruce forests (2,000 - 3,000 m asl.) including Tyan-Shan spruce, Shrenk spruce, Turkestan juniper etc.; alpine

and sub-alpine meadows (2,600 - 4,000 m asl.); high mountain syrt zone (high mountain tundra, 2,700 - 3,500 masl.) characterized by feather grass, fescue, meadow grass etc.; water ecosystems (Issyk Kul Lake, mountain rivers); forestry systems; pasture land; mining; agroecosystems, settlement areas”

(Source:

<http://www.unesco.org/mabdb/br/brdir/directory/biores.asp?code=KIZ+02&mode=all>).

Within the Biosphere Reserve, Issyk-Kul Lake covers 623,000ha (6230 km²) or 14.5% of the Reserve. It is the 10th largest lake in the world by volume, containing approximately 1,730 cubic km (or 1.73 x 10¹⁵ liters) of (slightly saline, 4-6ppt) water. It is assumed the salinity is driven by the surrounding geology, with large land areas surrounding the lake being of clay minerals. It is the 7th deepest Lake in the world at 668m, with a mean depth of 278m, and according to Baetov (2006) 38% of the lake (by surface area) is less than 100m deep. It is also the 2nd largest navigable mountain lake with an elevation of 1,607m.

RAMSAR site

The lake is a RAMSAR site, under the International Convention on Wetlands (Ramsar, 1971), designated originally in 1976. According to “The List of Wetlands of International Importance” (dated 04 July 2011, available at <http://www.ramsar.org/doc/sitelist.doc>):

“Issyk-kul Lake was designated for the Ramsar List by the former Soviet Union in 1976 and added to the Montreux Record in 1990. The site was designated in 2002 by the Kyrgyz Republic, and discussions are presently under way with Kyrgyz authorities about its present status vis-à-vis the Montreux Record”.

The Montreux record is a record of Ramsar Sites where changes in ecological character have occurred, are occurring or are likely to occur and there is clearly some discussion about whether Issyk-Kul should be on this list or not. The details are unknown.

Fishery and trans-located species

Issyk-Kul Lake was an important “official” national fishery until 2008 when a fishing moratorium was imposed, to reduce overfishing of endemic species. Distinction is made here in terms of “official” as it is generally recognized that regardless of the moratorium fishing activity still takes place on a daily basis, by fishermen who by virtue of the moratorium are now considered poachers. Such fishing, using gill nets, was observed during Mission One. A side-effect of such a moratorium is to reduce the available data on fish stocks and catches, as legal fishing is limited or non-existent and unofficial catches by poachers are understandably unregulated and unreported. There remains a significant fishing pressure.

The Lake contains (depending on source) up to 27 species of fish, with 10 of these being indigenous, 5 of which are endemic. A larger proportion of the species present are thus introduced or alien species. The 5 endemic species are *Leuciscus schmidtii* (Chebak or

Smchmidt's Dace), *Leuciscus bergi* (Chebachok or Issyk-Kul Dace), *Gobio gobio* (Lake Issyk-Kul gudgeon), *Schizothorax pseudoaksaiensis issykulli* (Issyk-Kul Marinka or Snow Trout) and *Diptychus dybovskii lansdelli* (Naked Osman). All these species are considered benthos feeding or benthopelagic species, either herbivorous or omnivores, and are not strongly predatory, though larger fish may eat other small fish. With sufficient funding and a controlled re-stocking policy, a managed fishery controlling catches and no poaching, pending other impacts, officials believe this could be a sustainable long term fishery. At present there would appear to be a lack of all of these, combined with a long history of introducing alien species, particularly predatory species, which has added to the fishery pressure and significantly reduced catches.

Naked Osman is of particular concern to the State as a symbol of the downgrading of endemic biodiversity within Issyk-Kul Lake. In discussions with stakeholders through this project Naked Osman (and Marinka) was mentioned frequently as a species that needs to be revived in the lake. This species is identified as "critically endangered" in the Kyrgyzstan Red Book of endangered national species, and has been endangered since the mid-1960. No authenticated observations have been made since at least 1984. Marinka or the Snow Trout also appears in this Book, as endangered. Observations are (anecdotally) deemed rare and no "reported" catches have been made since 1988 (Ryspaev and Woynárovich, 2008). It remains entirely possible that both species are extinct in Issyk-Kul Lake. A UNDP/GEF project in collaboration with the GCP/KYR/003/FIN project has as one of its aims, to use culture techniques to propagate both species, and to some extent this has begun. In the longer term Naked Osman is reportedly present in Son-Kul Lake, for example, and might be used as broodstock. Neither species currently appears on the International Union for Conservation of Nature (IUCN) Red List (<http://www.iucnredlist.org/>).

The combination of over-fishing and introduced species, in tandem with a water resources management system introduced some time ago that diverted many of the rivers that previously entered Issyk-Kul Lake to irrigation instead and therefore reduced potential breeding habitats, have all acted to reduce the overall endemic biodiversity and abundance in the lake over many years.

The first introduction of trans-located alien species dates back to the 1930's with the introduction of Sevan Trout from Armenia, which subsequently became well established. Through the 1950's to 1970's at least 10 other species ranging from Bream to carps to Tench, plus a policy of pikeperch re-stocking must have played a role in reducing native species diversity and abundance; and significantly, before aquaculture was developed to any extent. The UNDP/GEF project "*Strengthening Policy and Regulatory Framework for Mainstreaming Biodiversity into Fishery Sector*" has as its aim to reduce the abundance of introduced species by various means including sanitary fishing, and to increase endemic fish to a level that can sustain a productive fishery. In the context of this project, the designations and sensitivity of Issyk-Kul Lake is particularly important, as is a strong inter-relationship between fisheries and aquaculture.

The sensitivity of the system and concern for the introduction of additional non-native species (in this case), **is an overriding characteristic of the need for strong EIA guidelines and procedures** for the development of aquaculture projects. There are, however, a range of additional potential impacts that might affect the environment, which may also need assessment through EIA. These could include the impacts of fish wastes, feeding impacts, changes to the water column nutrient balance (water quality), impacts of increasing productivity in ponds, spread of disease and disposal of mortalities, among others. Commitment to considering the sensitivity of receiving waters and the translocation of species are identified as key elements in the FAO Code of Conduct for Responsible Fisheries (CCRF) under Articles 9.1.2 and 9.3 and related articles, respectively. The proactive development of a robust EIA system comes under CCRF Article 9.1.5.

Development of the objectives and the outcomes to this project has taken account of Issyk-Kul's status internationally, and are focused on this lake in particular. Outcomes, however, have been developed to be more generally applicable to all aquaculture developments across Kyrgyzstan.

Trans-boundary issues

Kyrgyzstan is a land-locked country surrounded by Kazakhstan to the north, Uzbekistan and Tajikistan to the south-southeast and China to the west. There are therefore complicated linked water-ways between these various countries where aquaculture may impact in the event that water is contaminated with excess nutrients or other chemicals.

5.0 The current activity defined

The overall objective of the activity and the associated workshop/training initiative is to develop an appropriate Environmental Impact Assessment (EIA) policy and guidelines for aquaculture so that capacity (production, skills, expertise) within the aquaculture sector in Kyrgyzstan is improved. Within this there is a need for an increasingly professional and structured approach to the development of aquaculture within Kyrgyzstan, covering the Farmer/Developer, State Agencies and other stakeholders, all of whom will and have been involved in the progression of this project.

Terms of Reference

The specific Terms of Reference (TOR's) for the project were as follows:

1. Review the current status of the EIA regulations and procedures relevant to aquaculture development activities/projects
2. Prepare a series of guidelines, bringing the consultant's experience and examples from elsewhere, to develop a practical EIA process applicable in Kyrgyzstan for aquaculture development activities/projects. The guidelines should consider the following areas in the EIA process:

- a. EIA pre-application consultation
 - b. Site selection and design criteria
 - c. EIA screening (Initial Environmental Examination - IEE or need for EIA) and scoping (scope of the EIA) assessment
 - d. Preparation of the Environmental Statement (ES) which includes reporting the results of the scoping, baseline, identification of receptors, assessment of impacts, mitigation measures, submission of the environmental statement
 - e. Reviewing the ES and decision making
 - f. Monitoring and managing
3. The Guidelines should be accompanied by a series of templates for use by applicants and roles and responsibilities of agencies and individuals at each step of the process defined
 4. Conduct a national training on the proposed EIA process
 5. Prepare guidelines to determine the carrying capacity of Issyk-Kul and Son-Kul Lakes in Kyrgyzstan

Outcomes

In fulfilment of these TOR's / objectives, the outcomes from the project were a report which:

1. Reviews the current status of the EIA regulations and procedures relevant to aquaculture development activities/projects in Kyrgyzstan;
2. Provides guidelines for a practical EIA process applicable in Kyrgyzstan for aquaculture development activities/projects as per TOR above
3. Provides templates to be used by the applicants for aquaculture development projects and roles and responsibilities of agencies and individuals to implement the EIA process
4. Reports on the national training including outcomes and recommendations on the implementation of the proposed EIA process and further studies and capacity building needs
5. Develops an outline methodology/guideline to determine the carrying capacities of Issyk-Kul and Son-Kul lakes.

Objective and outcome 5 provides for the development of an outline methodology only, with the assessment of carrying capacity for cage culture and other activity to take place in

conjunction with the United Nations Development Programme UNDP-GEF project “*Strengthening Policy and Regulatory Framework for Mainstreaming Biodiversity into Fishery Sector*”. This project aims to improve biodiversity, to see the return of endemic species, and to develop a strong endemic-based fishery to Issyk-Kul Lake once again. This activity may be being impacted by aquaculture, but may also use aquaculture practices to improve abundance and to (re)introduce endemic biodiversity, practices that would themselves fall within an EIA process. This UNDP project will begin immediately following conclusion of this FAO project.

The report

Within this report Section II provides a summary review of the current EIA regulations and procedures related to aquaculture in the Kyrgyz Republic. Section III provides a more detailed definition of EIA principles, by way of introduction to the draft guidelines proposed. Section IV provides draft templates that may be used or adapted by the authorities in the Kyrgyz Republic for all future applications for aquaculture developments. Finally this project is developed alongside the UNDP/GEF project to evaluate the carrying capacity for cage aquaculture within Issyk-Kul Lake and section V provide an introduction to and the options available for calculating such capacity. It is important to stress that this report is developed in line with the FAO Code of Conduct for Responsible Fisheries and the FAO guidelines on the Ecosystem Approach to Aquaculture, both of which provide a broad structure for the development of sustainable aquaculture and fisheries practices worldwide.

SECTION II: REVIEW THE CURRENT STATUS OF THE EIA REGULATIONS AND PROCEDURES RELEVANT TO AQUACULTURE DEVELOPMENT ACTIVITIES/PROJECTS

2.1 Introduction

This review of the current status of the EIA regulations and procedures relevant to aquaculture development activities/projects stems from various meetings held during the in-country part of Mission 1 (10th – 23rd July 2011) with various stakeholders and interested parties (Appendix 1.1).

In Bishkek the State stakeholders met included senior and other members of the State Agency of Environmental Protection and Forestry (referred to commonly as the State Environment Agency but hereafter referred to as SAEP&FM); Academy of Sciences Institute of Biology; State Committee for Water Resources and Land Improvement; Department of Fisheries; Department of Ecological Environmental Assessment (part of the SAEP&FM); and the Department of Hydrometeorology. In addition discussions were also had with senior persons from the Bishkek Hunting and Fisheries Association.

At Issyk-Kul, three pond farmers were visited at their farms. Stakeholders included the Chair of a new association of pond farmers in Karakol (set up under the GCP/KYR/003/FIN project). Two Rainbow Trout cage culture farms, plus one operating (Karakol) and 2 potential (Karakol and Balykchy) fish processors. Finally in the context of TOR item 5 and Outcome 5, but also for this activity I also met the UNDP/GEF Project Manager and an Institute of Biology representative together at the UNDP/GEF field station.

This was sufficient, given the time available, along with subsequent desk-based study, to make a reasonable assessment of the current status and application of EIA regulation and procedures [in Issyk-Kul Oblast]; to be able to make recommendations for improvement; and for these to be more generally applicable nationally.

The lack of an overriding strategy:

From the information available there is a Fisheries and Aquaculture Development and Management Strategy 2008-2012 and a Aquaculture Development and Management Strategy 2012-2020 is in preparation. It is outside the scope of this project, but it is recommended that the Kyrgyzstan Government initiate a Strategic Environmental Assessment (SEA) for aquaculture. This evaluation should be carried out in order to ascertain the impact of legislative and regulatory systems and practice on aquaculture development. Within this document there is some assessment of legal components and constraints in terms of capacity and expertise. But a SEA should evaluate this more fully and identify where aquaculture-related legislation might be enacted, if appropriate. One outcome of the SEA should be the development of a “Strategic Plan for Aquaculture Development in Kyrgyzstan”. As far as is known there is no Strategic Plan currently available.

Strategic Plans are an important function of the EIA process, providing a clear context for development of the industry, having evaluated not only the regulatory framework, but also the Institutional capacity; existing and new market potential both internally and internationally; needs in terms of research, training, infrastructure and financial/business opportunities; opportunities in terms of food security and quality assurance; compliance with international Codes of Conduct, such as that issued by the FAO for sustainable fisheries (including aquaculture); and the inter-relationship between fisheries and aquaculture. More broadly it will provide an overall framework for the development of the aquaculture industry in Kyrgyzstan.

Most importantly in the context of EIA and this project, it allows stakeholders to more fully understand the governmental view of aquaculture and its development, and can incorporate EIA requirements. Such Strategic Plans enable Farmer/Developers to only submit development proposals that comply with the overall strategic objectives. A Strategic Plan will also provide force in regulation for the implementation of the EIA process for aquaculture, making it more likely that such a process is followed and adhered to by all parties.

Recommendation 1: Carry out a Strategic Environmental Assessment (SEA).

Recommendation 2: Develop a “Strategic Plan for Aquaculture Development in Kyrgyzstan”.

2.2 Review of current status

This section of the report provides a summary of legislative controls currently in place, identifies the current key stakeholders in the process, and describes the current application process through the experiences of the applicants and other stakeholders.

Before these are described in some detail there are a number of general observations that are worth mentioning right at the beginning:

- 1) There are at least two existing laws directly applicable to the Environment and EIA, and that would be most applicable to the development of aquaculture within the Kyrgyz Republic, though neither Law makes reference to aquaculture explicitly. These are the:
 - a) Law on Environmental Protection (No 53, June 1999).
 - b) Law on Ecological Expert’s Review (No. 54, June 1999)

In addition there is an “Instruction for Procedure for Performance of Environmental Impact Assessment of Planned Economic and Other activities”

(called Instruction 1, and hereafter referred to as “The Instruction”) which requires that the documentation prepared must reflect the full extent of the project and meet the specified requirements for EIA. Further Instruction 2 introduced by the Ministry of Justice in July 1997 (Decree No. No.386) requires that “To ensure consistency of EIA reports, the Instruction on Procedure for Performance of Environmental Impact Assessment of Planned Activity should be fully consulted”. Instruction 1 was approved by the Minister of Environmental Protection of the Kyrgyz Republic in June 1999.

Neither of the two Laws nor the Instruction is acted upon for aquaculture developments other than in simple and broad terms, for the reasons outlined previously. There would appear to be some differing opinion as to which types of aquaculture require specific approval. Combined with no overarching aquaculture-specific legislation or a Strategic Plan to refer to there would appear to be a disjointed approach to aquaculture development in Kyrgyzstan at present.

- 2) There is not currently a working Environmental Impact Assessment process for aquaculture in place.

Although an inherent structure is available for EIA (see 1) above), there is not currently a working EIA process in place for aquaculture. It is important to appreciate the significance of this in terms of the extent to which this project can influence and change the current practices. Throughout the discussions which took place, there was a general consensus from all parties, that anything that added clarity and transparency to the process would be an improvement.

The author would like to say that international standards and EIA processes have in most cases taken years to develop into an effective and efficient system. While a better system can be applied in this case, under the banner of Environmental Impact Assessment and taking account of the above mentioned Laws and Instruction, it will take the will of government and other stakeholders and an improved capacity within the country, to transform the information provided in this report into a fully functioning and beneficial process. This report and the outcomes of the project are a guide only and State Agencies, especially the Department of Ecological Expertise, will decide whether to implement the recommendations and process in the present or a changed form.

- 3) There are no specific guidelines for an aquaculture application process, to inform stakeholders of the required process and to identify the key questions and information needed.

The lack of guidelines, and a lack of knowledge about the relevant EIA legislation, leads to variability in the quality of applications in the current system, and a general confusion about what is to be supplied and in what detail. It would appear to be the cause of frustration on the part of stakeholders. The

information provided later in this report points to the variety of slightly different ways the approval process has operated, and indeed in some cases the perception (perhaps correctly!) that no State approval is required at all.

