
Guidelines on the application of the environmental impact assessment procedure in aquaculture in the Central Asia and Caucasus region



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Guidelines on the application of the environmental impact assessment procedure in aquaculture in the Central Asia and Caucasus region

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PREPARATION OF THIS DOCUMENT

The Guidelines on the application of the environmental impact assessment procedure in aquaculture in the Central Asia and Caucasus region have been prepared by the FAO Project “Support to Fishery and Aquaculture Management in the Kyrgyz Republic (GCP/KYR/003/FIN)”. This document presents the key outcomes of an activity of the project to assess the current status of, and to determine a new procedure, for environmental impact assessment for aquaculture in the region. The Report on Environmental Impact Assessment Policy and Procedure for Aquaculture in the Kyrgyz Republic, prepared by R.A. Corner (international consultant on FAO Project GCP/KYR/003/FIN), provided valuable inputs to this document.

The Guidelines are a further contribution towards the implementation of the provisions of the FAO Code of Conduct for Responsible Fisheries (the Code) and thus have no formal legal status. *Inter alia*, the Code strongly emphasizes the need for responsible fisheries and aquaculture development, equitable international trade, and the protection of the environment and aquatic biodiversity. The information presented is intended to assist with consideration of issues related to the implementation of the provisions of the Code, particularly with respect to protection of the environment and aquatic biodiversity. Any differences in the terminology employed should not be considered as a reinterpretation of the Code. The Guidelines are intended to be flexible and capable of evolving as circumstances change or as new information becomes available.

ABSTRACT

The Guidelines on the Application of the Environmental Impact Assessment Procedure in Aquaculture in the Central Asia and Caucasus Region have been developed in support of Article 9 (aquaculture development) of the FAO Code of Conduct for Responsible Fisheries. The objective of the Guidelines is to contribute towards the development of an applicable procedure to assess the environmental impacts of aquaculture developments and projects in countries in the Central Asia and Caucasus region. A summary and the Guidelines cover a number of issues and stages relevant to the implementation of such a procedure, including: legal components, defining stakeholders, pre-application procedure, screening, scoping, preparation of environmental impact statement, reviewing adequacy of the environmental impact statement, consultation, decision-making and monitoring. The legal and institutional frameworks of selected countries in the Central Asia and Caucasus region have been summarized in this document to assess the enabling legal and institutional environments to implement an effective environmental impact assessment procedure for aquaculture developments and projects. The Guidelines were prepared based on widely accepted guiding principles of environmental impact assessment procedures.

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ABBREVIATIONS AND ACRONYMS

BMP	better management practice
CA	competent authority
COC	code of conduct
Code	Code of Conduct for Responsible Fisheries
COP	code of practice
EIA	environmental impact assessment
EIS	environmental impact statement
IEE	initial environmental examination
NGO	non-governmental organization
SEE	state ecological (or environmental) expertise
TOR	terms of reference

1. Introduction

The environmental impact assessment (EIA) procedure is an internationally recognized method of investigating the likely impacts of a development on the surrounding environment before the development has taken place, and of 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. It ensures decisions can be based on sound scientific information, and appropriate mitigation and management measures applied. It also provides a basis for monitoring to ensure the proposed impacts do not exceed defined environmental standards. Importantly, it is a procedure 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, the EIA procedure is generally well implemented for large infrastructure projects, such as oil installations, power generation projects, mining and road development. Less well developed globally is its application within the aquaculture sector. However, the situation is improving all the time as more countries recognize the benefits of EIAs in developing a sustainable aquaculture industry (FAO, 2009). Many countries now implement EIAs for aquaculture developments to varying degrees. The EIA procedure is most commonly applied to intensive marine finfish culture and to proposals for large-scale shrimp farm developments. Some countries with significant large-scale aquaculture industries do not apply EIAs to aquaculture development but rather rely on a range of alternative environmental management procedures (FAO, 2009).

It is important to recognize that, globally, the majority of fish-based production occurs at small-scale farmer level – often family-based extensive systems – and full EIAs are not implemented. However, such production is not unregulated and alternate standards and practices are nonetheless applied, mostly through “soft” means such as better management practice (BMPs), certification of BMP, codes of practice (COP), codes of conduct (COCs) or a combination of these (e.g. in Southeast Asia, Europe and the United States of America). These standards and practices are often managed through associated practical guidelines typically generated by a department of fisheries and aquaculture and/or environmental agencies. Such guidelines, based on sound criteria, define the minimum standards expected, and often also state which types of activity will require an EIA or more significant investigation before decisions on approval can be taken.

The recent publication *Environmental Impact Assessment and Monitoring in Aquaculture* (FAO, 2009) provides a good summary of the key requirements of EIAs in aquaculture, and it also presents various country case studies that are a good source of further information.

These regional technical guidelines on the implementation of EIA of aquaculture developments have been developed to support the following principles set out in the Article 9 of the Code of Conduct for Responsible Fisheries (the Code), which was unanimously adopted in 1995 by FAO, namely:

- **Article 9.1.1:** States should establish, maintain and develop an appropriate legal and administrative framework which facilitates the development of responsible aquaculture.
- **Article 9.1.2:** States should promote responsible development and management of aquaculture, including an advance evaluation of the effects of aquaculture development on genetic diversity and ecosystem integrity, based on the best available scientific information.
- **Article 9.1.3:** States should produce and regularly update aquaculture development strategies and plans, as required, to ensure that aquaculture development is ecologically sustainable and to allow the rational use of resources shared by aquaculture and other activities.
- **Article 9.1.4:** States should ensure that the livelihoods of local communities, and their access to fishing grounds, are not negatively affected by aquaculture developments.
- **Article 9.4.2:** States should promote active participation of fish farmers and their communities in the development of responsible aquaculture management practices

1.1 Statement of purpose

The purpose of the Guidelines is to provide guidance on the implementation of EIAs. An EIA is a tool that can be used to minimize negative impacts of aquaculture on aquatic environments and to take precautionary measures to ensure equitable and sustainable use of aquatic resources in developing aquaculture sustainably. The Guidelines consider a range of issues that are relevant to the implementation of EIAs to aquaculture developments, including: legal components; policy development; transparency and participation; decision-making; and social and ethical issues. They have been developed in conjunction with a review of the status of the environmental impact assessment regulations and procedures for aquaculture development in selected countries of the Central Asia and Caucasus region (Appendix 1). While the objective of these practical guidelines is to provide assistance, ensuring the orderly and sustainable development of aquaculture for those countries, they are flexible enough to be able to adapt them for implementation in any other country.

Implementation of the Guidelines may be undertaken by any entity or entities jointly that are competent or have the responsibility to do so. These may include, *inter alia*, government environmental agencies, research and development agencies, non-governmental organizations (NGOs), private-sector groups (e.g. producers, farmers and professional associations), civil society and consortia comprising some or all of these stakeholder groups.

1.2 Structure and contents of this document

The Guidelines are arranged under ten key implementation stages of an EIA procedure:

1. defining legal components;
2. defining stakeholders;
3. pre-application consultation;
4. screening;
5. scoping;
6. environmental impact statement (EIS);
7. reviewing delivery and adequacy of the EIS;
8. consultation;
9. decision-making;
10. monitoring.