- 4) Where aquaculture licences are granted in the current system there appears to be few or no conditions attached to them, regardless of aquaculture production type.

Limited information in licenses restricts the application of sufficient conditions and monitoring requirements. It also limits the options available for restricting, curtailing or changing practices in the event that an aquaculture producer acts irresponsibly and damages the environment, or otherwise poorly manages his production facility. There is also confusion in the system as to what aquaculture activity has been approved and what constitutes legal and illegal aquaculture activity. And finally the lack of conditions in the licence means that previous approvals are difficult to change, in the event of revised scientific advice for example.

- 5) The Permission and Licensing Committee which presides over all such decisions is a closed group from within one Agency, the SAEP&FM, and in itself is not specifically set up for aquaculture, but is a general Committee covering all development activity.

This is fundamentally an issue of transparency and ensuring the decision-making process is both fair and reasonable and taking account of all stakeholder responses and responsibilities. Under the Law (on Ecological Expert's Review (No. 54, June 1999)) the issuance of a licence clearly rests with the SAEP&FM and therefore by definition this Agency gives the final approval/non-approval decision. But this does not require that they are the also the sole decision maker in relation to approval of aquaculture activities. Some other State agencies do contribute to providing information in the current system, but it is limited and does not reflect the diversity and scope of likely opinion about aquaculture and its development and does not reflect the inclusive nature of EIA.

- 6) There is a lack of widespread professional expertise on the impacts of aquaculture development on the environment.

Clearly there are many experts on Ichthyology, on Environmental Issues, on EIA, and other scientific expertise needed for the development of aquaculture within the Kyrgyz Republic. But nearly all of this expertise resides within State Agencies. There is a more general lack of expertise across the sector as a whole.

Such a lack of expertise is not something which can be addressed wholly by this project, and will take some time to overcome. It will require training on EIA in both general terms and also as it applies to aquaculture, with persons making decisions and contributing to the generation of information and advice having sufficient scientific expertise. EIA for aquaculture would be a new process to

the Kyrgyz Republic and to some extent this will be addressed in this project. More fundamentally than this there would appear to be a lack of experience; on the State side in knowing what key questions to ask and what information should be provided to be able to evaluate an aquaculture development; and on the Farmer/Developers side a lack of knowledge, but also a lack of private sector expertise from whom to seek advice.

2.2 Legislative components

As stated above the most applicable Laws related to aquaculture (albeit indirectly as aquaculture is not mentioned specifically) are those on Environmental Protection and Ecological Expert's Review. A summary of these laws and the applicable parts is taken directly from a recent Summary Initial Environmental Assessment conducted by the National Electric Grid of Kyrgyzstan for the Asian Development Bank, for project Number 43456, related to the Kyrgyz Republic Power Sector Improvement Project (2010); alongside translations of The Instruction [on how to conduct impact assessments] and the two national laws, and meetings held with various State Stakeholders.

Parliament

At the highest level of government, the Jogorku Kenesh (or Parliament) has ultimate responsibility for national development and through the Commission on Agriculture and Environment is responsible for defining the overall framework for nature protection policy, and for developing and approving appropriate laws and regulations.

President's Office

A number of environmental responsibilities are delegated to the President's Office. The President has the authority to establish specific rules and decide on the use of natural resources, to define and announce the boundaries and the status of environmental emergencies and environmental disaster zones and to approve procedures for the collection and use of environmental protection funds, for example. The President is also responsible for signing all laws adopted by the Jogorku Kenesh and for conducting internal negotiations, as well as signing international conventions and treaties and submitting them for ratification by Parliament.

Laws

A review of fishery related Laws in the Kyrgyz Republic was carried out by Uran Tursunaliyev in February 2011 under the GCP/KYR/003/FIN project, and is not repeated here. Suffice to state that Aquaculture, as the development of fish culture for consumption, is not directly mentioned in the review, other than in general terms as it related to the Department of Fisheries responsibilities to develop aquaculture (and fisheries) within its remit. It might be argued however, that aquaculture and fisheries, in the context of the Kyrgyz Republic, are

somewhat synonymous, and thus the Tursunaliev review (2011) is also applicable, at least in part, to the development of aquaculture within the country.

Two key Laws in the context of this activity are the Law on Environmental Protection (No 53, June 1999) and Law on Ecological Expert's Review (No. 54, June 1999), the latter specifically providing the key legislative role for the State Agency on Environmental Protection and Forestry Management (SAEP&FM), in requiring and evaluating EIA and providing licences.

In the context of this project and in relation to EIA, the Law on Environmental Protection already requires that “in the process of designing, placing, construction, re-construction, putting into operation facilities, and other activities having a direct or indirect impact on environment, the actions for protection, use and restoration of the environment and natural resources” that these shall be identified and undertaken “according to ecological norms”. The Law also requires that an Environmental Impact Assessment (EIA or OVOS in Russian) be prepared for a planned activity (in Clause 17). The Law on Ecological Expert's Review states that EIA means the identification, analyses, assessment, and taking into consideration the possible impacts of development activities (Clause 1). Clause 10 defines the activities that require EIA in very broad terms (Box 1) and the process for the project proponents to undertake the EIA.

Box 1: List of activities requiring EIA as defined under Clause 10 of the Law on Environmental Protection.

- *Concepts, programs and plans of sectoral and territorial socioeconomic development;*
- *Plans of integrated usage and protection of natural resources;*
- *Master plans of cities and settlements as well as other town-building documentation;*
- *New construction, reconstruction, expansion and re-equipment of operative economic and other entities able to have impacts on the environment.*

Clearly Box 1 shows very general application of the types of projects that require EIA. The Instruction on how to conduct an [environmental] impact assessment provides a much more substantive list of the activities that will require EIA, under 23 sub-headings (see Appendix 1.2). Aquaculture is not referred to explicitly but could be construed as coming under sub-heading 5 “Agriculture and Forestry” point (e) “poultry, livestock and fishing facilities”.

More generally members of the SAEP&FM interviewed, including the Head of the Department of Ecological Environmental Assessment, are certain that aquaculture falls within the list of activities that requires EIA, even though this is not implemented at present. Perhaps

part of the issue here is the extent to which all aquaculture activities come under the terms of the EIA requirements given the various production types, their respective impacts and risks of impact and their position in relation to sensitive sites and their impact upon them.

The Instruction

According to The Instruction, the [EIA] documentation (commonly referred to as the Environmental Impact Statement or EIS) prepared must reflect the full extent of the project and meet the specified requirements for EIA. In particular it must include:

- (i) Description of the project or planned activity;
- (ii) Possible alternatives for the project or planned activity;
- (iii) Description of the existing environment;
- (iv) Types and degree of impact on environment and population;
- (v) Forecast any possible changes in environmental quality;
- (vi) Description of socio-economic and ecological consequences; and
- (vii) Actions to prevent environmental damage or mitigate the level of ecological risk.

This is broadly in line with international understanding of what an EIS should contain. However, The Instruction defines 5 key stages in the process of EIA as being:

Stage 1 – Notice of Intent (Declaration of intent)

Stage 2 – Determining the impacts on the environment

Stage 3 – Identifying the expected impact

Stage 4 – Updating of the project

Stage 5 – Preparation of the Statement of consequences

These provide confusing rather than clear instructions on following an EIA process, which more traditionally define the steps as Screening, Scoping, Preparation of an Environmental Impact Statement (EIS), Assessment of the EIS and Decision making; and review through Monitoring and management once approval has been given.

Broadly speaking the legislative components are in place but there may be a need to refine these, and to refine the information presented in The Instruction, in order that there is a clearly defined, coherent and efficient process and instruction set to follow. In the longer term a SEA (Recommendation 1) will be able to evaluate whether additional legal clarification or specific aquaculture laws are needed. What is certain is that as countries develop their respective aquaculture industries then aquaculture legislation, other guidance and advice, including what specific requirements need to be heeded are provided by the “State” as a matter of necessity, and such provision should be considered in the medium to longer term within the Kyrgyz Republic.

2.3 Stakeholders in Aquaculture

From discussions with various people during Mission One, the following provides a very brief summary of the key stakeholders in the procedures and decision making processes for applications made for the development of aquaculture in the Kyrgyz Republic.

State Agency on Environmental Protection and Forestry Management (SAEP&FM):

This agency has primary responsibility in law for the application of State control over environmental protection, development and implementation of environmental protection and nature management; and to control and issue licences for activities that use environmental resources, including aquaculture. The Permissions and Licensing Committee, where decisions on [aquaculture] licensing are made is chaired by an SAEP&FM Deputy Director, the committee made up of representatives from various departments within the SAEP&FM. Thus the SAEP&FM must by law play a significant part in the development of aquaculture, its control and management and of licensing and monitoring such activity.

Department of Ecological Expertise Assessment:

This is a department within SAEP&FM, which has as its primary responsibility to both develop and conduct EIA's and also to assess EIA's as they come into the department from other sources for all required activities including aquaculture). They evaluate these to determine risks and likely impacts, to provide a recommendation on approval or not for a project, and once approved to conduct monitoring, including site visits.

Department of Fisheries:

The Department of Fisheries is part of the Ministry of Agriculture and has as its main responsibility the development of a sustainable fishery for the Kyrgyz Republic, including aquaculture. It covers research, improvement in the understanding of fisheries and aquaculture and development of a sustainable approach for the improvement of catch and production of fish and fish products.

Institute of Biology:

The Institute is part of the Kyrgyz National Academy of Sciences. It is a State agency with responsibility for research and understanding of all flora and fauna. In the context of Aquaculture it acts as the official consultant on technical aspects, providing expert reports on their assessment of the scientific aspects of an application. Members of the SAEP&FM interviewed said they place a high regard on the information provided by the Institute of Biology.

Water Agency:

The Water Agency currently has a limited direct involvement in aquaculture applications. Its primary responsibility is the movement of water for drinking and agriculture (irrigation). It

does, however, play a key role in leasing land with an appropriate source of either surface or borehole water to aquaculture developments, particularly for pond culture. As such it is a stakeholder in the process.

Hydrometeorology Department:

Hydromet provide the focus of research and monitoring of water quality and the hydro-chemical nature and condition of water in Kyrgyzstan, irrespective of use. Research focuses on physio-chemical properties of water, including temperature, chemical composition, heavy metal and hydrocarbon contamination, for example, and measuring river flow rates; taking measurements on a regular basis (until 2007) throughout Kyrgyzstan,. It started collecting such information in the 1960's and has amassed a large database of physio-chemical information, at least till 2007, when it is understood that funding for such research was ceased. The database of information can be made available to this project and will provide useful metadata for the assessing cage culture carrying capacity in Issyk-Kul Lake, to be conducted under a project with UNDP.

Hunters and Fishermen's Association

This is members association with a large and active group who conduct sport fishing and hunting. It has the potential to provide a vast network of interested people who might help support research and understanding of river and lake systems.

Karakol Fish Farmers Association

This association was set up by FAO under the GCP/KYR/003/FIN project. It consists of approximately 25 small pond fish farmers who are non-legal entities (persons), plus currently a single legal entity in the form of an associated processing company. As Farmer/Developers of fish farmers and fish farming activity they form a key part of the stakeholder process.

Other pond farmers, not necessarily part of the association mentioned above, and other farmers from around the Kyrgyz Republic will play a vital part in the EIA process as existing, derelict and new farms will be developed over coming years.

Cage culture companies

Not necessarily a formal group within Issyk-Kul Lake, they do nonetheless have a loose association and often help support one and other, for example through fish feed purchase to provide economies of scale. As Farmer/Developers they play a key role in providing the necessary information required under any EIA process, of adapting their plans to meet mitigation requirements, of managing their respective farms responsibly and in ensuring environmental change is limited.

Biosphere Reserve (and other National and regional parks and protected zones)

Staff at the Issyk-Kul Biosphere Reserve were not interviewed during Mission One. They are entrusted to manage the reserve and by inference maintain and develop the habitats, ecosystems and biodiversity of the reserve. The Biosphere Reserve should therefore be a key stakeholder when aquaculture activity is developed within the reserve.

Similarly where other reserves, national parks or other protected zones are designated within the Kyrgyz Republic then the Boards enacted to manage such environmental facilities will also become stakeholders where development is intended to take place within them.

Local Government

Staff in local government were not interviewed during this activity. From discussions elsewhere however, it appears that main decisions (related to aquaculture and fisheries) are taken centrally and local government plays a lesser role. It does have an important role in local land use and development, however. They provide permission for shore facilities to cage farmers on Issyk-Kul Lake for example, and perhaps elsewhere across the country.

The Public

Within Environmental and EIA procedures developed in Law (albeit not used for aquaculture development currently) the public is required in law to be engaged in the protection of the natural environment. In reality the EIA process is unlikely to involve the public to any extent, until such time as concerned citizens begin to highlight and discuss the issues. Such may come about by the increased consumption of fish products, and an increasing desire to understand where one's food comes from, for food safety and environmental sustainability, as has occurred elsewhere, especially as wealth increases.

2.4 Synopsis of application process, set against an international context

From discussions with various applicant stakeholders during Mission One it was clear that there is a variable approach to the aquaculture application process. The generalised application steps in the current system are short (Figure 1), but there is still a lot of confusion about whether or not permission is required in the first instance.

Farmers who produce carps in ponds using extensive methods state they do not need permission from the SAEP&FM at all. Other pond farmers producing both carps and other species as a controlling mechanism (e.g. Pike perch for example) have applied for permission even though they use extensive methods. The former generally did not own the land and made agreements with the Water Agency for land and provision of water and deemed this sufficient to go ahead. The latter pond farmer, who owned his land and had a water supply felt the need to apply through the SAEP&FM, even though he was not certain he had to.

Cage farmers recognise they need permission, and some have done this through the SAEP&FM, whilst others appear to have gained what they perceive as permission through

various other agencies and institutions, but not formally through the SAEP&FM. These two means of approval / licensing are dealt with in the following two sections.

i) Applications made through the SAEP&FM:

As has been stated already the process of EIA is not implemented in any form for aquaculture. Despite this some limited licensing has been granted following an application through the SAEP&FM by certain types of production companies. Evaluation of an application is conducted by the Department of Ecological Expertise plus other SAEP&FM departments, who then meet as the Permissions and Licensing Committee to consider the applications merits. To help support their decision they often asked the Institute of Biology to provide their technical expertise, in the form of a report or had required such a report be submitted by the Farmer/Developer with the application. The Head of the Department of Ecological Expertise noted that there was a high regard for the reports produced by the Institute of Biology which helped the decision makers to come to a decision.

Approval is given with the issuance of some form of licence or not approved (Figure 1). If the applicant is successful the Licence appears to be in the form of a plan (diagram of the site) which is stamped and dated. This document may also be stamped by other agencies, such as the Biosphere Reserve, Department of Fisheries and others identifying their approval also. As far as is known these other stakeholders do not formally identify their observations on the development into the Permissions and Licensing Committee, though this may happen informally. If farmers have been successful in their application then they go ahead with the site development. If and where applications have been unsuccessful there appears to be no feedback given to identify the reasons for the rejection, so that additional information can be added and shortcomings remedied if and when a further application is made by the Farmer/Developer. Under these circumstances there is no “learning or understanding” [of why the application was rejected] and data supplied is simply repeated on other development proposals, perhaps with the same outcome (non-approval).

Whilst the Head of the Department of Ecological Expertise highlighted that applicants should follow the Legislative requirements and those in The Instruction, there are no aquaculture specific guidelines available to advise the Farmer/Developer on what to provide and the level of detail needed in the application. The applicant is left to determine this for themselves. Provision of some of this information is made through the Institute of Biology who have been well placed over the years to provide such advice.

Recommendation 3: *Guidelines should be produced which provide fish farmers with a summary of the information required for their submission of applications. This should include methods of data collection, simple calculations to assess the quantities of nutrients*

Who provides what information?

Those cage farmers that applied for formal permission, had provided a brief description of the development, a business plan and what they called an “environmental impact report”. The latter appears to contain information related to environmental security of the site from winds and waves and some general biological considerations, rather than an “environmental impact” report per se. The Pond farmer who had applied for permission included what he called a “biological justification”, which included measures of and impacts of out-flowing water on the local environment, specifically important as the water flowed directly to Issyk-Kul Lake. Specific details, or copies of the reports submitted could not be obtained. Both types of report were written by the Institute of Biology, for which the fish farmer paid a fee, and it is this report, provided to the SAEP&FM indirectly via the Farmer/Developer, or directly from the Institute of Biology, which provides the technical base for decisions.

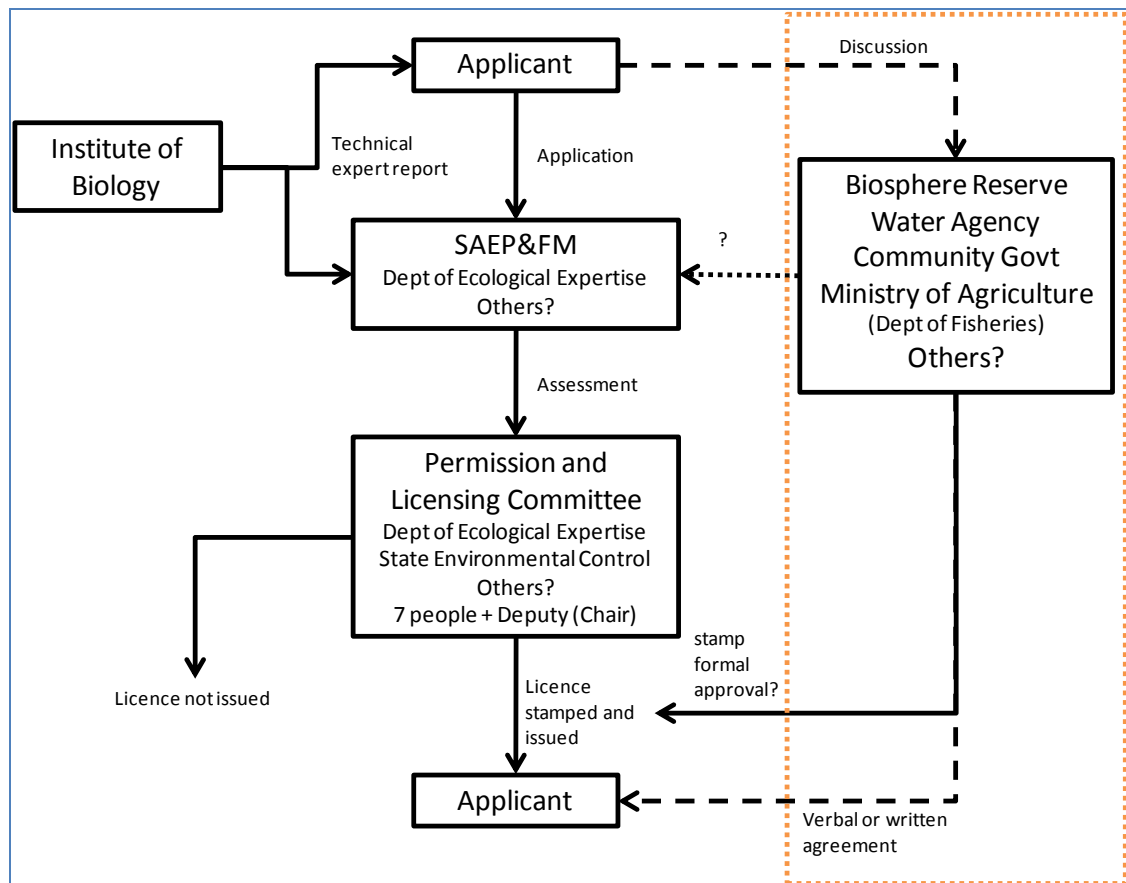


Figure 1: Apparent route of current applications for certain aquaculture developments in Kyrgyzstan (see text). Separated orange box often identified as a more informal route used by extensive ponds farmers. Under the more formal route applicants may have also gained permission from these other stakeholders separately; some of these stakeholders may have also formally stamped / signed the Licence issued.

In this context it is noted that there is a potential conflict of interest with the Institute of Biology. In discussions it was very unclear exactly who the Institute of Biology was providing its advice to. The Institute is part of the State system of permission and on the one hand appears to be providing advice the State system. But at the same time it also appears to be providing information to the applicant to “support” their applications. Whether this results from the Institution providing the State information and the personnel who work at the Institute providing the advice on a personal level to the applicants was unclear. This is very unusual internationally and stems, in the short term hopefully, from a lack of qualified consultant expertise outside of the State Sector.

It is recommended that the State should invest in targeted capacity building and training of potential consultants so that independent advice can be given to fish farm companies. The SAEP&FM and the Permissions and Licensing Committee will then also be in a position of having an Institute (of Biology) that can evaluate the technical and biological competence of applicant submissions, as well as providing the Committee with its own advice. The current system of providing advice to both the Farmer/Developer and the state could then end. Training provision of private sector consultants for EIA could at the moment come from Colleges and Universities, some of which offer EIA courses at present, but additional modules related to aquaculture would be needed. Students with a Biological background, but interest in EIA would be particularly useful. There may be an opportunity for some State-sector investment in a suitable training scheme through a College or University, with graduating students then able to start aquaculture consultancies in the private sector.

Recommendation 4: *The State should consider investing in targeted capacity building and training of potential aquaculture/environmental consultants, perhaps through the development of appropriate College or University education.*

Details provided in Applications against International norms

Both the cage farmers and the pond farmer included details about the species to be grown within their applications. But they did not include information on the numbers of fish to be produced or any form of production plan (taking account of growth over time for example). Tonnage is generally a blunt measure, but in combination with the number of fish plays a significant role in the amount of feed used, which impacts the environment both directly and indirectly. Production plans would typically include an estimate of the growth cycle taking account of variability during different parts of the year as light levels and temperatures change; the associated feed input (for cages and for more intensive pond production); and variability of feed input over time, as well as changes in nutrient content of the feed, which alter as fish grow.

Indeed the “environmental impact report” / “biological justification” do not address many of the environmental issues which are readily known to occur and which would form part of the standard information provided for similar applications made elsewhere in the world. In coming to the decision there was little to no information presented about the likely impacts from nutrients being added to the ecosystem for example. Summarising the above, it would be very normal practice, for any particular species, to identify fully:

- The number of fish to be grown
- Annual production quantity (No. of fish x wt)
- The type, amount and nutrient composition of food to be added and some assessment of feed conversion ratio.
- Within this, changes in feed type (e.g. protein and phosphorus content) at different points in the production cycle
- An estimate of the likely level of food waste that will pass uneaten to the lake
- An assessment of levels of faecal and dissolved wastes that would be added for this level of production, and
- An evaluation of the likely changes on water quality in the system, and on the lake bed onto which feed and faeces will settle which will also subsequently break down and add further dissolved nutrients to the system over time.

Although pond farmers will not necessarily be adding feed, they may add fertilizer to increase productivity of the pond system. Details of this would typically be included, plus an assessment of likely productivity throughout the year as light levels and temperatures of the water change. It would be typical, for flow-through systems, to estimate nutrients loads and to provide an assessment of the impact of water quality of the receiving water and downstream where waters flow into lakes.

Collectively these represent sources of addition nutrients to the ecosystem and a potential for environmental impact. In providing such data, along with an assessment of the current level of nutrients in the ecosystem (so called “baseline” surveys) means an assessment of possible impacts and the risk of them happening can be readily made. As this information is not currently provided, no real assessment of environmental impact can be made.

Such assessment might evaluate changes in water condition over time and potential change to the trophic status of the lake, for example. The effect on Lake productivity and biodiversity can also be evaluated. Much of this evaluation would be made with some knowledge and reference to baseline conditions, an assessment of available scientific evidence of impacts on similar systems, and a considered evaluation of the likely impacts of the specific development. It is unclear whether there is sufficient technical expertise to conduct this sort of work at present.

For the cage production side, and in relation to feed, only the type of feed to be used was given in the applications, it seems in order to show a willingness to use high quality feed. It appears no information was included on the amount of feed to be used, or indeed the nutrient composition of the feed. Both feed quantity and its composition are primary consideration

when evaluating how production might affect the environment. Quantities of feed used and its composition significantly affect the growth, the amount of waste produced (both waste feed and faecal) which itself directly impacts the environment; the more food that is used, and the higher the nutritional content, the higher the risk of an impact occurring. Not providing such information is highly unusual in an international context, and most farmers, particularly fish cage farmers will understand the likely impact from the feed they are adding. Not least feed is such a high proportion of the overall production cost in aquaculture, that a detailed understanding of its use is highly desirable.

For the cage farmers the information presented included the number of cages planned for the site, and for the pond farmer the number and area of ponds to be used. To some extent this was arbitrary information in the context of the licence as in both cases the licence only identified production level (tonnes) as the sole restriction or condition on the Licence.

The cage farmers interviewed were not yet at their full production capacity and they suggested there was no need to re-apply in the event that the number of cages increased for example, as they shifted towards the maximum production allowed under the licence. In contrast a pond farmer did suggest a further application would be required if more ponds were intended (even if not at full production), or if ponds on site were shifted from extensive production without the addition of feed, to more intensive systems where feed is added. This is an inconsistent understanding of what is required, for essentially the same thing in each case, i.e. to increase the area being used for culture. The lack of any guidelines is clearly confusing the aquaculture community as to what is necessary, not only initially, but also in the longer term as circumstances change. In both cases (cage farmer and pond farmer) they provided an outline of the production process; a description of how they intended to produce their fish, but little more.

A business plan was provided by each company as part of the application, which presumably identified that they were in a position financially to develop the site, to purchase necessary equipment and infrastructure and that these would be of a high quality (e.g. nets, cages). The business plan may not have included an assessment of local contribution to employment, and to local socio-economic considerations.

It is suspected that the impact of the site on other local users of the water and land, and on the local population generally, was not considered in the submissions made. Although a socio-economic component to an EIA is relatively new, it is now the norm and such an assessment allows the decision makers to fully understand the economic components of importance locally, regionally and nationally, before making their decision. Such information can be factored into the decision process and may outweigh the potential negative impacts on the environment. Socio-economics may outweigh other impacts where, for example, the environmental can be shown to be impacted only temporarily while the activity takes place (i.e. can be restored or will re-generate naturally), or where impacts are limited to small areas of higher impact. None of this appears to be evaluated at present.

With the potential for the escape of alien species being of particular concern in Issyk-Kul Lake, there was no assessment of the potential for escaped fish to enter the water column from either cage farming activities or pond farms. There was no evaluation of potential escape routes which in part will be affected by activities carried out (such as grading, harvesting) and the types and quality of nets used at cage farms for example; or from outflows, flood periods, bird transport in pond systems for example; which each represent potential escape routes for fish to enter the wider environment. Indeed there was no apparent need for the company's to consider what precautions (mitigation measures) they needed to take in the design of their respective production systems, or to develop a recovery plan in the event of an escape.

In an international context the information available for the Permission and Licensing Committee to make a decision whether to approve or not approve an aquaculture facility is very limited. The information presently used does not address the issues that would be highlighted through a more formal EIA process. Currently it could be argued that the current system does not evaluate the environmental and other impacts at all before making a decision. The EIA process itself, following the appropriate steps can quite adequately highlight the issues that are of particular concern to key stakeholders, so that the applicant can address these in the application made.

ii) Approval given by other means:

In the main the fish farmers that did not follow the route of approval described above were extensive farmers of carp species (and probably other species), that produced fish for a combination of recreational fishing and production for food. Discussions were held during Mission One, primarily with the Chair of the Karakol Fish Farmers Association representing 25 small farmers. He noted that all of his members did not own the land on which they were farming. They generally gained permission from the Water Agency (Author note: or perhaps the Department of Water Resources if this is different) gaining agreement of a lease of land with an appropriate water supply, for which an annual fee is paid per hectare leased. Water stems from either irrigation waters, or more dominantly through bore holes, which will be of a more constant temperature and composition than surface waters.

Despite the fact that in many cases some form of fertiliser is used to increase pond productivity and often the pond outflow maintained a direct link to Issyk-Kul Lake, the farmers did not perceive they needed permission from the SAEP&FM. The reason quoted was because they were extensive systems, and by inference "natural and having no impacts". But of course some level of impact may occur in the event that highly productive water from ponds enters otherwise oligotrophic systems for example. This might have short or longer term impacts on local water quality of the receiving water. However, where flow-through system release productive water entering an irrigation channel, this may in fact have a beneficial effect for the subsequent user. In the context of water use within the Kyrgyz Republic extensive pond production should fall within an overall EIA process, even where full EIA is not deemed necessary.

There is, however, one complication to including these subsistence-type farming activities. As already identified, in Law the SAEP&FM is deemed to be the competent authority in making decision on licensing development activities. Licences issued by the SAEP&FM can at present only be issued to Legal Entities (Companies), and cannot be issued to non-legal entities (individuals), the latter category into which many of the farmers fall. In order for small farmers to come under the procedures to be implemented for EIA it may be necessary to alter the persons that licences can be issued to, to include both legal and non-legal entities.

SECTION III: GUIDELINES FOR A PRACTICAL EIA PROCESS FOR AQUACULTURE DEVELOPMENT ACTIVITIES/PROJECTS APPLICABLE IN THE KYRGYZ REPUBLIC

3.1 Introduction

The aim of the guidance is to provide some practical advice and help on the EIA process for all stakeholders involved in the design and development of aquaculture facilities in Kyrgyzstan.

The guidance is designed for use by all stakeholders in the EIA process regardless of holding any specific designation (i.e. it includes the general public), but is designed in particular for State Agencies, Farmer/Developers and EIA practitioners/consultants. It may also be of use to educators and academics, and students who participate in Aquaculture EIA training.

Facilities under this guidance include semi-intensive and intensive cage culture sites and extensive, semi-intensive and intensive pond, raceway and tank systems; i.e. any production system used for the cultivation of fish, whether for the production of juvenile fish, fish production or re-stocking. Where ponds are used only for recreational fishing then these need not be included. If ponds are used for production and re-stocking, but also involve recreational fishing then these should be included.

For the purposes of the guidelines the species being grown and the scale of production is ignored. Decisions on whether certain types of production, growing certain species or whether farms under a certain size fall outside the guidelines are decisions for the Competent Authority.

The guidance has been prepared under as a sub-project under FAO project GCP/KYR/003/FIN (2008-2012) “*Support to Fishery and aquaculture management in the Kyrgyz Republic*” using a consultant expert, and refined based on comments and recommendations made by attendees at a stakeholder workshop held in Chok-Tal, Issyk Kul, on 29/30th September 2011. The sub-project, these guidelines and the associated templates, were developed out of a visit to and discussions with stakeholders in Bishkek and Issyk-Kul in July 2011. They take account of international understanding of the implementation of EIA for aquaculture, including international guidelines and FAO codes of practice, and local conditions. The guidelines are applicable to all aquaculture developments across Kyrgyzstan, unless otherwise determined by the Competent Authority.

It is important to define what these guidelines do not cover. They are not a complete manual on how to implement EIA, it does not contain details about specific requirements on how to undertake an EIA and it does not lay out in details what specifically and how to conduct specific activities in the development of Environmental investigations and completion of the Environmental Impact Statement. These activities must be based on the provision of advice from the State Departments and will develop depending on the detail of each aquaculture development activity.

3.2 Defining the EIA Process

In this section the EIA process is defined and broad descriptions of the phases or steps in the process are discussed. Specific guidelines then follow under each of the steps. Certain information in the initial definition and description may re-appear in the more detailed sections.

Environmental Impact Assessment

Environmental Impact Assessment (EIA) is a process which evaluates all possible relevant environmental and other impacts that a development may have throughout its life-cycle before major investment in the project has taken place. An important word within this is the word “relevant”. This does not necessarily involve assessing all possible, even minor, impacts. It does infer that impacts that are or are potentially “significant” should be assessed. Whilst the question of what the word “significant” means it has been shown that certain types of fish farming have particular impacts, based on local conditions and requirements.

The clearest definition of EIA, used by FAO in their recent assessment of Aquaculture EIA and Monitoring for Aquaculture (2008) is “*the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of development proposals prior to the major decisions being taken and commitments made*” (The International Association of Impact Assessment (IAIA) 1999).

There are other definitions, but all require that an effective process be implemented to assess and evaluate development projects before they have commenced as part of good management practice.

Aim of EIA

The aim of the EIA process is, where possible, to prevent, offset and reduce any negative impacts from the aquaculture development. These guidelines should be considered in this light, rather than it being seen as a rigid set of instructions. The EIA process is and should be flexible and to some extent be an iterative approach to identifying, predicting, evaluating and otherwise mitigating against the potential risks associated with the aquaculture development.

Introduction to EIA steps

EIA involves a number of steps, which may be implemented in full for complex developments or where the risks of impact are high or where an impact may be catastrophic even if the risk is low, for example. It may be implemented only partially or not at all for less complex or less impacting aquaculture developments. The EIA steps are defined in Figure 2.

Whether development applications requires any form of EIA, once the initial discussion or application has been made, can be determined during the early stages of the EIA process.