Prior to presentation of the Guidelines, there is a review of legal and institutional frameworks and current procedures relevant to EIAs or similar approaches in selected countries of the Central Asia and Caucasus region, and an introduction to each stage is given in order to summarize the procedure. Guiding templates required for the EIA procedure are given as appendixes.

2. GUIDELINES FOR A PRACTICAL ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE

2.1 Guiding principles of the EIA procedure

The basic or guiding principles for effective and efficient implementation of an EIA procedure are given below. These guiding principles are largely based on those identified by the International Study of the Effectiveness of Environmental Assessment launched by the Canadian Environmental Assessment Agency and the International Association of Impact Assessment (Sadler, 1996). These guiding principles are applicable not only to implement an EIA procedure in aquaculture but to all types of other development. When applying or referring to them, it is important to consider the principles as a single package, recognizing their varying interrelationships. By keeping the following principles in mind, rather than focusing narrowly on specific procedures, the application of existing EIAs will be more flexible and cost-effective. These principles should also form a sound basis for the development of new or modified procedures applicable to particular sectors or development contexts (Hambrey *et al.*, 1999).

Adaptability: The EIA should be adjusted to the realities, issues and circumstances of the aquaculture development proposals under review.

Accountability: Decision-makers are responsible to all parties for their actions and decisions under the assessment procedure.

Certainty: The procedure and timing of an assessment should be agreed in advance and followed by all participants.

Credibility: Assessment is undertaken with professionalism, fairness, impartiality and objectivity.

Efficiency and cost-effectiveness: The assessment procedure and its outcomes should ensure environmental protection at the least cost to the proponent.

Flexibility: The assessment procedure should be able to adapt to deal efficiently with any proposal and decision-making situation.

Practicality: The information and outputs provided by the assessment procedure should lead to the identification of measures for impact mitigation that are practical and can be implemented by the developer.

Transparency: All assessment stages should be clear, easily understood and open procedures, and decisions and the basis for them should be open and accessible.

Participation: The EIA should provide appropriate and timely access to the procedure and opportunities to inform and involve all interested parties.

2.2 Introduction to the Guidelines

The aim of the guidelines is to provide some practical advice and help on the EIA procedure for all stakeholders involved in the design and development of aquaculture facilities. They are designed for use by all stakeholders in the EIA procedure regardless of holding any specific designation (that is to say, the general public are included), but they are designed in particular for state agencies, the aquaculture farmers¹ and EIA practitioners and consultants. They may also be of use to educators and academics, and to students undergoing aquaculture EIA training.

The outputs were refined based on comments and recommendations made by attendees at a stakeholder workshop held in Chok-Tal, Issyk-Kul (Kyrgyzstan) on 29–30 September 2011. They take account of international understanding of the implementation of EIAs for aquaculture, including international

¹ Throughout this document, the term “aquaculture farmer” refers to all developers, be they single farmers, collectives or associations of farmers, and any investors and developers of aquaculture practices and enterprises that are developing or intend to develop aquaculture facilities.

guidelines and local conditions. The Guidelines are applicable to all aquaculture developments, unless otherwise determined by a competent authority (CA).

It is important to define what these Guidelines do not cover. They are not a complete manual on how to implement an EIA, as they do not contain details about specific requirements on how to undertake an assessment, nor what specific impacts/receptors will require investigation, or how to conduct such investigations. These activities will be based on local requirements and provision of advice from the national state agencies, and they will change depending on the detail of each aquaculture development activity.

2.3 Defining the EIA procedure

In this section, the EIA procedure is defined and broad descriptions of steps in the procedure are discussed. Specific guidelines then follow (Section 2.4) under each of the steps. Certain information in the initial definition and description may re-appear in the more detailed sections.

2.3.1 Environmental impact assessment

An EIA is a procedure that evaluates all possible relevant environmental and other impacts that a development may have throughout its life cycle. It is conducted before major investment in the project has taken place. An important word here is “relevant”. An EIA does not necessarily involve assessing all possible, even minor, impacts. It does infer that impacts that are or are potentially “significant” should be assessed. While there may be a question about what the word “significant” means (what is significant to one, may be insignificant to another), it has been shown that certain types of fish farming have particular impacts, which are variable depending on local conditions and requirements.

There are other definitions of an EIA other than as presented above. However, the essential requirement is that, as part of good management practice, an effective procedure be implemented to assess and evaluate development projects before they have started.

2.3.2 Aim

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

2.3.3 When is an EIA needed?

An EIA involves a number of steps. These may be implemented in full for complex developments or in fewer steps as necessary. Where the risks of impact are high or where an impact may be catastrophic even if the risk is low, for example, a full EIA may be required. The steps may be implemented only partially or not at all for less complex or less impacting aquaculture developments. The steps in an EIA are defined in Figure 1. Whether or not an aquaculture development requires any detailed form of EIA can be determined during the early stages of the defined procedure.

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 require less intensive evaluation. In this situation, the applicant needs only to provide basic information about the development, and then approval can be given at an early stage. The procedure need not be more complicated or bureaucratic than is currently implemented.

Examples here might include low-production extensive systems, single-pond systems, or pond systems where water flows directly into irrigations channels without passing through rivers, lakes and other waterbodies. However, caution needs to be maintained. Even here, there may be situations that require more detailed information to be provided because the impacts become proportionately higher. These might include:

- higher-level production / higher stocking density;
- where feed or fertilizer is added to increase pond productivity (semi-intensive);
- larger single farms covering several hectares, or multiple ponds on 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 rivers then into lakes, or directly into lakes that maintain specific biodiversity that might be affected by excess nutrient load.

The production of low-value (in marketing term) herbivore and omnivore species such as carps is changing rapidly. Production is moving from extensive to semi-intensive systems using farm-made aquafeeds and may change to intensive systems using more commercial feeds. 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 a full EIA. If additional information, explanation or remedy can be provided easily during the early phases of the EIA procedure, this may be sufficient to grant approval without the need for very detailed study.

Aquaculture systems under the Guidelines include semi-intensive and intensive cage culture sites; and extensive, semi-intensive and intensive pond, raceway and tank systems. They are for any system used for the cultivation of fish, whether for the production of juvenile fish (hatcheries), fish on-growing to marketable size to be sold to consumers (whether or not processed) or fish for the purpose of re-stocking. Where ponds are used only for recreational fishing and no feed is used, these need not be included. If ponds are used for production of saleable fish and/or re-stocking but also involve recreational fishing, then these are included.

For the purposes of the Guidelines the species being cultured and the scale of production are ignored. Decisions on whether certain types of production or on growing certain species or on whether farms under a certain size fall outside the Guidelines are decisions for the national CAs.

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 through an EIA. Examples in this case would include more complex developments and more intensive production systems, including cage culture and commercial trout pond culture. If the initial evaluation identifies that more detailed information or further investigation is needed to define or otherwise highlight the risks and significance of potential impacts, then the full EIA procedure can be implemented.