Certain types of production are liable to have limited impacts, have a low risk of occurring or be insignificant if they do occur. Such projects therefore require less extensive evaluation. After the provision of basic information and where developments are deemed to require little evaluation, then approval can be given at this early stage. The process need not be more complicated or bureaucratic than present.

Examples might include low production, extensive type, small, single-development pond systems; or pond systems where water flows directly into irrigations channels only without passing through lakes. However, caution needs to be maintained. Even here there may be situations which require

more detailed information to be provided, because the impacts become proportionately higher. These might include:

- Higher level production / higher stocking density
- Even where extensive, if feed or other fertilizer is added to increase pond productivity
- Larger single farms covering several hectares, or multiple ponds in a single site
- Multiple farms in a single local area, which together might have a proportionately larger impact.
- Where outflow water goes into streams and then into lakes, or directly into lakes which maintain specific biodiversity that might be impacted by excess nutrient load.

Thus certain types of aquaculture developments will need some additional information to evaluate the significance of one or a few impacts. Such projects are intermediate between having no assessment and full EIA. If additional information, explanation or remedy can be provided easily during the early phases of the EIA process this may be sufficient to grant approval without the need for very detailed study.

Where initial discussion and assessment identifies that the risks of an impact occurring are higher, or where an impact may be catastrophic even if the risk of it occurring is low, and insufficient mitigation can be proposed without more detailed investigation, then this will probably require more detailed assessment. Examples in this case would include more complex developments, and include cage culture. If the initial evaluation identifies that significantly more detailed information or further investigation is needed to define or otherwise highlight the risks and significance of potential impacts then the full EIA process can be implemented.

One of the key outcomes of the full EIA process is to ensure sufficient information is available so that the Competent Authority is able to make a better informed decision about approval, or non-approval, of a project.

3.3 Summarising the process

Pre-application meetings

Pre-application meeting about the aquaculture development can be carried out prior to formal application. Through discussion, the Farmer/Developer and Stakeholders together consider the proposed development and consider what if any impacts are likely. Stakeholders should be consulted and their opinions taken into account. The Farmer/Developer provides at least a minimum of information about the development, so that this can be assessed.

The Farmer/Developer should have this pre-application discussion with a range of stakeholders, and is useful for the Farmer/Developer to explain what they intend to do and how. The Farmer/Developer should provide basic information including scale of the development, the species involved, numbers of fish and water requirements, and broadly how they intend to run and manage the operation. They must also consider possible impacts and provide an assessment of these, even for those elements where the impact may be low or negligible. By gathering opinion and feedback the Farmer/Developer can respond to these at an early stage in the process, and alter plans if necessary.

It is possible, after this Pre-application discussion, that there are no issues of concern and the Stakeholders can informally let the Competent Authority know this is the case, so that the submission by the Farmer/Developer to the Screening phase can simply result in approval of the development.

Development of information and responses to issues raised in an early pre-application phase is not wasted. When the same information is submitted to screening, it might mean there is no need to provide further information and approval of the development can be given. Equally, even where a full EIA is triggered after screening, this information and the outcomes and changes that have resulted should be placed within the Environmental Impacts Statement, so that the Competent Authority can see how the Farmer/Developer has altered their plans as a result of these discussions.

In reviewing the present application and licensing process the lack of a strategic plan for aquaculture development has been highlighted. Such a document would have clear advantages to pre-application meetings, and will allow all participants to understand the overall strategic objectives of Kyrgyz Government for the development of aquaculture.

Screening

If, after the Pre-application meetings, and the Farmer/Developer decides to put in a formal request for a licence/consent, the next phase is “Screening”.

Screening is seen as vitally important in the EIA process. Within the Screening phase the Competent Authority (CA) determines whether an EIA is needed or not. The CA needs to have sufficient information about the proposed development to be able to make this judgement. All aquaculture developments should be Screened.

If agreement of Stakeholders is reached in the Pre-application phase, and this is known to the CA, then the CA can simply assess the proposal and give approval. The same information presented for the pre-application discussions will have been provided, plus any further changes that have resulted from these meetings should be provided by the Farmer/Developer.

As a minimum requirement the Farmer/Developer needs to provide a description of the proposed site and production process. Having considered the development and responses from Pre-application meetings the Farmer/Developer needs to identify the major factors affecting the environment, provide some indication of the risks, the significance of the impacts and broad mitigation measures.

If they have not already had contact with other Stakeholders, the CA should contact them during the Screening process, to ask for their opinions. Opinion should be provided not only on the development proposal but also on the adequacy of the information provided by the Farmer/Developer.

If these stakeholders have already been contacted by the Farmer/Developer (pre-application meetings) then the development will come as no surprise and provided their concerns have been dealt with, may offer no objection.

Alternatively stakeholders may be asked to provide a “Screening Opinion”. A Screening Opinion is a written response by the stakeholder to the CA about the proposal. Screening Opinions from each of the stakeholders, having assessed the information presented by the Farmer/Developer, should list those things that need further clarification from their point of view. These Screening Opinions will also provide a good basis for the next phase in the process, Scoping.

From these screening opinions and their own view, the CA will decide whether:

- Approval can be given
- Further information is required before a decision about an EIA can be made, or
- Full EIA is required.

In all cases the CA should notify the Farmer/Developer accordingly, in writing.

Scoping

If the screening decision identifies the need for EIA then the Scoping phase is important to establish precisely what factors which are or maybe significant and listing those areas where further investigation and understanding is needed.

The CA would typically use the written Screening Opinions from stakeholders plus their own views, and those of the Farmer/Developer to draw up a Scoping document. The Scoping document identifies in one document:

- The receptors which are impacted
- Precisely what methods should be used to measure and assess the key impacts on these receptors
- List those areas that need fuller investigation and information.

The key to scoping for all sides is to identify only those areas which are deemed significant in the context of and location of the development. The information requested and the investigations that are required to be carried out should allow better and more informed decisions can be made towards the end of the process. The scoping document provides the basis for the Farmer/Developer to go away and investigate what is needed and to not waste time and money on things that are not needed.

The Scoping document should be provided in writing to the Farmer/Developer.

Environmental Impact Statement

Working to the Scoping document the Farmer/Developer is then expected to carry out the necessary investigations on those areas of concern, to provide information that supports their development plans and to identify mitigation of the impacts.

The result of this investigation is pulled together in to a single document called an Environmental Impact Statement (EIS). The EIS document should be a comprehensive response, describing:

- The project and what is involved;

- Identifying and assessing, through direct measurement, through research or literature what the key factors are;
- Identifying changes in the project design as a result of the Initial Assessment discussions and Screening Opinion, and that have taken place as a result of the investigations carried out in preparing the EIS;
- Provide required information to evaluate current (baseline) conditions and potential modifications that may occur as a result of the development;
- Identify and explain changes, actions and mitigation measures to prevent, offset or otherwise reduce these impacts.

The EIS forms the key document, along with the application for licence/consent, to be evaluated and considered by the Competent Authority.

Adequacy and decision making

After the EIS is submitted it needs to be assessed to ensure it is adequate and covers all the necessary detail about the development and its impacts. An assessment of adequacy is not per se an assessment of the detail. It is merely ensuring that the issues raised, for example in the Scoping Statement, have been adequately addressed. If it has not been then further clarification or information can be requested.

Once it has been assessed and deemed adequate, then the CA is now in a position to make a judgement on approval of the project. Transparency is the key to this process and any and all decisions need to be fully justified, in writing, so that the Farmer/Developer and all stakeholders can understand the reasons for the decision made.

The steps and follow-up activity

The EIA process is not a “box-ticking” exercise or a rigid series of steps that must be followed in a wholly linear fashion. Aquaculture and the impacts of aquaculture can be complex and simple answers or responses are rarely possible.

Indeed responses may also not be distinctive or specific. Parts of the EIA process may come from and be based on opinion only, although such opinion must be supported with appropriate scientific evidence, experience and other data. Evaluation and determination may have to be made from conflicting opinions and information and it is not necessary that every stakeholder agrees to the development. The CA will evaluate all responses, objections and available data and come to a conclusion.

What the EIA process does is provide a systematic approach to responding to such complex issues and considering environmental information; places environmental information at the heart of the design and execution of the aquaculture project and allows all stakeholders to contribute to the decision in a transparent and fair way.

Approval of a development through the EIA process confirms that the project is acceptable on environmentally sustainable and other similar grounds and that there has been sufficient investigation to prevent, offset or otherwise mitigate any significant negative impacts and that any impacts from the development are acceptable.

Key to the EIA process is monitoring. Once the development has been approved and is running it is essential to monitor the activity to ensure it is operating within the licence issued, within the parameters identified in the EIS and is not impacting the environment in unexpected ways.

Project Preparation	The developer prepares information about the development.
Pre-application consultation	The developer informally seeks the views from main stakeholders, prior to making a formal application. Stage is optional. Can often determine whether sufficient information is being passed to the CA, to provide a good screening opinion.
Screening	The CA determines whether an EIA is required. This may happen when the CA receives notification of the intention to make a development consent application, or the developer may make an application for a Screening Opinion. The CA should seek screening opinion from other stakeholders to ensure all impacts are considered and information requested
Scoping	Developers may request a Scoping Opinion from the CA or the CA may offer their scoping opinion after screening. The Scoping Opinion will identify the matters and information to be included in the environmental Impact Statement EIS.
Environmental Studies	The developer carries out investigation, studies and assessment of information and prepares an EIS. Takes account of the scoping opinion and any more general advice issued by the CA on the requirements of the EIS.
Submission of information to the competent authority	The developer submits the environmental information to the CA together with the application for development consent.
Review adequacy of the Information presented	There may be a need to review the adequacy of the EIS submission from the developer. This may be done by the CA or a nominated person/organisation. This is NOT an assessment of the merit of the information, only that it is in sufficient detail to adequately cover the screening opinion and other guidance.
Consultation with Statutory consultees, other stakeholders and the public	The EIS must be made available as a minimum to those that offered a screening opinion. But should also be available more generally. Sufficient time should be allotted to allow comment on the development proposal and supplied information prior to the decision on the request.
Consideration of the submission and comments from consultees	The environmental information and results from consultations must be considered by the CA, in determining whether to approve or not approve the development.
Announcement of the decision	The decision must be made available to the developer and consultees, and more generally. The decision should include reason for the decision, and in relation to the licence granted, the application of conditions attached to the licence which the developer must follow to comply with the licence issued. There should be the right of appeal.
Follow-up monitoring of the development, if granted permission	There may be a requirement to monitor the activities after approval. This is to ensure compliance with the licence conditions and other applicable regulations, and to monitor the impacts against those predicted in the EIS.

Figure 2: Steps in the Environmental Impact Assessment process.

Other approvals

It remains likely that other approvals may also be required before the Farmer/Developer can proceed with the development. Examples of other approvals may include permission to use land from the owner or local government, for on-shore facilities; lease of water resources from the

Water Agency; and in the context of Issyk-Kul permission from the Biosphere Reserve may be required. Some of these may be needed before a Farmer/Developer makes an application. An example would be for a pond system where access to water is an essential component of the development.

Also as these groups are also likely to be stakeholders in the EIA process, they may decide to transfer their approval into a single general permission by the competent authority, granted through the EIA process.

3.4 Guidance

3.4.1 Legal components

It should be noted that there are many codes, laws, decrees and regulations that potentially affect the development of an aquaculture site. Under FAO project GCP/KYR/003/FIN Mr Uran Tursunaliev (2011) conducted an assessment of legislation affecting fisheries and concluded there were up to 64 such pieces of legislation that affect fisheries activity as a whole. It will be important to consider these in the context of any development activity. It is not intended to repeat this review here and Mr Tursunaliev's report should be consulted, but broadly these codes, laws, decrees and regulations cover a range of subjects from fish farming to the fishery fund, licensing, fees, to impacts on flora and fauna, import and export of fish, veterinary requirements, protection of lakes and special protected areas and biospheres to trans-boundary issues, and more.

In relation to EIA specifically, the need for an EIA is enshrined in Law in Kyrgyzstan. The applicable laws are the Law on Environmental Protection (No 53, June 1999) and the Law on Ecological Expert's Review (No. 54, June 1999). These should be read in conjunction with the "Instruction for the procedure for Performance of Environmental Impact Assessment of planned economic and other activities" (referred to commonly as Instruction 1).

The Instruction in particular provides more detail on what information should be included in the Environmental Impact Statement, but is very general and applicable to all types of development. It is intended that these guidelines will provide more focused information for the implementation of EIA requirements for aquaculture and upon agreement will supplement the Instruction.

It is noted that "aquaculture" is not explicitly identified as an activity for which EIA is required, but it is not unreasonable to include aquaculture under the collective term "fisheries", identified as being subject to the requirements for EIA under Instruction 1 as group 5 "Agriculture and Forestry" sub-point (e) "poultry, livestock and fishing facilities".

If a Farmer/Developer is considering an aquaculture project, involving the setting up of an aquaculture facility for the production of fish for food or re-stocking or for fry production, or a combination of these, whether in conjunction with a recreational fishery options or not, then it is a pre-requisite that the Farmer/Developer understands the legal and instructional requirements laid out above.

In addition when the EIS is produced by the Farmer/Developer, other legal components may need to be addressed. No specific Laws are identified here, but such Laws might cover local requirements on planning, regulations for waste disposal (e.g. diseased or dead fish), biodiversity

requirements, protected species, and so on. The Competent Authority should provide guidance which outlines what might have to be considered in such an application.

Recommendation 5: Competent Authority to provide guidance to Farmer/Developers and other stakeholders on what laws are applicable for aquaculture development applications.

3.4.2 Stakeholders defined

Although not presently identifies as such, stakeholders can be designated within two key groups for consultation purposes; statutory and non-statutory.

Statutory consultees are those organisations that must be consulted for every application for an aquaculture development. These are typically organisations who play a key administrative or regulatory role in the management of aquaculture and the decision making process.

Non-statutory consultees are those who may be consulted depending on the circumstances of the development application. Using Issyk-Kul as an example, the Biosphere Reserve might be considered a non-statutory stakeholder, as they will only be interested in developments within the boundary of the Reserve, but not for applications nationally outside the Reserve.

In these guidelines the “Statutory Consultees” are

- The State Agency on Environmental Protection and Forestry Management (SAEP&FM) – as the Competent Authority;
- Department of Ecological Expertise, separately from above, although part of the SAEP&FM;
- The department of Fisheries; and
- Local government / planning departments, on a localized basis.

A non-exhaustive list of non-statutory consultees might include:

- The Institute of Biology¹
- The Biosphere Reserve
- Association of Hunters and Fishermen
- Water Agency
- Department of Hydrometeorology
- Ministry of Agriculture
- President’s Office
- Karakol Fish Farmers Association or other similar Associations
- Other fish farm companies
- NGO’s

¹ The Institute of Biology may become a Statutory Consultee with time. At this point there are insufficient private sector consultants for the applicants to contact to provide their environmental support. In the meantime the Institute of Biology must therefore play a key role for both the Farmer/Developer in providing key environmental information and advice and the Competent Authority as their chief environmental advisor. In time, if and when there is sufficient private sector consultants, the Institute of Biology should step back from providing environmental information for the Farmer/Developer, and should become a Statutory Consultee, and in turn when consulted provide advice / screening opinion / scoping information to the Competent Authority.

3.4.3 EIA guidance

The following sections provide specific guidance under each of the steps defined in Figure 2 and outlined in general summary above.

3.4.3.1 Pre-application Discussion

What is Pre-application Discussion?

If a Farmer/Developer is considering applying for consent to develop an aquaculture facility then Pre-application consultations may take place any time before a formal application is submitted and approval requested.

Pre-application discussion is not specifically part of the formal EIA process and thus cannot be a “required” step, unless specifically required through regulation. It has been introduced in some countries through such regulations.

However, in most countries it is a more informal requirement through an agreement between the stakeholder communities. It is an acceptable part of the process, as a means of informally discussing a proposal with key stakeholders, and is therefore strongly recommended.

How to go about it

Requests for Pre-application meetings will be made by and driven by the Farmer/Developer.

In this context the Farmer/Developer should contact key stakeholders, who may be any organisation or persons that may be affected by or have some opinion about the development. As a minimum this will include the statutory consultees as defined above; and perhaps some of the non-statutory consultees as well, depending on location and if appropriate.

The Farmer/Developer should complete the Pre-Application Template (Appendix 2.1) and this document should form the basis of the consultation. The template acts as a standardised format for presenting information about the development. Completion of the Template is discussed in Appendix 2.1.

Any meetings held should be held informally, in order to discuss the proposal. Each person within the process has different responsibilities.

Farmer/Developer responsibility

The Farmer/Developer initiates the consultation, which may simply be sending out a completed Pre-Application Consultation Template document and asking for feedback, but can and should include meetings where appropriate.

Prior to any meeting the Farmer/Developer should offer as much information as possible to the stakeholders, in the form of the Pre-application Template. This should be in some detail so the stakeholder understands what is being considered and discussed. There will be a need to provide a reasonable detailed description of the proposed development activity. The more information provided at this stage the better.

For reasons of confidentiality, the Farmer/Developer may decide to limit the consultations to statutory consultees only. It may not be appropriate to discuss the development with a wide stakeholder group if the Farmer/Developer feels it may cause undue concern and objection in these groups at an early stage. Such objection will need to be addressed head-on in due course through the EIA process.

The order in which consultees are contacted is not relevant, although it would be usual practice to contact the Competent Authority initially, followed by other stakeholders.

The aim of the Pre-Application process should be for the Farmer/Developer to gain advance warning of the general feelings from the statutory and other key stakeholders about the proposed development. It should be an opportunity to highlight the key and significant impacts or concerns.

At any meeting the Farmer/Developer should ask stakeholders about their opinion on the development and listen specifically to the points raised. The Farmer/Developer should discuss the issues openly and where possible provide responses, with such responses based in fact, experience or through general knowledge.

The Farmer/Developer should be prepared to at least consider altering the development plans to take account of the concerns raised.

One example might be the Farmer/Developer wanting 20 cages of fish in a lake development. This may be unacceptable to Stakeholders for reasonable and clear reasons. Consideration is given by the Farmer/Developer to alternatives, and perhaps agreement to lower the number of cages required, or change management plans so that the number of cages is reduced to an agreeable level.

Providing this information and being willing to discuss this information at this early stage may be sufficient to reduce fears about the possible impacts. The Farmer/Developer should note that this information will be provided anyway when the application is made, and the effort may be regarded with fewer objections. It is also no wasted work and will form part of the EIS, should this be required before the development can go ahead.

What is needed in the Pre-Application Template?

The Pre-Application Template document is presented in 2.1, and contains descriptions of the information required. Such information includes:

- Location, description and size of the site
- Planned biomass or production
- Fish species being considered
- Land or water area to be used
- Infrastructure proposed (cages, ponds, need for storage facilities)
- A description of the production process to include where fish / eggs will come from, how they will be grown, what feed will be used and how much and how feed will be delivered, stocking density, fertiliser requirement [for ponds], production timescales, what if any chemicals will be used and so on); and
- Pictures of the proposed site(s) may also be useful.

In addition where the Farmer/Developer knows that a particular impact will occur, they may also offer information (such as reports or research) about this/these and provide mitigation against these impacts at this early stage. These will be added as additional document into the Pre-Application Template.

This shows that the Farmer/Developer has not only considered what he wants to do, but also what the possible impacts may be. What specifically these impacts might be will depend on the location, the type of production, and so on, but could include impacts on water quality, species, biodiversity, habitat, other people, other water users and so on.

Stakeholder responsibilities

Request for pre-application consultation with stakeholders, by a Farmer/Developer, should be greeted positively. It is an informal request to provide feedback on an application that may at some point be made. Whether or not the Farmer/Developer goes ahead with the application may come out of the pre-application consultation process. Key stakeholders should therefore support requests for pre-application consultations.

Stakeholders should point out specific issues that concern their organisation and give their opinion about the development in this context. They should not raise issues that are trivial, or outside their specific expertise or remit, or are personal issues relevant to the person being consulted. Issues raised should be real issues, with a basis in fact and not merely anecdotal.

Stakeholders should read the information sent or provided by the Farmer/Developer and consider its merits, and areas of concern. These areas of concern should be raised with the Farmer/Developer during the meeting(s). Stakeholders can point out issues that it thinks may be insurmountable or provide objection to the development. This should be supported by specific evidence that either the impacts are likely to be so significant as to be sufficient to object fully to a proposal, or where it is deemed that impacts cannot be mitigated against, i.e. it should be evidence based. Stakeholder should, however, listen to the Farmer/Developer to see where such objections may be overcome.

Where the Competent Authority is contacted in the consultation, then it would not be normal to object to the development at this stage, when all the facts, and supporting information from the Farmer/Developer may not be available. Decisions should be made at the appropriate time, during further phases of the EIA process. But the CA should point out areas where it is concerned about the possible impacts from the development.

The stakeholders should point out to the Farmer/Developer any legal impediment to the development.

Stakeholders should not impose any fees for the Pre-application discussions, even if it would be normal to do so for formal applications. The exception would be where the Farmer/Developer is asking formally for information or a report, which the Farmer/Developer will use, for which a fee should be paid.

General guidance

Pre-application consultation and discussions should be informal and non-binding on both parties. However, it will be important to make comprehensive notes about the consultations that do take place. If a full EIA is required by the Competent Authority, then the EIS should refer to the pre-application consultations, and note where the development design and implementation has changed as a result.

Changing the development plans as a result of consultations, at any point in the EIA process, is a good opportunity for the Farmer/Developer to show that he has taken seriously the issues raised and adjusted the plans accordingly, to provide mitigation.

The outcome of the pre-application discussion need not be agreement or a consensus on a way forward and indeed may not provide a comprehensive set of answers. It will likely raise more questions that will need to be considered. The main purpose is simply to exchange sufficient information to improve an understanding about the aquaculture development and of the issues concerned.

The outcome of the pre-application consultation will be to highlight the main issues of concern, such that the Farmer/Developer is able to provide better information to the screening process, and perhaps provide assessment and responses to the issues of concern at an early stage, if they decide to go ahead, perhaps eliminating the need to undertake a full EIA process.

3.4.3.2 EIA screening (Initial Environmental Examination - IEE or need for EIA):

What is Screening?

Screening is the process of deciding whether an EIA is required or not. In many countries it is referred to as an Initial Environmental Examination or IEE. It is a process that is initiated by a formal application for an aquaculture development by the Farmer/Developer.

During screening the Competent Authority must decide whether or not an EIA is required for the proposed aquaculture development / facility. It is therefore an initial examination of the proposal and its likely impacts.

The Farmer/Developer should make a formal application to the Competent Authority for permission to go ahead with the aquaculture Development. This should include submission of a letter of application, include any application forms required by the Competent Authority and should include the completed Screening Template (Appendix 2.2).

What is needed in the Pre-Application Template?

Parts of this template are the same as the Pre-Application Template and can be “cut and pasted”. In addition the Farmer/Developer should conduct an initial assessment of the possible impacts of their development. Section 3 in the template should highlight the key receptors, i.e. those things that may be impacted. In section 4 there is a checklist of broad elements that may be impacted, with the opportunity for the Farmer/Developer and the Statutory Consultees to consider what aspects may affect each of the receptors identified. Space has been left to add those note listed, which will depend on each application.

Statutory Consultees use this document to record their formal comments on the application and to add their views and comments.

Farmer/Developer responsibilities

For the screening process the Farmer/Developer should provide as much information as possible at this stage. The list of information to be provided is similar to that provided under Pre-application discussion, only in more detail where possible, and taking account of the discussions which took place.

Where pre-application consultations took place, the Farmer/Developer should outline what these discussions were, what was highlighted as issues, what the outcomes of this were and what changes have been made to the development as a result.

In addition where the Farmer/Developer should make some attempt to consider that things may be impacted by the development proposal, these are called receptors. Where the Farmer/Developer is aware that a particular impact will occur (e.g. waste feed and faeces, and their effects are well documented), they may also offer information (reports, research, expert opinion) on this and provide mitigation against these impacts at this stage.

It is in the Farmer/Developers interest to provide sufficient information for a reasonable decision to be made by the Competent Authority. The more comprehensive the information the better the decision that can be made.

Screening and the Competent Authority

Following a formal application for an aquaculture development, the process of Screening is carried forward and driven by the Competent Authority. For such development in Kyrgyzstan the Competent Authority is the State Agency for Environmental Protection and Forestry Management. The SAEP&FM has full responsibility for making the final decision on the need for EIA. However, it does not do this alone and must ask as a minimum the other Statutory Consultees for their input to the decision.

To this end the Competent Authority should forward the application and Screening Template to the statutory Consultees as soon as possible for their comments and feedback.

Once all the information is received the decision on whether or not to require an EIS should not be taken lightly. There is often a significant cost associated with an EIA, in terms of both time and money. EIA should be a necessary process in the context of the likely impacts from an aquaculture development. If impacts are not significant, or are well understood and readily mitigated against and are agreeable then EIA should not be necessary. If the development has some impacts but sufficient information and mitigation is offered with the application, then again the full EIA process may not be required.

Likewise it should not be instigated universally for all aquaculture development activity, or simply requested as a means of delaying an unwanted development. The development should not be approved without an EIA where impacts are liable to be high or significant, simply because the development is wanted, say for socio-economic reasons.

Here a Governmental strategy for the development of Aquaculture in Kyrgyzstan would prove useful.

In this context the Competent Authority, during the screening phase, can make a number of judgements that broadly fit in to 3 categories. It can decide whether:

- The proposed aquaculture development is below criteria thresholds set (see below) and is liable to have no significant impacts on the environment, and there are no concerns raised by other Stakeholders. In which case no further steps in the EIA process are needed and the Competent Authority can immediately make a decision to approve, or not approve (for other reasons) the development.
- The proposed development is below the criteria thresholds set (see below) but there are one or two (or more) areas where further information would be useful in order to carry out the evaluation and come to a decision.

Under these circumstances the Competent Authority will evaluate the information provided by the Farmer/Developer to see whether this answers some of the questions posed, or if insufficient can order further information to be provided if it can be easily done. If what the Farmer/Developer has provided is sufficient, or the Farmer/Developer is able to respond with further information within a reasonable time period then again the Competent Authority can decide whether or not the development can ahead.

- Finally, if the aquaculture development falls into a category where EIA is compulsory, or where the level of production is above the criteria threshold set (see below) and impacts are liable to be significant, or a large number of “receptors” are affected, then the Competent Authority can require that a full EIA assessment to be carried out before a decision can be made.

Thus, the need for an EIA comes down to the extent to which the proposed aquaculture facility is liable to impact the environment, the significance of these impacts, and the need to investigate and propose mitigation. There is generally no right or wrong answer to determine that an EIA is needed or not. However, there are some specific considerations that can be used to help in the decision.

Criteria-based decisions

Internationally, many countries operate some form of criteria-based decision system to help make the determination about whether an aquaculture development will need an EIA or not. Such systems often identify various upper limits for which an EIA is not required.

For example, for cage culture of fish (in freshwater or marine systems) regulators allow certain sized developments to take place (based on production biomass) without the need for EIA, provided the species being grown is native. Low level production of a non-native species may still require an EIA, if there are other sensitivities or impacts from the species requested being non-native.

In the example above the production biomass is generally set to a low value (in Europe 50-100 metric tonnes for example) which is significantly below what is economically viable to grow in Europe and EIA is therefore required for most forms of this type of production in Europe. Where the application for a cage site is below this level of production then less rigorous requirements are set. This would still incorporate the need to describe the development, consider the outputs from this facility (e.g. some estimate of the faecal and feed waste) and so on, and in some way to consider possible impacts and provide mitigation against them; and provided this is supplied in sufficient detail with the application, then a full EIA is not required.

In the case of pond culture the “size” set is usually an area based description (i.e. Ha of ponds) below which an EIA would not be required, specifically where the production system is extensive (no food added). If the size criterion is okay but the production system is intensive (feed added) then EIA may still be required.

Thus, the size criteria may encompass the species being grown, such that native species have different criteria than non-native species and also include other production characteristics, in the form of a matrix. Specific sizes of aquaculture developments and the species encompassed, in Kyrgyzstan, need to be considered by the Competent Authority and other key regulators, and be related to the norms here.

Over the top of this are further general criteria that may also need to be considered. As an example, in Europe all lakes are classified according to their nutrient status (oligotrophic, mesotrophic, eutrophic and hypereutrophic) and certain lakes will already have additional social pressures, such as sewage discharge, that makes them unsuitable for the additional nutrient load that fish farming will add to the system. These lakes are regarded as “off-limits” to aquaculture development. Other lakes may be off-limits simply because of the social uses they are put to (e.g. tourism). Some countries specify a minimum depth of water needed to grow fish in cages and all lakes that cannot support this depth are also not allowed to have cage culture. Perhaps certain river systems contain rare endemic species (e.g. in Scotland the Freshwater Pearl Mussel) that cannot be affected by the abstraction and subsequent return of nutrient rich water for and from a land-based flow-through pond or tank system, and such rivers are not allowed to have fish culture on or around them. Other limitations may relate to cultural heritage, archaeology, landscape and visual impacts.

This list is not exhaustive and the Competent Authority and other regulators will need to consider what might reasonably be included in an overall criteria-based assessment.

Consultation by the Competent Authority

It is expected that the Competent Authority will ask the opinion of other stakeholders. In the main such requests should be limited to the Statutory Consultees only, with other consultees where necessary. As stated previously the Template should be used by those consulted to provide the feedback and comment, thus providing their assessment of the proposal, in writing. This Template should be returned to the Competent Authority for consideration.

The written statement provided by the Statutory Consultees should outline what concerns them, receptors they think are likely to be impacted by the development, and some opinion to what extent

these are significant impacts or not. The Screening Template provides a numbered series of boxes that can be completed for each point raised.

Those consulted should consider the information that the Farmer/Developer has sent with the application to see if some of these concerns can be offset or mitigated through design or other changes, suggesting what these changes might be. They should also identify those things where further information or a more comprehensive assessment is needed. Finally, and on the balance of their expertise, of the information provided by the Farmer/Developer and the areas that need further investigation, they should provide their opinion about whether the full EIA is needed or not.

This then is a “Screening Opinion” and will prove invaluable as a tool to complete the Terms of Reference (TOR’s) during the Scoping phase, if an EIA is required.

General guidance

The decision made by the Competent Authority to require an EIA or not require an EIA should take account of:

- The application and a comprehensive description of the development.
- The additional information (pre-application discussions, changes made to design, known impacts and mitigation against these) provided by the Farmer/Developer in support of the application.
- The Screening Opinions provided by the Consultees
- The Competent Authority’s opinion.

Technically the Competent Authority can also decide to reject the application.

Having made the application it is assumed the Farmer/Developer has checked to ensure there is no legal impediment to the development and that the application complies with the national criteria set (see above), and thus the application should only be rejected outright if there is sufficient information available and formal grounds to make this decision.

Any decision; to not require an EIA, to require an EIA, or to reject the application outright needs to be fully justified.

The outcome of the Screening phase should be a written document (screening report) sent to the Farmer/Developer outlining the decision made and the comprehensive reasons for this decision.

Where an EIA is not required and approval is given for the development, in addition to the screening report the Competent Authority should issue a Licence. See licensing guidance later in this document.

3.4.3.3 EIA Scoping assessment (scope of the EIA)

What is Scoping?

Scoping is an important stage within the EIA process. It occurs once the decision has been made to order an EIA. In Scoping it is essential to identify, in writing, what specific issues and concerns need to be investigated and reported upon in the EIS.

The aim of Scoping is for the Competent Authority to provide the Farmer/Developer with the relevant information on:

- What impacts need further investigation, focusing primarily on the most important impacts.
- Alternatives that should be considered within the project
- Anything else of relevance

And in doing so this provides Terms of Reference (TOR's) for the Farmer/Developer to investigate and report on these issues and prepare an EIS. The "Scoping Statement" may include:

- Alternatives to be considered (alternate sites, alternate production type)
- Requests for baseline surveys and investigations to be carried out, e.g. testing of water quality, measurement of quality parameters
- Methods to be used, if appropriate. Continuing the example above, the CA may require a specific method to test water quality, or have specific parameters assessed. These should be specified.
- Mitigation which needs to be considered
- Organisations to be consulted, and
- The structure, content and extent of the environmental information to be provided (i.e. in the Environmental Impact Statement or EIS).

Requesting a Scoping Opinion and the Scoping Template

Farmer/Developer will normally request a Scoping Statement from the Competent Authority. They can do this by completing the Scoping Template and sending this to the CA. The Farmer/Developer simply completes the basic information on the front page of the template and sends this to the CA.

The Competent Authority can then formally provide a Scoping Statement. They can do this by asking the Statutory Consultees to complete Section 2 of the Scoping Template or The CA can use the information given by the Statutory Consultees during the Screening Opinions to draw up the Scoping/Terms of Reference.

Scoping Opinion

It is good practice to make the Scoping Statement as comprehensive as possible, but it has to be recognised that further information may be needed in order to make the best overall decision, which may not have been apparent at the time the Scoping Statement was initially produced. Thus it can be a flexible document that information can be added to.