One of the key outcomes of the full EIA procedure is to provide sufficient information so that the CA is able to make a more fully informed decision about approval or non-approval of a project.

FIGURE 1

Steps in the environmental impact assessment procedure

Source: Adapted from EC (2001).

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 competent authority (CA), to provide a good screening opinion
Screening	The CA determines whether an Environmental Impact Assessment (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 opinions 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 its 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 an 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 EIS to the CA together with any formal application documents required for development consent.
Review of 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/organization. This is NOT an assessment of the merits of the information, only that it is in sufficient details to cover adequately 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 consent request.
Consideration of the submission and comments from consultees	The EIS 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 the reasons for the decision, an in relation to the licence granted, the application of conditions attached to the licence that 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 the other applicable regulations, and to monitor the impacts against those predicted in the EIS.

2.3.4 Strategic aquaculture plans and EIA

An EIA is a mechanism by which the impacts of aquaculture developments can be considered. In addition to implementing the Guidelines, countries in the Central Asia and Caucasus region are encouraged to develop strategic aquaculture plans as the central means of communicating their intentions concerning the development of aquaculture nationally.

Strategic plans are an important part of the EIA procedure, 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 COCs, such as that issued by the FAO for sustainable fisheries (including aquaculture); and the interrelationship between fisheries and aquaculture. More broadly, they provide an overall framework for the development of the aquaculture industry.

Most importantly in the context of EIA, they allow stakeholders to understand more fully the governmental view of aquaculture and its development, and they can incorporate EIA requirements. Such strategic plans enable aquaculture farmers to submit only those development proposals that comply with the overall strategic objectives. A strategic plan will also provide force in regulation for the implementation of the EIA procedure for aquaculture, making it more likely that such a procedure is followed and adhered to by all parties.

2.4 Summarizing the EIA procedure

2.4.1 Legal components

There are many codes, laws, decrees and regulations that potentially affect the development of aquaculture in countries of the Central Asia and Caucasus region (refer to Appendix 1 for further details). It will be important to consider these in the context of any development activity. The review in Appendix 1 is not exhaustive, but covers a broad assessment from six countries in the Central Asia and Caucasus region, namely: Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan.

There are several laws and other important legislative acts that contain provisions related to environmental legislation in each country [Table 1 (which is an abridged version of Table A1.3 in Appendix 1)]. Where a development takes place, there is a need for a review to be undertaken by state ecological (or environmental) expertise (SEE). However, often, the procedural scheme of SEE does not appear to meet all the EIA requirements in line with international practices, and implementation of SEE is variable across the region.

TABLE 1

Governing laws and activities subject to state ecological (or environmental) expertise (SEE) that may involve an environmental impact assessment (EIA)

Armenia	Azerbaijan	Kazakhstan	Kyrgyzstan	Tajikistan	Uzbekistan
Governing laws					
Law on Environmental Impact Expertise, 1995.	Law on Environmental Protection 1999; draft Law on Environmental Expertise and draft Regulations on environmental impact assessments.	Environmental Code 2007.	Law on Environmental Protection 1999, Law on Environmental Expertise 1999.	Law on Nature Protection 1993, and in the Law on Ecological Expertise 2003.	Law on Nature Protection 1992, Law on Ecological Expertise 2000, SEE contains references to public hearings as part of the EIA procedure, when necessary.
Activities subject to SEE may involve EIA					
Any economic unit, implementation of any concept, programme, scheme including the explanation of procedures, plans, or master plans.	Public and private projects involving construction, modernization, new equipment and technologies, oil contracts, manufacturing industries.	The law requires the preparation of SEE for all projects of economic activity; reconstruction, preliminary design and design documents, concepts, investment projects, contracts, draft versions of normative regulatory acts, regulations of emissions to the environment, documents for application of new technologies and documents reasoning for yield of natural resources. Public environmental expertise is voluntary and not financed from the state budget.	Four categories of projects have been identified based on the significance of the impacts on the environment: I – high risk; II – medium risk; III – low risk; and IV – local impact.	Development planning of all facilities subjected to SEE and EIA activities that may have an impact on the environment under four categories of environmental impact: I – high risk; II – medium risk; III – low risk; and IV – local impact. Requirements and terms of SEE and EIA differ according to the category of a facility.	Facilities subjected to SEE and EIA come under four categories of environmental impact: I – high risk; II – medium risk; III – low risk; and IV – local impact. Requirements and terms of SEE and EIA differ according to the category of a facility.

There are at least two existing laws directly applicable to the environment and EIA that would be most applicable to the development of aquaculture within these countries, although the laws make no explicit reference to aquaculture. It is not unreasonable to include aquaculture under the collective term “fisheries”, identified as being subject to the requirements for EIA in most cases. These laws are:

- Law on Environmental Protection or Environmental Code (Azerbaijan, Kazakhstan, Kyrgyzstan and Tajikistan);
- Law on Nature Protection (Armenia and Uzbekistan);
- Law on Environmental Impact Expertise (Armenia) or Law on Ecological Expertise (Kazakhstan, Uzbekistan) or Environmental Expertise (Kyrgyzstan).

These laws should be read in conjunction with the other regulations or instructions on the procedure for the performance of an EIA of planned economic and other activities. The regulations and associated instructions sometimes provide more detail on what information should be included in the EIS, but these are very general and applicable to all types of development. It is intended that these practical guidelines will provide more focused information for the implementation of EIA requirements for aquaculture and, upon agreement, will supplement these regulations and instructions.

If an aquaculture farmer is considering a 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 prerequisite that the aquaculture farmer understands the legal and instructional requirements of the national jurisdiction concerned.

In addition, where the EIS is produced by the aquaculture farmer, 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 biosecurity, waste disposal (e.g. diseased or dead fish), biodiversity requirements, protected species, etc. The CA should provide guidance that outlines what might have to be considered in such an application.

2.4.2 Pre-application consultation

Pre-application consultation is not specifically part of the formal EIA procedure and cannot be a “required” step unless specifically required through regulation. It has been introduced in some countries through such regulations. However, in many countries, it is implemented as an informal requirement through an agreement between the stakeholder communities. It is an acceptable part of the procedure, as a means of informally discussing a proposal with key stakeholders, and is therefore strongly recommended. Requests for pre-application meetings should be made by, and driven by, the aquaculture farmer.

The aim of the pre-application procedure is for the aquaculture farmer to gain advance warning of the general feelings about the proposed development from the statutory and other key stakeholders. It is an opportunity to highlight the key and significant impacts or concerns. It will also reduce the workload of the CA and make the procedure smoother.

Pre-application meetings about an aquaculture development should be carried out before a formal application is made. Through discussion, the aquaculture farmer and stakeholders together consider the proposed development and consider what impacts are likely, if any. The aquaculture farmer provides information about the development so that this can be assessed.

The aquaculture farmer should have this pre-application discussion with a range of stakeholders. It is useful for the aquaculture farmer to explain what the intentions and methods are. The aquaculture farmer should provide basic information including scale of the development, the species involved, numbers of fish and water requirements, and, broadly, how the operation will be run and managed. The aquaculture farmer 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 aquaculture farmer can respond to the issues raised at an early stage in the procedure, and alter the development plans if necessary.