However, this flexibility should not be used as a never-ending need to alter the extent of information to be supplied, which in the long term can lead to frustration on the part of the Farmer/Developer. If he repeatedly has to spend time and money to provide a never-ending stream of information requests this can be frustrating. Similarly the Farmer/Developer should not be expected to fund major research projects, simply to fill data gaps. If changes are necessary, then this should only be because the information is necessary because the impacts are significant.

In developing the Scoping Opinion there are 3 key things to consider:

- What effects could this project have on the environment, or social considerations?
- Which of these is liable to be significant and therefore require further investigation, and
- What alternatives and mitigation measures ought to be considered.

What would be useful would be to develop a checklist to help identify what the likely significant impacts may be. The checklist will be different depending on the type of production, whether it is pond (or tank) culture or for fish cage culture, for example, and will need to be developed in the context of what is possible in Kyrgyzstan. Example checklists for each type of production are provided in Appendix 2.3.

The Scoping Statement should be presented to the Farmer/Developer as a written document, through the Scoping Template.

3.4.3.4 The Environmental Impact Statement

What is an Environmental Impact Statement?

An Environmental Impact Statement (EIS) is a document, produced by the Farmer/Developer, which presents its responses to the Scoping Opinion. It needs to be a comprehensive written response which includes full descriptions of the production process and other information. All necessary information should be provided as a single document, even if having been previously provided during Screening. The EIS includes reporting the results of the scoping, baseline results, identification of receptors, assessment of impacts and mitigation measures; and requires submission of a written document.

What goes into the EIS?

The investigations should be reproduced into a comprehensive Environmental Impact Statement or EIS. Farmer/Developer's should use the Terms of Reference issued during Scoping (i.e. the Scoping Opinion) to highlight what needs to be added into the EIS. The Farmer/Developer should also include further information that it feels is needed to enhance the final decisions made.

To be effective and comprehensive the EIS needs to contain:

1. Description of the project, including in particular:
 - a. A description of the physical characteristics of the whole project and the land and water use requirements during the construction and operational phases.

This could include maps and pictures of the site and surrounding area, what infrastructure and buildings need to be constructed or used, feed and equipment storage facilities, office space and so on.

- b. A description of the main characteristics of the production processes. For example, type and quantity of fish and feed used, how are the fish to be fed or pond systems fertilized and when; materials used in construction and anchoring of cages or earth working required for ponds; if grading is carried out how this is completed, what

happens at harvesting time and so on. Effectively a description of all processes used in the culture of fish.

- c. An estimate, by type and quantity, of expected residues and emissions resulting from the operation of the proposed project. Here considering feed, faecal and excretory products lost to the environment, whether continuously as in cage culture or flow-through pond culture, or intermittently as in standing pond culture when water is released or exchanged, perhaps at harvest/re-stocking. But also consider any chemicals used (cleaning, against disease), likely noise from boats, generators, people (for e.g.), lighting required and so on.
2. An outline of the main alternatives considered by the Farmer/Developer and an indication of the main reasons for the particular choice made, taking into account the environmental effects.

Here considering alternative site locations perhaps or alternative production methods can be made and reported on. If there are issues about a particular location, then consideration of alternate site locations should be made.

- -
 3. A description of the aspects of the environment likely to be significantly affected by the proposed project, including fauna, flora, soil and water, but also local population, landscape, local archeology, national and regional parks, and any aspect that may be significantly impacted.

This will in part come from the Scoping Opinion, but should also include those aspects that the Farmer/Developer also highlights as needing additional information. This will include consideration not only of the environment, but also conflicts of interest, other users of water resources for example;

- -
 -
 4. A description of the likely significant effects of the proposed project on the environment resulting from:
 - d. the existence of the project,
 - e. the use of natural resources, i.e. water
 - f. the emission of pollutants, the creation of nuisances and the elimination of waste, and the description by the Farmer/Developer of the methods used to assess the effects on the environment, e.g. computer modelling perhaps, research papers, technical opinion, expert advice.
5. A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.

Some examples here would include management plans for prevention of disease outbreaks (i.e. buying only certified disease free eggs/fry); eliminating escaped fish (high quality netting, perhaps a strategy to recapture in the event of escape, or minimizing risk by using only native species, or for ponds ensuring appropriate barrier systems to capture fish that escape the pond); strategies to minimize feed waste (e.g. using high quality feed, not

feeding indiscriminately) and so on. What needs to be mitigated against and the extent to which mitigation can be made will depend on the development type.

6. A non-technical summary of the information provided under the above headings.

This should summarise in a few pages the key findings and outcomes in simple non-technical language.

7. An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the Farmer/Developer in compiling the required information.

This is important as this identifies uncertainties in the assertions made, and also where information available is simply lacking. The Competent Authority should not disadvantage the Farmer/Developer where technical information is simply not available or has not been previously researched. The Farmer/Developer should not highlight information where it would be reasonable for them to collect this information, e.g. base line studies.

The EIS will also highlight changes to the development design or to activities planned initially for the development that are now different as a result of mitigation measures imposed on the project. This is so the Competent Authority can see that progress has been made, that the risks have been minimised to the greatest possible extent, and that approval can be given with a high degree of confidence.

NOTE: The fact that the onus is on the Farmer/Developer to find and provide this information maybe a long term goal, due to the available capacity and expertise in Kyrgyzstan at present, the lack of independent consultants and the funding available for such a potentially detailed investigation. The Competent Authority and other statutory consultees (State Agencies) may be able to offer support to this through the provision of data for free or for a reasonable fee. The Institute of Biology may also play a key role here in the short term with the provision of their expertise on ichthyology and ecology. It is outside the scope of this project but it is recommended that the Competent Authority and other Agencies provide guidelines for the development of the EIS, and in particular provide guidance on how to assess some of the known impacts from fish culture to aid the Farmer/Developer to produce the EIS, and which would include methods of going about finding the data and interpreting it, at least for the most obvious impacts that are readily known to occur.

Recommendation 5: *The State should consider producing a guidance document specific to aquaculture for the production of the Environmental Impact Statement and methods of evaluating some of the more obvious impacts from Aquaculture.*

The Farmer/Developer should produce the EIS as a single document, to be submitted to the Competent Authority.

3.4.3.5 Delivery and reviewing the adequacy of the EIS

The Farmer/Developer will be required to deliver the completed EIS to the Competent Authority.

This can be delivered as a hard copy document or in electronic format. The Competent Authority may request the Farmer/Developer to provide a number of hard copies, at the Farmer/Developers expense. The Competent Authority can then use these to send to Consultees later in the process.

Review of the adequacy of the EIS can be conducted by the Competent Authority, another State Agency or by an independent person / organisation. Initially the best person to review the EIS would be the Competent Authority. Later this process may be delegated elsewhere.

Reviewing adequacy

The person reviewing the EIS needs to understand the Scoping Statement (TOR's). It requires the person to read through the EIS and then to clarify whether the EIS adequately addresses the issues raised in the Scoping Statement. Here the checklist that is recommended be produced under Scoping, is also useful to consider the quality and adequacy of the EIS, because it clearly identifies the pertinent questions to be asked, and allows a consideration whether the EIS has responded fully to these points.

If after checking the response is "Yes" all the main components has been addressed, then the review can conclude the EIS is adequate.

If the response is "No" then the reviewer should highlight those areas that are not adequate, and the Farmer/Developer should be able to address this before further stages in the EIA process are completed. The Farmer/Developer should be given the chance to provide additional information, and to clarify the points made as required. Alternatively the Farmer/Developer can comment on why the additional information is not possible.

When the Farmer/Developer re-submits the revised EIS, then the next review should only assess those areas previously stated to be inadequate.

What the review of adequacy should not do

This review of adequacy of the EIS does not make any judgement on whether the development can go ahead or not, and makes no recommendation about whether it can go ahead or not. The review merely identifies that the EIS is sufficient, that the responses are based in fact / science / reality and are realistic.

3.4.3.6 Consultation phase

What is this consultation?

Although consultees have been asked for their views on the project during the screening and scoping phases, and possibly also during pre-application consultation, further consultation after the EIS has been delivered is key to an open and fair system.

Consultation at this stage can be comprehensive and include not only the Statutory Consultees, but also the Non-statutory Consultees, and if desired the public.

The EIS should be made available (electronically or as hard copies) to the consultees. This is so they can assess whether the particular concerns they had during screening and scoping have been

addressed satisfactorily. If organisations and the public are being consulted for the first time, then they can see that the issues raised have also been addressed satisfactorily.

Responsibilities of those consulted

Those consulted should read through the EIS and highlight those areas of concern that have been adequately addressed and those that in their view have not been addressed adequately.

The Consultees should not at this stage raise additional concerns that have not previously been highlighted, unless they become apparent only when reading the EIS. The Consultee should highlight issues that have not been adequately addressed and require further work.

These comments should be passed back to the Competent Authority in writing. Provided the issues of concern have been addressed, this declaration should include whether the Consultee objects to or has no objection to the proposal.

If there are any further concerns or clarifications raised by the Consultees, then the Competent Authority should pass this information back to the Farmer/Developer, in order to allow the Farmer/Developer time to provide additional information, if he so wishes.

Consultation may also include the general public. Views can be gained through media advertising that a development proposal has been made and that the EIS is available for scrutiny. This should include an address so that the public know who to contact to gain a copy of the EIS and a deadline for responses should be set.

Public scrutiny

Alternatively, or in addition, the Competent Authority may order a public hearing at which the Farmer/Developer can present details about the application for their fish farm, present a summary of the EIA process and provide details of the assessments made and the outcomes.

The Farmer/Developer should have staff there, who are familiar with the proposal and who are able to answer questions about it. Presentation may be formal, such as a powerpoint presentation, or less formal, such as presenting posters and reading materials that people can view and take away or ask questions about, or a combination of the two. It should be made clear to the public that after this meeting they will have a defined period of time in which to provide their written views about the development proposal and what they have seen and read as a result of the public hearing and reading the EIS.

It would be normal practice to have a 4-6 week consultation period to allow for a detailed understanding of the project and the EIS submitted. The Competent Authority should ignore any responses made after this period.

3.4.3.7 Decision making phase

What is the Decision making phase?

Once the EIS has been delivered and found to be adequate, and the Consultees and general public (as applicable) have provided their responses to the consultation period then the final decision must be made about approval for the development.

The final decision rests with the Competent Authority.

The Decision Making phase of the EIS process is crucial. This part of the process should be a systematic review of the EIS, an evaluation of data provided, a consideration of the consultees and general public responses and views.

Making the decision

There are no critical guidelines that can be produced to advise the Competent Authority on how to make this decision.

The Competent Authority needs to be satisfied that the potentially significant impacts from the development have been addressed and minimised through mitigation and changes. If this is the case then the Competent Authority should approve the application. If not then rejection of the application is the likely result.

Making the decision can be complicated, by the nature of aquaculture developments and also by potentially conflicting views from the various stakeholders. Some may agree with the development, other may not. Some of the information provided may only be opinion (however expert or not), or some information may be lacking due to a lack of research in a particular field, or in a particular location. Some of the information provided in the EIS, particularly in areas such as mitigation, may only include what the Farmer/Developer agree to do or act in a particular way (e.g. buy only certified disease free eggs).

The Competent Authority must weigh up the balance of evidence, consider the applicant and their intentions and agreement to manage a certain way, take account of the varying opinions from Stakeholders and on this balance come to a decision.

Announcing the Decision

After the systematic review the Competent Authority must make a decision to approve or not approve the development.

This judgement must be provided in writing, and should be comprehensive and outline the associated reasons behind the decision. This is required so that the Farmer/Developer, other consultees and interested parties understand exactly the reasons for the approval given or the rejection of the application.

Issuing a licence

On approval the Competent Authority must issue the necessary permissions and a licence to go ahead with development of the facility. Again this should be a written document that outlines what has been approved and any associated conditions placed on the development.

To provide an example, such a Licence document should include:

- A brief description of what has been approved, i.e. a descriptive summary of the development.
- A map of the site;
- Conditions or limitations on what is allowed and not allowed
- Expectations about paperwork that needs to be maintained, or data that needs to be provided regularly
- Monitoring requirements.
- Should identify what chemical medicines, fertilizers and other treatments are approved and what quantities of these products are allowed to be used.
- Any other requirements of the development

In the case of pond culture this might identify:

- The maximum size of the pond(s);
- Any minimum or maximum pond depth requirements;
- A map or diagram of the site;
- Identifies permission to abstract water from a river, or otherwise the type of water source approved, and permission to release water back to the river or other watercourse and related to this a maximum allowable nutrient concentration for the water released; if appropriate
- The fish species allowed along with the number of fish or a maximum biomass;
- Whether or not fertilisation is allowed and what type of fertilisation;
- Whether or not the Farmer has to keep certain paperwork or develop records, such as fish egg purchase certificates/documents (e.g. to be able monitor quality), or measures of water quality, that can then be inspected.
- Others as appropriate.

In the case of tank culture, such as a hatchery, this might identify:

- The maximum size and number of tanks allowed;
- A maximum stocking density of fish welfare grounds
- May specify the type of construction allowed for the tanks;
- Details about abstraction of water from a river, or other type of water source approved, and details about the release of water back to the river or other watercourse and related to this a maximum allowable nutrient concentration for the water released;
- The fish species allowed along with the number of fish or a maximum biomass;
- The feed type allowed, along with how much feed is allowed to be used, which may also specify the quality expected to be used;
- Again any paperwork that needs to be maintained
- Others as appropriate.

In the case of cage culture of fish in a lake or reservoir, this might identify:

- The maximum size and number of cages;
- Minimum requirements in terms of anchoring, quality of materials to be used for cage infrastructure including net types;
- A map of the site;

- The fish species allowed along with the number of fish or more likely a maximum biomass for the site; specifications for the type and use of feed to be used at the site;
- Whether on-shore facilities are permitted and to what extent;
- Specifications for the maximum amount of nutrients to be added to the ecosystem;
- Paperwork requirements, which might include amounts of feed used each day, any disease treatments added, when and in what quantities
- Others as appropriate.

In all cases the licence should also identify the monitoring requirements at the site. This might include actions that the Competent Authority expects that the Farmer/Developer will carry out to assess local impacts on water quality, sediment quality or other impacts depending on the development type and the outcomes of the EIA process. It should also specify what actions the Competent Authority will take, by way of site visits or monitoring activity, along with expectations about paperwork needed to be maintained.

The permission granted and the licence and conditions that are applied should explicitly describe what is permitted and what is expected of the development and the Farmer/Developer. It should be in sufficient detail that checks carried out can verify that the licence and the conditions applied are being carried out.

Monitoring and managing

After the development has gained approval, follow up site visits and regular monitoring is a necessary function to ensure that the activities identified and mitigation offered in the EIS is being adhered to. Site visits should be carried out by an appropriate State Agency. As development of Aquaculture resides with the Department of Fisheries, then these would seem the most appropriate to evaluate the operations and activity of the farm, and the SAEP&FM may consider more the impacts on the environment. Regardless of who does what, the monitoring should ensure compliance with the licence, should consider how the site is run and the fish and activity managed, and specific aspects of monitoring should not be carried out by more than one Agency, to avoid conflicting information.

Such monitoring should be limited to assessing the most significant impacts, and to show whether the mitigation or alternatives proposed and the actions taken by the Farmer/Developer, once production has started, are having the desired effect. For example one of the largest impacts from cage culture is the release of nutrients in the form of waste feed, faeces and excretory materials. The Farmer/Developer may be required to monitor the water quality locally to assess the impact of the estimated level of nutrients being added. Equally for pond culture in a flow-through system, especially where semi-intensive and intensive methods are being used, nutrient flow into the river, lake or other receiving water may need to be assessed regularly to make sure the maximum limits applied for such release are not being surpassed. Such monitoring may be carried out by an appropriate State Agency, or as in many developed countries, the requirement may be placed on the Farmer/Developer who would then employ environment specialists to do this.

NOTE: this may be a longer term goal given the lack of independent consultants in the private sector to be able to carry out this monitoring activity.

Having monitored over a reasonable period and where the impacts are larger than those predicted there has to be a mechanism to allow for corrective action.

Here the Competent Authority/responsible State Agency in conjunction with the Farmer/Developer can propose and make changes to the site, the process or the infrastructure, to overcome the deficiencies or impacts identified. Having identified what the changes need to be, the Farmer/Developer should be allowed sufficient time for the changes to be implemented and to conduct monitoring to see whether the changes have made any difference.

Refusal by the Farmer/Developer to carry out the changes, or an inability to overcome the problems identified or if the Farmer/Developer is not working to the conditions laid out in the licence, it could result in the need to change or rescind the licence. Such changes might include a reduction in the physical scale of the site (e.g. reduced number of cages or ponds), so that the environmental impacts are brought under control. In the most extreme cases the licence can be withdrawn and the Farmer/Developer should cease production.