It is possible that, after this pre-application discussion, there are no issues of concern, and the stakeholders can informally let the CA know that this is the case, so that the submission by the aquaculture farmer to the screening phase can simply result in approval of the development (Figure 2).

Development of information and responses to issues raised in an early pre-application phase is not wasted. The same information will be submitted to screening (see Section 2.4.3), and it might mean there is no need to provide further information and that 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 EIS so that the CA can see how the plans of the aquaculture farmer have been altered as a result of these discussions.

The outcome of the pre-application discussion may not be agreement or a consensus on a way forward and may not provide a comprehensive set of answers. It is more likely to raise additional questions that will need to be considered. The main purpose is to improve an understanding about the aquaculture development and of the issues concerned through an exchange of information. The outcome of the pre-application consultation will be to highlight the main issues of concern, which the aquaculture farmer can consider and so be better prepared to provide good information to the first formal stage of the EIA procedure, screening. Provision of good information at the beginning and considering and responding to the issues raised during the pre-application consultation may eliminate the need to undertake a full EIA procedure when a formal application is made for a development.

FIGURE 2

Decision-making in the EIA procedure



2.4.3 Screening

If the aquaculture farmer decides to put in a formal request for a licence/consent after the Pre-application meetings, the first formal step in the EIA procedure is “Screening” (Figure 1). In many countries, it is referred to as an initial environmental examination (IEE). It is a procedure that is initiated by a formal application for an aquaculture development by the aquaculture farmer.

Screening is seen as vitally important in the EIA procedure. Within the screening phase, the CA will decide whether an EIA is needed or not (Figure 2). To be able to make this decision, the CA needs to have sufficient information about the proposed development to be able to make this judgement. All aquaculture developments should be screened.

Once an application and all the information have been 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. An EIA should be a necessary procedure in the context of the likely impacts from an aquaculture development. If the impacts are not significant, or are well understood and readily mitigated against and are therefore acceptable, then a full EIA should not be necessary. If the development has some impacts but sufficient information and mitigation is offered by the aquaculture farmer with the application, then again the full EIA procedure may not be required.

Similarly, an EIA should not be instigated universally for all aquaculture development activity, or simply requested as a means of delaying an unwanted development. Conversely, 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.

Where stakeholders have been consulted in the pre-application phase and have raised no objections, and this is known to the CA, then the CA can simply assess the proposal and give approval. The information presented for the pre-application discussions will also be provided for screening. In addition, any changes to the development plans that have resulted from these pre-application meetings should also be provided by the aquaculture farmer. As a minimum, the aquaculture farmer needs to provide a description of the proposed site and production processes in detail. Having considered the development and responses from pre-application meetings, the aquaculture farmer needs to identify the major factors affecting the environment, and provide some indication of the risks and the significance of the impacts and broad mitigation measures. This level of information may be sufficient for the CA to make a decision.

If the aquaculture farmer has not already had contact with other stakeholders, the CA should contact them during the screening procedure in order 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 aquaculture farmer. If these stakeholders have already been contacted by the aquaculture farmer (pre-application meetings), then the development will come as no surprise to them and, provided their concerns have been addressed, they may offer no objection.

Alternatively, stakeholders may be asked to provide a “screening opinion”. A screening opinion is a written response by the stakeholder about the proposal sent to the CA. Stakeholders should assess the information presented by the aquaculture farmer and 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 procedure, scoping.

From these screening opinions and its own view, the CA can decide whether (Figure 2):

- approval can be given;
- further information is required before a decision about an EIA can be made;
- a full EIA is required.

In all cases, the CA should notify the aquaculture farmer of the decision and the reasons for that decision in writing.

2.4.4 Scoping

If the decision of the CA during screening is to order that a full EIA is needed, the next step in the procedure is scoping. In scoping, it is important to establish precisely what factors in the development will or may have a significant effect and, in doing so, list those areas where further investigation and understanding is needed (Figure 1). During scoping, it is essential to identify what specific issues and concerns need to be investigated and reported upon by the aquaculture farmer, in writing. Increasingly, risk analysis is being used as a main tool to assist in screening, scoping and decision-making (GESAMP, 2008), in which possible impacts are identified, the risk of their happening assessed, and the means and methods of overcoming them evaluated. The screening opinion will help the farmer to identify and consider the risks.

The CA would typically use the written screening opinions from stakeholders plus its own views, and those of the aquaculture farmer to draw up a scoping statement. The scoping statement identifies in one document:

- the receptors that are likely to be affected;
- precisely what methods should be used to measure and assess the key impacts on these receptors;
- those areas that need fuller investigation and information.

The key to scoping for all sides is to identify only those areas that are deemed significant in the context 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 to be made towards the end of the EIA procedure. The scoping statement provides the basis for the aquaculture farmer to go away and investigate what is needed and to avoid wasting time and money on things that are not needed. It is used by the aquaculture farmer as a basis to produce the key document in the EIA procedure – the EIS.

The CA should provide the scoping statement to the aquaculture farmer in writing.

2.4.5 Environmental investigation and impact statement

The next step in the EIA procedure (Figure 1) is production of the EIS. It is a document that presents the response of the aquaculture farmer to the scoping opinion. It needs to be a comprehensive written document that includes full descriptions of the development, production processes and other information, plus results from investigations by the aquaculture farmer of the likely significant impacts (e.g. through baseline studies, identification of receptors, assessment of impacts and mitigation measures). All necessary information should be provided as a single document, where possible.

Working to the scoping document, the aquaculture farmer is then expected to carry out the necessary investigations on those areas of concern, to provide information that supports the development plans and to identify mitigation of the impacts. Thus, the EIS document should be a comprehensive response:

- describing the project and what is involved;
- identifying and assessing probable impacts and receptors affected, through direct measurement, through research or literature search;
- identifying changes in the project design that have taken place as a result of the pre-application consultation, initial assessment and screening opinion, and investigations carried out in preparing the EIS;
- providing required information to evaluate current (baseline) conditions and potential modifications that may occur as a result of the development;

- identifying and explaining 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 CA.

2.4.6 Adequacy

After the EIS has been submitted, it needs to be assessed in order to ensure that 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 in the EIS. It is merely ensuring that the issues raised, for example, in the scoping statement, have been adequately addressed. If, after checking, the response is “Yes, all the main components have been addressed”, then the review can conclude that the EIS is adequate (Figure 2). If the response is “No”, then the reviewer should highlight those areas that are not adequate, and the aquaculture farmer should be able to address these before further stages in the EIA procedure are completed.

2.4.7 Consultation phase

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. The CA should seek the views of stakeholders, and stakeholders should consider the submitted EIS in detail and provide their opinion on the project.

2.4.8 Decision-making

Once the EIS has been assessed and deemed adequate, and the CA has consulted with stakeholders, the CA is now in a position to make a judgement on approval of the project (Figure 2). The CA should consider all the information at its disposal and the opinions presented and come to a decision about approval of the aquaculture project.

Transparency is the key to this procedure, and any and all decisions need to be justified fully, in writing, so that the aquaculture farmer and all stakeholders can understand the reasons for the decision made.

The EIA procedure is not a “box ticking” exercise or a rigid series of steps that have to 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 not be distinctive or specific. Parts of the EIA procedure may come from, and be based on, opinion only, although such opinion must be supported by 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 then come to a conclusion.

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

Approval of a development through the EIA procedure 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.

2.4.9 Monitoring

Monitoring is key to the EIA procedure. After the development has been approved, the site has been developed and fish culture is happening, it is essential to monitor the activity at the site in order to ensure

that it is operating within the licence issued, within the parameters identified in the EIS and not affecting the environment and society in ways that are unexpected.

2.4.10 Other approvals

Different approvals may also be required before the aquaculture farmer can proceed with the development. Examples of other approvals may include: permission to use land from the owner or local government; planning agreement for on-shore storage and office facilities; and lease of water resources from the relevant agency for water resource management. Some of these may be needed before the aquaculture farmer makes an application. An example would be for a pond system where access to water is an essential component of the development.

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

2.5 Timing for the procedure

The following are only intended as a guide to the timing of each step in the EIA procedure. The actual timing can be determined by the relevant CA, given the circumstances of the country, and may be longer or shorter than indicated here:

- pre-application procedure: two weeks;
- screening opinion: four weeks from the date of receipt of the proposal/application from the aquaculture farmer;
- scoping opinion: four to eight weeks;
- EIS: depends on the size and type of development and the impacts identified;
- adequacy: less than one week;
- consultation: two weeks;
- decision-making: less than one week after consultation completed;
- appeals: as determined by local procedures.

2.6 Stakeholders

Stakeholders play an important function within the EIA procedure. Stakeholders are organizations and individuals who have a vested interest in an aquaculture project, whether from a positive or negative perspective. Stakeholders that are formally consulted during the EIA procedure are also referred to as consultees. Stakeholders may provide technical advice, will certainly provide feedback on applications and will often take part in decision-making through the CA.

There are two types of stakeholder, statutory and non-statutory, that must be consulted for every application for an aquaculture development. Which are consulted will depend on the development. Statutory consultees are those organizations that have to be consulted for every application for an aquaculture development. Non-statutory consultees are those who may be consulted depending on the circumstances of the development application.

Line agencies on environmental protection (both central and regional), fisheries, water resources management, and research and development institutions should at least be considered as statutory consultees, while *inter alia*, hydrometeorological institutions, fishers associations, governmental and non-governmental conservation agencies, tourism agencies, and local planning and development institutions may be considered as non-statutory consultees.

2.7 Guidelines on the EIA procedure

2.7.1 Legal components

- i. The CA should provide guidance to the aquaculture farmer and other stakeholders on what laws and regulations are applicable for aquaculture development applications.

2.7.2 Pre-application discussion

- i. Pre-application consultations should take place any time before a formal application is submitted and approval requested.
- ii. 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.
- iii. The aquaculture farmer should contact key stakeholders, which may be any organization or persons that may be affected by or have some opinion on 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 the circumstances and if appropriate.
- iv. The aquaculture farmer should complete a pre-application consultation template (a proposed guiding template, given in Appendix 3), and this document should form the basis of the consultation. The finalized template should act as a standardized format for presenting information about the development.
- v. Any meetings held in order to discuss the proposal should be held informally. Each person within the procedure has different responsibilities.
- vi. The aquaculture farmer should initiate the consultation, which may simply be by sending out a completed pre-application consultation template document and asking for feedback, but should include meetings where appropriate.
- vii. Prior to any meeting, the aquaculture farmer should offer as much information as possible to the stakeholders, as identified in the pre-application template. This should be in some detail so that the stakeholder understands what is being considered and discussed. There is a need to provide a detailed description of the proposed development activity. The more information that is provided at this stage, the better.
- viii. For reasons of confidentiality, the aquaculture farmer 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 aquaculture farmer feels it may cause undue concern and objection in these groups at this early stage. Such objections will have to be addressed directly in due course through the formal EIA procedure.
- ix. Although the order in which consultees are contacted is not relevant, the CA should be contacted first, followed by other stakeholders.
- x. At any meeting, the aquaculture farmer should ask stakeholders about their opinion on the development and listen specifically to the points raised. The aquaculture farmer should discuss the issues openly and, where possible, provide responses that should be based in fact, experience or general knowledge.
- xi. The aquaculture farmer should be prepared to at least consider altering the development plans to take account of the concerns that arise.

The alternatives considered may be minor changes to production procedures, but they could also involve major changes. For example, the impact of a proposed fish farm producing 1 000 tonnes of a non-native species of fish in floating cages located in a lake might be considered unacceptable by some stakeholders for environmental, social or other reasons. An assessment of alternatives in this situation could include, for example, changing location to a more acceptable site, producing the fish in tanks on land, reducing the production biomass to a lower tonnage or changing species to a native species. The aquaculture farmer would consider the impacts on their plans for development and the economic feasibility of some or all of these alternatives.

Providing information and being willing to discuss this, or making changes at this early stage, may be sufficient to reduce fears about the possible impacts. The aquaculture farmer should note that this information may have to be provided anyway when the application is made, and the effort now may be regarded with fewer objections later. It is also not wasted work and will form part of the EIS, should this be required before the development can go ahead.

- xii. The pre-application template should contain descriptions of the following (as a minimum):
- location, description and size of the site;
 - planned biomass or production;
 - fish species being considered;
 - land or water area to be used and water volumes required for flow-through systems.
 - infrastructure proposed (cages [materials, design, anchors], ponds [size and depth], hatcheries [buildings required, materials, tank design], need for office facilities, feed mills and storage);
 - the production processes: to include where fish/eggs will be sourced from; how they will be grown; what feed will be used, how much and how feed will be delivered; stocking density; fertilizer requirements (for ponds); production timescales; whether any chemicals will be used; etc.;
 - pictures of the proposed site (or sites) may also be useful.
- xiii. Where the aquaculture farmer knows that a particular impact will occur (e.g. nutrient waste) or receptors be affected (e.g. a river, by nutrient waste), the aquaculture farmer should also offer supporting information (such as reports or research) about these receptors and impacts and provide mitigation against these at this early stage. These should be added as additional documents into the pre-application template.

Considering impacts and providing supporting information shows that the aquaculture farmer has not only considered is intended but has also been open about what the possible impacts may be. What specifically these impacts might be will depend on the location, the type of production, etc., but they could include impacts on water quality, species, biodiversity, habitat, other people, and other water users.

- xiv. Key stakeholders should support requests for pre-application consultations and requests for pre-application consultation with stakeholders. The aquaculture farmer should be greeted positively.
- xv. It should be regarded as an informal request to provide feedback on an application that may at some point be made. Whether or not the aquaculture farmer goes ahead with the application may be determined by the pre-application consultation procedure.
- xvi. Stakeholders should point out specific issues that concern their organization and give their opinion about the development in this context.
- xvii. 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. The issues raised should be real issues and with a basis in fact, not merely anecdotal.