Monitoring ensures that the impacts identified in the EIA process and the mitigation measures identified are being carried out and are having the desired effect; and that the licence and conditions applied are being adhered to.

SECTION IV: TEMPLATES TO BE USED BY THE APPLICANTS FOR AQUACULTURE DEVELOPMENT PROJECTS AND ROLES AND RESPONSIBILITIES OF AGENCIES AND INDIVIDUALS TO IMPLEMENT THE EIA PROCESS

TEMPLATE FOR EIA PRE-APPLICATION CONSULTATION

FISH FARMING IN KYRGYZSTAN

GUIDANCE ON THIS PRE-APPLICATION CONSULTATION TEMPLATE

Prior to issuing the pre-application consultation template, the developer should consider the best way to consult the Statutory and non-statutory Consultees, including the public.

The aim of the Pre-application process should be for the developer to gain advance warning of the general feelings from the statutory and other key stakeholders about the proposed development. It should be an opportunity to highlight the key and significant impacts or concerns.

Request for pre-application consultation with stakeholders, by a developer, should not be construed by the stakeholders contacted to mean that such an application for an aquaculture development will go ahead. It is an informal request to discuss an application that may at some point be made. Whether or not the developer goes ahead with the application may come out of the pre-application consultations process. Key stakeholders should therefore support requests for informal pre-application consultations.

Failure to engage at this stage does not mean that opinions cannot be aired once the formal screening phase goes ahead.

FILLING IN THE TEMPLATE

At the points where you wish to add text, insert the cursor over the grey 'text form field'. Simply start typing. Text should wrap down the page, and main form boxes will expand to accommodate. **Save your version of the master file with your own unique filename.**

INTRODUCTION

Dear

We are proposing to undertake an aquaculture development at the site identified in this template, and would like to ask informally about your views about our proposals, as part of a non-statutory consultation exercise. There is no obligation on you to respond to this request, but pre-application consultation is good practice and it helps to identify any issues at an early stage so that these can be considered and, if relevant, addressed. We do hope you can help us by replying. It should be noted that this non-regulated part of the formal EIA process will be followed with the statutory Screening and Scoping consultation with statutory consultees.

Please see all the details concerning the proposal in this file. We should be grateful if you could send your response back to us by (a one week consultation period).

Please note that this consultation relates to new guidelines on Environmental Impact Assessment being introduced into aquaculture development in Kyrgyzstan, where the test is to identify the likelihood of **significant** environmental impact arising from this proposal.

However at this stage you may also wish to include any comments relating to the development. All responses will be analysed by my company and acted upon, if appropriate. If a formal planning application is lodged with the Competent Authority (the State Agency for Environmental Protection and Forestry Management) we will do our utmost to address the issues raised.

It would be helpful if you could respond electronically. If you can only respond with hard copy (by post), we will endeavour to scan your response and include it in our conclusions.

Finally, if it would be very useful to meet with you to discuss our proposal we will be happy to do this.

If you wish to discuss this proposal you can contact me on the number below. Our thanks in advance for your assistance.

Yours faithfully/sincerely

Date:

Position:

Company:

Address:

Email:

Tel:

EIA PRE-APPLICATION CONSULTATION TEMPLATE

PROPOSAL *(To be completed by the developer)*

Project Name:

Location:

Date:

Signed:

Position:

Company:

Contact Address:

Contact Email:

Contact Tel:

We provide additional material which we believe will be of assistance to you as you consider your concerns and possible impacts from the development. These are shown below.

ADDITIONAL DETAILS OF THE PROPOSAL

The Developer should complete this Section.

Insert a map showing location of farm, or range of location options if the development is for a new farm. If possible, also indicate the location of the relevant shore base on the map, and if known, the locations of other fish farm sites in the area.

‘Copy’ appropriate sized map from relevant file, highlight the grey form field below, and ‘paste’

NOTE: The developer can also scan a hand-drawn sketch of the site and area and attach here.

Insert a map showing configuration of proposed fish farm, and identify GPS coordinates if possible.

‘Copy’ appropriate sized map from relevant file, highlight the grey form field below, and ‘paste’

NOTE: Configuration will depend of farming type (pond, cage farm, hatchery, other). It should clearly show the detailed layout of the site

Insert any other relevant graphical information.

‘Copy’ appropriate sized map from relevant file, highlight the grey form field below, and ‘paste’

NOTE: This may include photographs of the proposed site.

Insert any other relevant text information concerning either the design or the operational characteristics of the proposed development.

NOTE: Information proposed depends on farming type and species. Should be a detailed description of the farming processes to include Description of the site, Planned biomass or production, Fish species being considered, Land or water area to be used, Infrastructure proposed (cages, ponds) and a description of the production process (such as where fish / eggs will come from, how they will be grown, what feed will be used and how much and how feed will be delivered, stocking density, fertiliser requirement [for ponds], production timescales and so on).

TEMPLATE TRANSFER GUIDANCE – 1

After the developer has completed all relevant sections, the current version of the template should be e-mailed to those stakeholders they wish to contact, whether they are Statutory Consultees or Non-statutory Consultees identified by the developer as having a pre-application interest in the proposal.

The templates should have a unique file name, which might usefully include the date at which they are e-mailed to consultees.

NOTE: *It is possible that the template file size might be too large for emailing, perhaps to some consultees and not others. If file transfer error messages are received, the developer should produce a hard copy of the proposal and **post** it to the consultee.*

EIA TEMPLATE FOR SCREENING FISH FARMING IN KYRGYZSTAN

NOTE: Completion of this Screening template must comply with the requirements of the Law on Environmental Protection (No 53, June 1999). It is the responsibility of the developer and the Competent Authority to ensure that it does.

From receipt of the Template the Competent Authority should aim to provide a comprehensive response on the development proposal to the Developer within 4 weeks of the date they receive the Template from the developer.

PROPOSAL *(To be completed by the developer)*

Project Name:

Location:

Date:

Signed:

Position:

Company:

Contact Address:

Contact Email:

Contact Tel:

We request an EIA screening opinion. Details of the project are attached.

We provide additional material which we believe will be of assistance to statutory consultees when considering EIA Screening – supplied in Annex 1. The documents attached are:

Attachment 1

Attachment 2

Attachment 3

(Add more references if necessary, by cutting and pasting from above).

Note: The Developer should add documents, summaries of research and documents which evaluate their initial assessment of the possible impacts of their development. These act as

supporting information.

PURPOSE OF THIS TEMPLATE

Before completing this template the Farmer/Developer should familiarise himself with the Aquaculture EIA guidelines prepared under FAO project GCP/KYR/003/FIN “*Support to Fishery and aquaculture management in the Kyrgyz Republic*”, the Law on Environmental Protection (No 53, June 1999) and the Instruction for the procedure for Performance of Environmental Impact Assessment of planned economic and other activities.

This EIA Screening Template is designed to assist the work of the relevant Competent Authority and the Statutory Consultees in determining the Screening Opinion. The Competent Authority and the Statutory Consultees should view and consider the information provided by the developer to come to the Screening Opinion.

The developer should start the process by completing the proposal box and sections 2-5 and by attaching any additional material in Annex 1 of this template. This should then be forwarded to the State Agency on Environmental Protection and Forestry Management as the Competent Authority. The Screening Opinion may result in approval without the need for EIA, or the need for EIA. It is important the Developer provides sufficient information to make this determination.

On receipt the Competent Authority should continue to use this template, as indicated in the appropriate sections.

FILLING IN THE TEMPLATE

At the points where you wish add text insert the cursor over the grey ‘text form field’. Simply start typing. Text should wrap down the page, and main form boxes will expand to accommodate the amount of text added. Please attempt to keep responses sufficiently brief to provide factual information.

For ‘check boxes’, double click when the cursor is on the box, and click the ‘*default value – checked*’ option.

Developers save your version of the master file with your own unique filename.

Competent Authority should allocate a unique number to the Screening Opinion and save the master under this number before forwarding to Statutory Consultees. This reference should be used on all further correspondence related to this Screening Opinion.

1 EIA SCREENING OPINION TEMPLATE *(To be completed by the Competent Authority)*

Relevant information request to Statutory Consultees

The Competent Authority should forward this template, saved under the unique reference number, to the Statutory Consultees immediately upon receipt from the Farmer/Developer

Dear Statutory Consultees,

We have received this request for an EIA Screening opinion, from the Farmer/Developer named at the start of the template. Information on the proposal and supporting details are attached.

I would be grateful if your organisation or agency, as a Statutory Consultee, will provide your advice (at the relevant part of sections 5 and 6) to assist us with our decision on the screening opinion.

We remind Statutory Consultees that our interest is in assessing whether the development will be likely to have **significant** effects on the environment by virtue of its nature, size or location.

Please advise whether:

- You consider that the proposed development will be likely to have “significant effect” on the environment by virtue of its nature, size or location. If so, please provide sufficient detail on what effects concern you. You can at this stage provide details about what additional information you would like considered in the Environmental Impact Statement. If not provided now you will be requested for this information during Scoping.

or

- You consider that the proposed development is not likely to have a “significant effect” on the environment, but you request that certain additional information is submitted in support of any future application for the proposed development. Please identify what information.

or

- As far as your interests are concerned you are content for the proposal to proceed without any further requirements for environmental information.

Your response is required by [Competent Authority add date, allow 4 weeks for responses]

If I do not hear from you within the stated timescale it will be assumed that you have no comment to make on the acceptability or otherwise of the proposed development.

Electronic signature of person in Competent Authority dealing with proposal:

Print Name:

Contact Telephone no:

Today's Date:

2 ADDITIONAL DETAILS OF THE PROPOSAL *(To be completed by the Developer)*

The Developer should complete this Section, and refer particularly to the relevant guidance, where available.

Insert a map showing location of farm, or range of location options if the development is for a new farm. If possible, also indicate the location of the relevant shore base on the map, and if known, the locations of other fish farm sites in the area.

‘Copy’ appropriate sized map from relevant file, highlight the grey form field below, and ‘paste’

NOTE: The developer can also scan a hand-drawn sketch of the site and area and attach here.

Insert a map showing configuration of proposed fish farm, and identify GPS coordinates if possible.

‘Copy’ appropriate sized map from relevant file, highlight the grey form field below, and ‘paste’

NOTE: Configuration will depend of farming type (pond, cage farm, hatchery, other). It should clearly show the detailed layout of the site

Insert any other relevant graphical information.

‘Copy’ appropriate sized map from relevant file, highlight the grey form field below, and ‘paste’

NOTE: This may include photographs of the proposed site.

Insert any other relevant text information concerning either the design or the operational characteristics of the proposed development.

NOTE: Information proposed depends on farming type and species. Should be a detailed description of the farming processes to include Description of the site, Planned biomass or production, Fish species being considered, Land or water area to be used, Infrastructure proposed (cages, ponds) and a description of the production process (such as where fish / eggs will come from, how they will be grown, what feed will be used and how much and how feed will be delivered, stocking density, fertiliser requirement [for ponds], production timescales and so on).

3 IDENTIFICATION OF ENVIRONMENTAL RECEPTORS *(To be completed by the Developer)*

Initial Assessment of Presence of Environmental Receptors

The **Developer** should complete section 3.1 and 3.2 to the best of their ability and knowledge. This section identifies the Developers considered opinion on what impacts may arise from the development and the elements that may be affected (the receptors). Tick the appropriate boxes and give details.

4.1 Sensitive Area

Is the proposed development located in or adjacent to any of the following:

Site of Special Scientific Interest	☐
Land subject to Nature Conservation	☐
International Conservation Sites	☐
World Heritage Sites	☐
National Monuments	☐
National Parks	☐
Trans-Boundary Issues	☐
Other, please specify.	☐

Please give a brief summary of effects on sensitive areas, if known:

4.2 Sensitive Species or Habitats (e.g. refer to Kyrgyzstan Red Book and international references)

Is the proposed development located near to any identified sensitive species or habitat(s)?
Provide a brief description of these and how they are likely to be impacted?

Does the proposed development involve the growth of non-native species? Give name(s) of species and give reasons and likely impacts.

Please identify what these are:

4.3 Other environmental receptors.

Is the proposed development liable to impacts any other receptor? (*e.g. human interaction; noise, water and land pollution, cultural heritage, cumulative impact, air quality*), with a brief description of how impacted.

Mark boxes and give details below.

- Water resources required? ☐
e.g. lakes, rivers, groundwater, irrigation water
- Impacts on water resources likely? ☐
e.g. increases in nutrient levels, fish and feed wastes, pond draining
- Impacts on other fish species likely? ☐
e.g. consider likelihood of fish escaping
- Potential disease effects? ☐
Note: not only those affecting your fish stocks, but also the wider fish community
- Are chemicals to be used? ☐
e.g. disinfectants, antibiotics, others
- Is infrastructure needed? ☐
e.g. ponds, cages, shore facilities (what?), feed stores, offices, workshops, equipment
- Conflicts of interest with other users? ☐
e.g. other water uses, other water users, fisheries, tourism.

Please provide details for each marked box:

4 SCREENING CHECKLIST *(To be completed by the Developer initially, and statutory consultees subsequently)*

The Competent Authority might wish to take account of the following potential impacts of fish farming in relation to existing regulatory regimes.

Where a Statutory Consultee is also the regulator, they should clearly state this and briefly summarise the scope of their powers to regulate the impact in question.

Below are a summary of issues that might be considered when making an application for an aquaculture facility.

IMPACT	Comments
1. Benthic Impacts	Only relevant for cage farming in lakes, given the potential to deposit large quantities of faecal and waste feed material. Possible degradation to lake bed and release of nutrients to the water column.
2. Water Column Impacts	Release of nutrient rich materials (feed, faecal and excretory products from cage farming, water flow out of ponds and flow-through hatchery and ponds to receiving water, potentially affecting water quality.
3. Impacts upon species or habitats of conservation importance, including Sensitive Sites	Need to consider sensitive species and habitats, whether protected by law or not and the impact of the development on these.
4. Navigation, Anchorage, Commercial Fisheries, other non-recreational uses (e.g. irrigation)	Need to consider other users of the water sources, land base and site, as applicable, that may be impacted in their ability to fulfil their requirements if the development were to go ahead. May have positive effects, e.g. increasing nutrient composition of irrigation water, may have negative effects such as conflicts with other water users.
5. Landscape and Visual Impact Assessment	In addition to species, habitats and sensitive sites, the visual impact of the sites location (on other users and more generally), may be considered.
6. Noise	May be a factor where generators, boats and other noisy equipment are to be used, either during the construction of the site, the operation of the site, or if the development is time-limited, in the deconstruction of the site.
7. Waste Management	Certain types of production can result in significant quantities of waste materials that will need to be disposed of. This may include dead fish in the event of large fish kills.
8. Socioeconomic,	Need to consider current ownership, use and access to and through

Project Name:

Location:

Other identifier:

Screening Checklist
For each of the numbered potential impacts in the left hand column, consideration should be given to the following points: A. Will the impact have an effect on any of the receptors or issues identified in sections 3.1 and 3.2 Have all the receptors/issues/effects been identified. Explain. B. Is the impact covered by other regulation or law? State your reasons for wishing to discuss it further in this document. C. Is there potential for cumulative or indirect impact on an identified receptor. Explain. D. SCREENING ADVICE. Is the impact on receptor(s) likely to have a significant effect. Explain. <i>Please provide concise information, and refer it specifically to elements A to D where appropriate.</i>

IMPACT TYPE	INSERT YOUR COMMENTS IN THE APPROPRIATE ROW
1. Benthic Impacts	
DEVELOPER	
STATUTORY CONSULTEE	
2. Water Column Impacts / Water quality issues	
DEVELOPER	
STATUTORY CONSULTEE	
3. Impacts upon species	

or habitats of conservation importance, including Sensitive Sites	
DEVELOPER	
STATUTORY CONSULTEE	
4. Navigation, Anchorage, Commercial Fisheries, other non-recreational water uses (e.g. irrigation)	
DEVELOPER	
STATUTORY CONSULTEE	
5. Landscape and Visual Impacts	
DEVELOPER	
STATUTORY CONSULTEE	
6. Noise	
DEVELOPER	
STATUTORY CONSULTEE	
7. Waste Management (non-fish)	
DEVELOPER	

STATUTORY CONSULTEE	
8. Socioeconomic, Access and Recreation	
DEVELOPER	
STATUTORY CONSULTEE	
9. Traffic and Transport	
DEVELOPER	
STATUTORY CONSULTEE	
10. Trans-boundary issues	
DEVELOPER	
STATUTORY CONSULTEE	
11. Any other issue (please specify clearly)	
DEVELOPER	
STATUTORY CONSULTEE	

TEMPLATE TRANSFER GUIDANCE – 1

*After the developer has completed the Proposal box and Sections 2, 3, 4 and the relevant rows of Section 5, the current version of the master template, **should be emailed or posted to the Competent Authority.***

The template should have a unique file name, which might usefully include the date at which this version is emailed/posted to the Competent Authority.

TEMPLATE TRANSFER GUIDANCE – 2

*After the Competent Authority has completed Section 1, the current version of the master template, saved using a unique identifier (Screening Number) **should be emailed or posted to the Statutory Consultees.***

5 STATUTORY CONSULTEE RESPONSE

Statutory Consultees should complete section 5, having in addition completed their relevant part of section 4

5.1. Organisation:

Contact name:

Directorate/Division/Agency:

Telephone number:

Email:

We have considered this proposed development in terms of formal EIA Screening, and have completed our assessment of the significance of potential environmental impacts.

Check or complete the following fields as required.

We obtained supplementary information from the developer during our consideration ☐

We consulted with other Statutory Consultees during our consideration ☐

Our advice as to your Screening opinion is summarised as:

Electronic signature:

Date:

TEMPLATE TRANSFER GUIDANCE – 3

*After each Statutory Consultee has completed their relevant part of Sections 4 and 5, they should email or post **those sections only** back to **Competent Authority** by the deadline specified in section 2.*

Prior to doing so, the Statutory Consultee should complete the boxes at the top of the second page of Section 5 on the name of the project and its location in order to identify which project they are commenting upon. If another unique identifier has been agreed with the Competent Authority, the 'other identifier' box should also be completed.

The returned portion of the template should have a unique file name, which might usefully include the date at which this version is emailed/posted to the Competent Authority.

Once the Competent Authority has received and analysed the responses from statutory consultees, and reviewed the Developer's proposal, they should complete Section 6. Use Annex 2 to provide to provide a full statement of the reasons the development is consider to require an Environmental Impact Statement, in the event that point 3 is "checked". Use Annex 3 to cut and paste in the responses from the Statutory Consultees.

6.1. SCREENING OPINION – Competent Authority Summary

We have considered this proposed development in terms of formal EIA Screening, and have completed our assessment of the significance of potential environmental impacts, and the advice offered by Statutory Consultees where relevant. We conclude:

1. No EIA is required for this proposed development and approval can be given ☐
2. We will require further information in order to determine whether an EIA is required or not. See below for details.
☐
3. An EIS will be required for this proposal. A statement of reasons is attached (as Annex 2).
☐

In the event of checking box 2 above, please enter what further information is required below..

We wish you to provide the following further information before a final decision can be taken on whether an EIA is required or not:

Electronic signature:

Name:

Planning authority:

Telephone no:

Date:

TEMPLATE TRANSFER GUIDANCE - 4

The relevant authority should now send (e-mail or post) this completed template to the developer

*within the **4 week** deadline period.*

ANNEX 1

DEVELOPER TO USE AS REQUIRED FOR ADDITIONAL INFORMATION

Insert any attachments here.

**ANNEX 2 COMPETENT AUTHORITY TO INSERT A FULL STATEMENT OF
REASONS WHY THE DEVELOPMENT IS A DEVELOPMENT THAT
REQUIRES AN ENVIRONMENTAL IMPACT STATEMENT THROUGH THE
EIA PROCESS**

Competent Authority insert letter here.

**ANNEX 3 COMPETENT AUTHORITY TO INSERT STATUTORY
CONSULTEE RESPONSES (IF APPROPRIATE)**

*If this Annex is to be utilised, the Competent Authority should paste in all the Statutory
Consultee Section 5 and 6 responses.*

EIA TEMPLATE FOR SCOPING

FISH FARMING IN KYRGYZSTAN

NOTE: Completion of this Scoping template must comply with the requirements of the Law on Environmental Protection (No 53, June 1999). It is the responsibility of the developer and ultimately, the Competent Authority to ensure that it does.

From receipt of the Template the Competent Authority should aim to provide a comprehensive Scoping Statement for the development to the Developer within 6 weeks of the date they receive the Template from the developer.

PROPOSAL *(To be completed by the developer, same information as Screening*

Project Name:

Location:

Date:

Signed:

Position:

Company:

Contact Address:

Contact Email:

Contact Tel:

As the Competent Authority you have determined that the above development requires an Environmental Impact Assessment to evaluate the more significant impacts from the development.

In order to complete this satisfactorily we request an EIA Scoping opinion from you, encompassing the requirements of the Statutory Consultees.

PURPOSE OF THIS TEMPLATE

Before completing this template you should familiarise yourself with the Aquaculture EIA guidelines prepared under FAO project GCP/KYR/003/FIN “*Support to Fishery and aquaculture management in the Kyrgyz Republic*”, the Law on Environmental Protection (No 53, June 1999) and the Instruction for the procedure for Performance of Environmental Impact Assessment of planned economic and other activities.

This EIA Scoping Template will primarily be completed by the Competent Authority, taking account of the comments and requirements laid out by the Statutory Consultees. This will then be used by the Developer to carry out the necessary investigations, and to form the basis of the Environmental Impact Statement.

The developer should initiate the request for a Scoping Statement by completing the proposal page, and subsequently use this template as a outline requirement for the development of the Environmental Impact Statement.

FILLING IN THE TEMPLATE

At the points where you wish add text insert the cursor over the grey ‘text form field’. Simply start typing. Text should wrap down the page, and main form boxes will expand to accommodate the amount of text added. Please attempt to keep responses sufficiently brief to provide factual information.

For ‘check boxes’, double click when the cursor is on the box, and click the ‘*default value – checked*’ option.

1 EIA SCOPING OPINION TEMPLATE *(To be completed by the Competent Authority)*

Relevant information request to Statutory Consultees

The Competent Authority should forward this template, saved under the unique reference number, to the Statutory Consultees immediately upon receipt from the Developer

Dear Statutory Consultees,

The Development outlined at the start of this template underwent a Screening Opinion in which you were involved. On consideration of all the evidence, we as the Competent Authority have determined that a full EIA process is needed. The Farmer/Developer has been asked to produce an Environmental Impact Statement.

The Famer/Developer has asked for a Scoping Opinion. We would be grateful if your organisation, as a Statutory Consultee, would now provide your advice to assist the Developer in understanding what specific points require more detailed investigation and reporting.

We remind Statutory Consultees that our interest is in assessing whether the development will be likely to have **significant** effects on the environment by virtue of its nature, size or location.

Please provide:

- A summary of any specific concerns that are liable to have a significant environmental impact; and
- A summary of the details that you wish to see evaluated in the Environmental Impact Statement.

If you identify concerns that do not specifically fall within your remit, then please identify these.

This information should be a comprehensive, but concise summary of the information requiring evaluation by the Developer. Please refer back to your comments during the Screening phase to ensure all areas are covered. You may also provide sources of information or other methods you wish used to evaluate the particular concern.

This information will form your Scoping Statement, which will be combined with Scoping Statements from other Statutory Consultees and sent to the Developer.

Your response is required by [Competent Authority add date, allow 2 weeks for responses]

If I do not hear from you within the stated timescale it will be assumed that any issues highlighted during Screening are resolved or no longer significant concerns, and you have no further comment to make on the development.

Electronic signature of person in Competent Authority dealing with proposal:

Print Name:

Contact Telephone no:

Today's Date:

2 SCOPING OPINION *(To be completed by the Statutory Consultee)*

The Statutory Consultee should complete this Section, and relay any and all significant impacts that require more detailed study.

In each box, provide a summary of the A summary of any specific concerns that are liable to have a significant environmental impact; and underneath a summary of the details that you wish to see evaluated in the Environmental Impact Statement.

Add more boxes as appropriate.

Concern 1:

Details you wish to see evaluated:

Concern 2:

Details you wish to see evaluated:

<i>Concern 3:</i> <i>Details you wish to see evaluated:</i>
<i>Concern 4:</i> <i>Details you wish to see evaluated:</i>
<i>Concern 5:</i> <i>Details you wish to see evaluated:</i>

Please add more boxes as required.

TEMPLATE TRANSFER GUIDANCE – 1

*After each Statutory Consultee has completed Section 2, they should email or post Section 2 only back to the **Competent Authority** by the deadline specified*

The returned portion of the template should have a unique file name, which might usefully include the date at which this version is emailed/posted to the relevant authority.

3 COMPETENT AUTHORITY SUMMARY

Once the Competent Authority has received the responses from statutory consultees, they should complete Section 3. Use Annex 1 to cut and paste in the Scoping Statement responses from the Statutory Consultees.

3.1. SCOPING OPINION – Competent Authority Summary

We have received advice by way of completed versions of this Template, from all relevant Statutory Consultees. We conclude that an EIA is required and an Environmental Impact Statement should be prepared and submitted for consideration. The specific issues we would wish to see addressed in the ES are set out in our attached scoping opinion (Annex 1).

Electronic signature:

Name:

Planning authority:

Telephone no:

Date:

TEMPLATE TRANSFER GUIDANCE - 4

*The relevant authority should now send (e-mail or post) this completed template to the developer within the **8 week** deadline period.*

**ANNEX 1 COMPETENT AUTHORITY TO INSERT THEIR SCOPING
STATEMENT HERE ALONG WITH STATUTORY CONSULTANT RESPONSES.**

Insert any attachments here.

SECTION V: DEVELOPMENT OF AN OUTLINE METHODOLOGY/GUIDELINE TO DETERMINE THE CARRYING CAPACITIES OF ISSYK-KUL AND SON-KUL LAKES.

5.1 Introduction

This part of the project provides the background for a further project to be carried on behalf of UNDP under their project “*Strengthening Policy and Regulatory Framework for Mainstreaming Biodiversity into Fishery Sector*” in collaboration with FAO.

The project is to conduct a review of possible methods to evaluate the carrying capacity of Issyk-Kul Lake for the cage culture of fish, to conduct modelling to estimate what this carrying capacity is, using available metadata and possibly collected data. The approach taken and results determined must be realistic and cautious in principle so as to not overplay the likely quantities of fish able to be produced. At the same time the model must be functional, able to be implemented without the need for high-level expertise and be based on characteristics that can be readily measured or supplied. Carrying capacity models should have the capability to conduct what-if scenarios so that different level of production can be evaluated. The aim always is to understand the mechanisms limiting carrying capacity whilst having little to no impact on the water quality and condition of the receiving water.

Outline TOR's

- Review the possible carrying capacity models applicable to Issyk-Kul Lake
- Design a suitable carrying capacity study for Issyk-Kul Lake.
- Prepare a guideline document that outlines the methodology including sampling and analysis protocols and approach of the selected carrying capacity model
- Initiate the field sampling process with training for technical staff
- Conduct modelling of Issyk-Kul Lake and recommend the minimum and maximum production allowable using cage culture, depending on species being considered and available biological and hydrographic information.
- Develop and conduct national training in the modelling framework and results defined.

5.2 Carrying capacity

Aquatic ecosystems consist of large numbers of different organisms which depend upon the fixing of light into carbon-containing compounds by photosynthetic green plants, and the subsequent cycling of material through a complex web of food chains. Most lakes and reservoirs derive energy from autochthonous (internal) production by algae, macrophytes and periphyton, these plants requiring light, a carbon source and a supply of nutrients to be able to develop.

In this context the waste outputs from aquaculture activities provide an additional source of nutrients to the system, which may then be used by algal species (and fauna) to over-develop, leading the potential for eutrophication effects.

Fish culture in cages are open systems which use resources and deposit wastes directly to the environment and the environment must be able to assimilate or otherwise respond to the additional nutrients being added. Response is often associated with alterations to water quality through changes to primary productivity which must be limited in order to not alter the trophic state of the system. In essence the outcomes of the models must be realistic and if implemented (as actual production) should have a manageable and acceptable change to the environment, so that production may be sustainable in the long term. There are too many instances internationally of ecosystem crashes that result from an over-production of fish in systems that were unable to assimilate or respond to the changes (nutrients) introduced.

It is likely that a certain level of fish production will be possible within Issyk-Kul Lake, without detrimental effect. But this will to a large extent depend on the biology of particular species being grown, on their feeding regime, on feed composition and likely waste outputs. Aquaculture of fish in cages produces a lot of waste in the form of uneaten feed, faecal materials and excretory products. These enter the water environment directly in various chemical forms which may be available immediately to other species, or add to suspended or deposited solids that may become available as sources of nutrients after bacterial processing. The model needs to encapsulate this plus reflect the current water quality status of the lake and possible changes as a result of fish culture activity to determine an overall quantity of fish that might reasonably be produced in the system.

In freshwaters phosphorus is often a limiting nutrient in lake productivity. After the P has been used up through primary productivity (micro and macroalgal growth) then further growth and development is unable to take place (is limited), even where other nutrients are present in sufficient quantities. Thus, in freshwater carrying capacity models P is often the primary term evaluated. Fish do not naturally contain the phosphatase enzyme and are not able to readily metabolise phosphorus in the diet. Farmers need to compensate for this by using feeds that have a higher level of dietary phosphorus than is really needed by the fish, which then goes to waste. Levels of phosphorus in uneaten feed and faecal wastes therefore tend to be relatively high as a proportion of the dietary requirement in fish.

5.3 Approaches possible

Carrying capacity is an important concept for ecosystem-based management which helps define the upper limits of aquaculture production and ecological limits, and the social acceptability of aquaculture without causing “unacceptable change” to both natural ecosystem and social functions and structures.

Assessment of carrying capacity is one of the most important tools for technical assessment of not only the environmental sustainability of aquaculture since it is not limited to farm or population size issues but can be applied at ecosystem, watershed, and global scales. There are various forms of carrying capacity that might be considered.

- Physical carrying capacity: simply assumes the whole water body is used for aquaculture; in effect it is no more than the “total area suitable for aquaculture”. Physical carrying capacity is useful to quantify potential areas available for aquaculture in the ecosystem, but offers little information towards calculating aquaculture’s limits within the water body.
- Production carrying capacity: estimates maximum aquaculture production, typically at the farm scale. Production biomass calculated as production carrying capacity could be restricted to smaller areas within a water basin so that the total production biomass of the water basin does not exceed the ecological carrying capacity.
- Ecological (or assimilative) carrying capacity: is defined as the magnitude of aquaculture production that can be supported without leading to significant changes to ecological processes, species, populations, or communities in the environment.
- Social carrying capacity: can be defined as the amount of aquaculture that can be developed without adverse social impacts. Effectively, what is the maximum biomass that might be considered acceptable by the local and national general public based on societal attitudes.

This project will make evaluation of the first 3 of these, in terms of looking at the physical properties of the lake to determine all the possible locations where production could take place; evaluate the size of farms in relation to how this may impact localised effects; and assess ecological or assimilative capacity so as to not have significant changes to the environment.

Carrying capacity models that may be considered for this work include that developed by Vollenweider (1968, 1975, 1976), and later by Dillon and Rigler (1974) and others. Whilst these models are relatively old they nonetheless serve as a relatively simple explanation of potential changes to ecosystems, based on phosphorus loading and a few other variables. More complex models will also be assessed but it is likely that there may be insufficient metadata available to be able to realistically run the model and there is not going to be the available funding or time to conduct a specific series of data collection sufficient to enable model development and verification.

5.4 Data provision

The Hydrometeorological Department already have a large database of physio-chemical information that may be used for this project. This includes long-term measures of temperature, some nutrients including phosphorus, river water flow rates and other data that will be useful for this project. As far as is known, some biological data, such as chlorophyll concentrations, may not be available though this needs to be investigated further. Other data

requirements will be determined after an initial assessment of the available models has been made.

Short term collection of data is unlikely to add to the overall project. The project is planned to be carried out over 3 months only, and this is insufficient time to remedy shortfalls in existing data. Means to overcome any particular shortfalls will be assessed during the project.

Appendix 1. List of main activities requiring EIA from Instruction on how to complete an [Environmental] Impact Assessment document (Registered in the Ministry of Justice Kyrgyz Republic July 4, 1997 Index 386)

1. Energy Facilities
2. Reservoir
3. Mining and processing of petroleum
4. Production of Building materials
5. Agriculture and Forestry
6. Mining
7. Metal Industry
8. Production of Glass
9. Production of pharmaceutical and biological products
10. Chemical production
11. Food
12. Textile, leather and paper industries
13. Warehouses of toxic, hazardous or radioactive substances
14. Facilities for waste water treatment and flue gases
15. Water withdrawal from groundwater
16. Water supply system of settlements, irrigation or drainage
17. Construction of roadways or railways
18. Airports, airfields, training grounds for internal ports, navigation and racing grounds
19. Construction of facilities for recreation and tourism
20. The organisation of industrial sites
21. Sewer network
22. Mountain lifts and cable cars
23. Disposal, recycling and disposal of industrial and household wastes.