- xviii. Stakeholders should read the information provided by the aquaculture farmer and consider its merits, and areas of concern. These areas of concern should be raised with the aquaculture farmer during the meeting (or meetings).
- xix. Stakeholders should point out issues that they think may be insurmountable or even provide objections to the development. These should be supported by specific evidence; that the impacts are likely to be so significant as to be sufficient to object fully to a proposal, or where it is thought that impacts cannot be mitigated against. However, stakeholders should listen to the aquaculture farmer to see how such objections might be overcome.

Where the CA is contacted in the pre-application phase, then it would not be normal to object to the development at this stage, when all the facts and supporting information may not be available. Decisions should be made at the appropriate time, during further phases of the EIA procedure. However, the CA should point out areas where it is concerned about the possible impacts from the development.

- xx. Depending on the remit of the stakeholders, they should point out any legal impediment to the development to the aquaculture farmer.
- xxi. When stakeholders have no objections to the development and are in agreement with the proposal, this should be passed on to the aquaculture farmer.
- xxii. Stakeholders should not impose any fees for the pre-application consultation and discussions, even if it would be normal to do so for formal applications. The exception would be where the aquaculture farmer is asking formally for information or a report that the aquaculture farmer will use, and for which a fee would normally be paid.
- xxiii. If a full EIA is required by the CA, 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 procedure, is a good opportunity for the aquaculture farmer to show that the issues raised have been taken seriously and the plans adjusted accordingly to provide mitigation.

2.7.3 Screening (initial environmental examination)

- i. During screening, the CA must decide whether or not an EIA is required for the proposed aquaculture development and/or facility. It is therefore an initial examination of the proposal and its likely impacts.
- ii. The aquaculture farmer should make a formal application to the CA for permission to go ahead with the aquaculture development. This should include submission of a letter of application and any application forms required by the CA as well as the completed screening template (guiding template is given in Appendix 3.2).

As parts of the screening template (Appendix 3.2) are the same as the pre-application template, information can be easily transferred between them (cut and pasted). In addition, the aquaculture farmer should conduct an initial assessment of the possible impacts of the development. Section 3 in the guiding template should highlight the key receptors, i.e. those things that may be affected. In section 4 of the template, there is a checklist of broad elements that may be affected, with the opportunity for the aquaculture farmer and the statutory consultees to consider what aspects may affect each of the receptors identified. Space has been left to add notes to those listed, which will depend on each application.

- iii. For the screening procedure, the aquaculture farmer should provide as much information as possible. The list of information to be provided is similar to that provided under the pre-application discussion (above), only in more detail where possible, and taking account of the discussions that have taken place.

- iv. Where pre-application consultations have taken place, the aquaculture farmer should outline what these discussions were, what were highlighted as issues, what the outcomes of this process were and what changes have been made to the development as a result.
- v. In addition, the aquaculture farmer should make some attempt to consider what receptors may be affected by the development. Where the aquaculture farmer is aware that particular impacts will occur (e.g. waste feed and faeces) whose effects are well documented, they should also offer information (reports, research, expert opinion) on these and provide mitigation against these impacts at this stage.

It is in the interest of the aquaculture farmer to provide sufficient information. This will allow a reasonable decision to be made by the CA. The more comprehensive the information is, the better is the decision that can be made.

- vi. Following a formal application for an aquaculture development, the screening procedure should be carried forward and driven by the CA. Although the CA has the full responsibility for making the final decision on the need for an EIA, it should not do this alone and must ask others for their opinion. As a minimum, the other statutory consultees should be consulted.

The CA should forward the application and screening template to the statutory consultees as soon as possible for their comments and feedback.

- vii. The template should be used by those consulted to provide feedback and comment. This template provides a means of responding to the proposal in writing. The template should be returned to the CA for consideration.
- viii. The written statement provided by the statutory consultees should outline what concerns them, receptors they think are likely to be affected by the development, and some opinion to what extent these are significant impacts or not. (The screening template should provide a numbered series of boxes that can be completed for each point raised).
- ix. Those consulted should consider the information that the aquaculture farmer has sent with the application to see whether some of these concerns can be offset or mitigated through design or other changes, suggesting what these changes might be.
- x. Those consulted should also identify those aspects where further information and more comprehensive assessment are needed.
- xi. On the balance of their expertise, of the information provided by the aquaculture farmer and the areas that need further investigation, stakeholders 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) in a scoping statement during the scoping phase, if an EIA is required.

- xii. The CA, during the screening phase, will make a number of judgements on the application for an aquaculture facility that broadly fall in to three categories. It should decide whether:
 - The proposed aquaculture development is below the 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 this case, no further steps in the EIA procedure are needed and the CA 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 some areas where further information would be useful in order to carry out the evaluation and come to a decision. In this case, further information should be requested from the aquaculture farmer.
 - Finally, if the aquaculture development falls into a category where an EIA is compulsory, or where the level of production is above the criteria thresholds set (see below) and impacts are

liable to be significant, or a large number of “receptors” are affected, then the CA can require that a full EIA assessment be carried out.

- xiii. Where the decision falls into the second category, the CA should evaluate the additional information provided by the aquaculture farmer to see whether the response is satisfactory. If so, a decision can then be made regarding approval or non-approval of the development. If there are still questions that need to be considered, then a full EIA may be required.

The need for an EIA depends on the extent to which the proposed aquaculture facility is liable to have impacts on the environment, the significance of these impacts, and the need to investigate and propose mitigation and precautionary measures. 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.

- xiv. Ideally, the CA should use a criteria-based decision-making system to help make the determination about whether an aquaculture development will need an EIA or not.

Internationally, many countries operate some form of criteria-based decision system to help make the decision 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 developments of a certain size to take place (based on a maximum production or holding biomass) without the need for an 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.

- xv. Where there is no developed criteria-based decision-making system, a system could be developed.

In the example above the maximum production or holding biomass is generally set to a low value (in Europe, 50–100 tonnes, for example), which is significantly below what is economically viable to grow in Europe. Therefore, an EIA is required for most forms for 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. Provided this is supplied in sufficient detail with the application for screening/IEE, then a full EIA is not required.

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

The size criteria may encompass the species being grown, such that native species have different criteria from non-native species and also include other production characteristics, in the form of a matrix.

On top of this are further general criteria that may also need to be considered. As an example, in Europe, lakes are classified according to their nutrient status (e.g. oligotrophic, mesotrophic) and where they are already subject to additional social pressures, such as sewage discharge, this may make them unsuitable for fish farming. Other watercourses may be off-limits simply because of the social uses they are put to (e.g. tourism). Certain river systems may contain rare endemic species (e.g. the freshwater pearl mussel in Scotland [the United Kingdom of Great Britain and Northern Ireland]) that must not be affected by the abstraction of water for the farm and subsequent return of nutrient-rich water to the river from land-based flow-through pond or tank systems. 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 CA and other regulators will need to consider what might reasonably be included in an overall criteria-based assessment.

- xvi. The decision made by the CA to require an EIA or not 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 aquaculture farmer in support of the application;
 - the screening opinions provided by the consultees;
 - the opinion of the CA.
- xvii. The CA should ensure there is no legal impediment to the development and the application complies with the national criteria (see above). Thus, the application should only be rejected outright if there is sufficient information available and formal grounds to make this decision.
- xviii. Any decision (not to require an EIA, to require an EIA, or to reject the application outright) should be fully justified.
- xix. The outcome of the screening phase should be a written document (screening report) sent to the aquaculture farmer outlining the decision made and the comprehensive reasons for this decision.
- xx. Where an EIA is not required and approval is given for the development, in addition to the screening report, the CA should issue a licence (see section 2.6.8).

2.7.4 EIA scoping assessment

- i. Scoping occurs after screening and only if an aquaculture project requires an EIA. The aim of scoping is for the CA to provide written confirmation, called a “scoping statement”, to the aquaculture farmer about what information is needed in the EIS.
- ii. This scoping statement should be the TOR under which the aquaculture farmer needs to investigate and report on these issues and prepare an EIS.
- iii. The scoping statement should, as a minimum, include one or more of the requirements listed below, as necessary:
 - What receptors and impacts need further investigation, focusing primarily on the most significant impacts.
 - Alternatives that may need to be considered within the project (such as, alternate sites or 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 describe how specific parameters are to be assessed. These should be specified.
 - Mitigation that needs to be considered.
 - Organizations to be consulted.
 - The structure, content and extent of the environmental information to be provided in the EIS.
- iv. If a full EIA is needed, then the aquaculture farmer should request a scoping statement from the CA by completing a scoping template and sending it to the CA (a guiding scoping template is given as Appendix 3.3).
- v. The aquaculture farmer should complete the basic information on the front page of the template and sends this to the CA.

- vi. The CA should formally provide a scoping statement, one that takes account of its requirements and those of the statutory consultees. The scoping template has space for the statutory consultees to make their comments. Alternatively, the CA should use the information given by the statutory consultees during the screening opinion to draw up the full scoping statement, which should be sent to the aquaculture farmer.
- vii. The scoping statement should be as comprehensive as possible and, where feasible, not be changed. However, further information may be needed in order to make the best overall decision, information that may not have been apparent at the time the scoping statement was initially produced. Thus, it should be a flexible document that information can be added to.
- viii. The flexibility should not be used as a never-ending need for the aquaculture farmer to provide information and supporting evidence. In the long term, this can lead to frustration on the part of the aquaculture farmer.

If the aquaculture farmer repeatedly has to spend time and money to address a never-ending stream of information requests, this can be frustrating. Similarly, the aquaculture farmer 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 to make a decision on the project and because the impacts are significant.

- ix. The following key questions should be considered when developing the scoping opinion:
 - 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?
 - What alternatives and mitigation measures should be considered?

It would be useful 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 it will need to be developed in the context of what is possible in the country.

- x. The scoping statement should be presented to the aquaculture farmer as a written document of what needs to be assessed.

2.7.5 The environmental investigation and impact statement

- i. On receipt of the scoping statement, it is the responsibility of the aquaculture farmer to carry out the necessary investigations and prepare their written submission (the EIS) for consideration.
- ii. The aquaculture farmer should produce the EIS as a single document, which is submitted to the CA in support of the application for an aquaculture development.
- iii. The EIS should be a comprehensive written document, responding to the issues raised in the scoping statement.
- iv. The aquaculture farmer should also include any further information that he/she feels is needed in order to enhance the final decisions made.
- v. To be effective and comprehensive, the EIS should at least contain:
 - 1) A description of the project, including in particular:
 - a. A description of the physical characteristics of the whole project, the land- and water-use requirements, infrastructure (cages, tanks, ponds) and what will happen during the construction, operational and decommissioning phases of the development. 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 materials used in construction and anchoring of cages or earth works required for ponds, for example. Also: how these will be delivered to site, used on site, and at the end of the useful life of the development what will happen to the infrastructure.

- b. A description of the main characteristics of the production processes to be used. For example, the type and quantities of fish to be grown, and feed used, consideration of how the fish are to be fed or pond systems fertilized and when (timescales); if grading is carried out how this is to be completed, how are fish harvested and so on. Effectively, a description of all husbandry and practical 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. Also: consider any chemicals used (for cleaning or against disease), likely noise from boats, generators, people, lighting required and so on.
- 2) An outline of the main alternatives considered by the aquaculture farmer and an indication of the main reasons for the particular choice made, taking into account the environmental effects.

Here, considerations of 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. Receptors (those things affected) might include fauna, flora, soil and water, but also local population, landscape, local archaeology, national and regional parks, and any aspect that may be significantly affected.

This will in part come from the scoping opinion, but should also include those aspects that the aquaculture farmer 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:
- a. the existence of the project;
 - b. the use of natural resources, i.e. water and/or land;
 - c. the emission of pollutants, the creation of nuisances and the elimination of waste.

The aquaculture farmer can use a number of methods to describe and assess the likely effects of an aquaculture development on the environment. Examples will include direct assessment, such as conducting a baseline study to understand the present conditions, then using prediction of waste emissions and expert knowledge and research to evaluate possible effects. More sophisticated computer modelling can also help support the conclusions drawn.

- 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 and/or 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 from 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 summarize 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 expertise) encountered by the aquaculture farmer in compiling the required information.

- vi. The EIS should 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 important as this identifies uncertainties in the assertions made, and also where information available is simply lacking. The CA should not disadvantage the aquaculture farmer where technical information is simply not available or has not been previously researched. The aquaculture farmer should not highlight information where it would be reasonable for him/her to collect this information, e.g. baseline studies.

This is so the CA can see that progress has been made, that the risks have been minimized to the greatest possible extent, and that approval can be given with a high degree of confidence.

- vii. The State should produce a guidance document specific to aquaculture describing preparation of an EIS and methods to evaluate some of the more obvious impacts from aquaculture.

The fact that the onus is on the aquaculture farmer to find and provide this information may be a long-term goal in view of the available capacity and expertise in the countries of the Central Asia and Caucasus region. The CA 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 academic institutions may also play a key role here in the short term with the provision of their expertise on aquaculture, ichthyology and ecology. The CA and other agencies should progressively 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 aquaculture farmer in producing a high-quality EIS. This would include methods of how to find and interpret the data, at least for the most obvious impacts that are readily known to occur.

2.7.6 Delivery and reviewing the adequacy of the EIS

- i. The aquaculture farmer should deliver the completed EIS to the CA as a hard copy document or in electronic format, as required.
- ii. The CA should specify the number of hard copies the aquaculture farmer should submit, at his/her own expense. The CA should then use these to send to consultees later in the procedure.
- iii. Review of the adequacy of the EIS should be conducted by the CA, another state agency or, more preferably, by an independent person or organization.

- iv. The person reviewing the EIS should understand the scoping statement in order to have a clear idea of what was expected. Then the reviewer should read through the EIS and determine whether the EIS is adequate.
- v. A checklist should be produced under scoping, and the reviewer should verify that the quality of the EIS is sufficient and adequate, and confirm whether the EIS has responded fully to the points in the scoping statement.
- vi. Where the EIS does not address the points in the scoping statement, the aquaculture farmer should be given the opportunity to provide additional information, and to clarify the points made as required. Alternatively, the aquaculture farmer can comment on why it was not possible to provide the additional information.
- vii. When the aquaculture farmer re-submits the revised EIS, then the next review should only assess those areas previously stated to be inadequate.
- viii. This review of the adequacy of the EIS should not make any judgement or recommendations on whether the development 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.

2.7.7 Consultation phase

- i. After the review of its adequacy, the EIS should be made available (electronically or as hard copies) to the consultees.
- ii. Consultation should be comprehensive and include not only the statutory consultees, but also non-statutory consultees, and if desired the public. This is so they can assess whether the particular concerns they had during screening and scoping have been addressed satisfactorily. If other organizations and the public are being consulted for the first time, then they can see what the issues are and whether they have been addressed satisfactorily.
- iii. Those consulted should read through the EIS and highlight the areas of concern that have been adequately addressed and those that in their view have not been addressed sufficiently.
- iv. 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.
- v. Comments from consultees should be passed back to the CA in writing. If the consultees believe the issues of concern have been adequately addressed, they should state this and state they have no objection to the proposal.
- vi. If there are further concerns or clarifications raised by the consultees, then the CA should pass this information back to the aquaculture farmer, and give time to the aquaculture farmer to provide additional information if he/she wishes.
- vii. If the general public is to be included in the consultation, the public should be informed through media advertising that a development proposal has been made, that the EIS is available for scrutiny and that they have an opportunity to present their views. This notification should include an address so that the public know who to contact in order to obtain a copy of the EIS and a deadline for responses should be set.

- viii. Where the CA believes it is in the public interest to hold a public hearing, the aquaculture farmer should be given the opportunity to present details about the application for the development, present a summary of the EIA procedure and provide details of the assessments made and the outcomes.

The aquaculture farmer should have staff at any public hearing. They will be familiar with the proposal and be 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 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.

The CA should ignore any responses made after this defined period.

- ix. It would be normal practice to allow a period of two or more weeks for the consultation (as necessary) to allow for a detailed understanding of the project and the submitted EIS.
- x. After the consultation is complete, a decision will be made about approving or not approving the aquaculture development proposal.

2.7.8 Decision-making phase

- i. Once the EIS has been delivered and found to be adequate, and the consultees and general public (as applicable) have provided their responses within the consultation period, then the final decision must be made about approval for the development.
- ii. The final decision will rest with the CA.
- iii. The decision-making procedure, conducted by the CA, should be a systematic review of the EIS, an evaluation of the data provided, and a consideration of the responses of the consultees and general public.
- iv. The CA should be satisfied that the potentially significant impacts from the development have been addressed and minimized through mitigation and changes to the development proposal. If this is the case, then the CA should approve the application. If not, then rejection of the application is the likely result.

Making the decision can be complicated. Aquaculture developments are complex and some of the information provided may only be opinion (however expert or not) and some information may be lacking owing to a lack of research in a particular field, or in a particular location. It is likely that there will be conflicting views from the various stakeholders/consultees. Some may agree with the development, others may not. In areas of mitigation, some of the information provided in the EIS will only be commitments from the aquaculture farmer to operate in a particular way (e.g. buy only certified disease-free eggs), and as such cannot be tested fully until after the development has been approved.

- v. The CA must weigh up the balance of evidence, consider the applicants and their track record and ability to run an aquaculture facility, consider their intentions and agreement to manage the development in a sustainable way, and take account of the varying opinions from consultees and stakeholders. On the balance of the evidence, the CA should come to a decision.
- vi. After the systematic review, the CA should make a decision to approve or not approve the development.
- vii. The judgment must be provided in writing, and should be comprehensive. It should outline the reasons for the decision made. This is required so that the aquaculture farmer, consultees and interested parties understand exactly what the reasons for approval of the project are or the reasons for the rejection of the application.

Right of appeal: If an application for an aquaculture development has been rejected, the aquaculture farmer should be given the right of appeal. The appeal procedure should be a clearly defined procedure. The procedure should make clear the person to whom the appeal should be made and under what circumstances appeals will be heard. The aquaculture farmer should have the opportunity to disagree with the rejection, and state the reasons for this. The CA should be given the chance to make its case for the rejection. Such consideration should be heard by a suitably qualified independent expert agreed to by the two parties, and the final decision should be binding on both parties.

- viii. On approval, the CA must issue the necessary permissions to go ahead. This should include the issue of a licence to go ahead with development of the facility. This licence should be a written document that outlines what has been approved and include any associated conditions placed on the development.
- ix. Such a licence document should in general include the following, although the detail will vary depending on the development type:
- 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 need to be provided regularly;
 - monitoring requirements;
 - the identification of 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 (or ponds);*
- *any minimum or maximum pond depth requirements;*
- *a map or diagram of the site;*
- *permission to abstract water from a river or other the type of water source, and permission to release water back to the river or other watercourse. 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 holding biomass;*
- *whether or not fertilization is allowed and what type of fertilization;*
- *whether or not the aquaculture farmer has to keep certain written 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.*

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

- *the maximum size and number of tanks allowed;*
- *the type of construction allowed for the tanks (e.g. plastic, concrete);*
- *details about approved abstraction and release of water back to the environment and related maximum allowable nutrient concentration for the water released;*
- *the fish species allowed along with the number of fish or a maximum biomass;*
- *a maximum stocking density on fish welfare grounds;*
- *the feed type allowed, along with how much feed is allowed to be used, which may also specify the quality expected to be used;*
- *any written records that need to be maintained.*

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

- *the maximum number and size of cages;*
- *minimum safety and quality requirements in terms of anchoring, quality of materials to be used for cage infrastructure including nets;*
- *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 at the site;*
- *whether onshore facilities are permitted, to what extent and for what (office/storage);*
- *specifications for the maximum amount of nutrients to be added to the ecosystem;*
- *paperwork requirements, which might include amount of feed used each day, any disease treatments added, when and in what quantities, keeping records of disease outbreaks.*

In all cases, any other information and detail that is deemed necessary.

- x. In all cases, the licence should also identify the monitoring requirements at the site. This should include actions that the CA expects that the aquaculture farmer 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 procedure.
- xi. The licence should also specify what actions the CA will take, by way of site visits or monitoring activity.
- xii. 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 aquaculture farmer.
- xiii. It should be in sufficient detail that site visits and checks carried out can verify that the licence and the conditions applied are being adhered to and the requirements carried out.

2.7.9 Monitoring and managing

- i. After the development has gained approval, follow-up site visits and regular monitoring are necessary functions to ensure that the activities identified and mitigation offered in the EIS are being adhered to. Site visits should be carried out by an appropriate state agency.

As development of aquaculture usually resides with the Department of Fisheries, then these would seem the most appropriate department to evaluate the operations and activity of the farm. The relevant state environmental authority may consider the impacts on the environment. Where more than one state agency is involved, their respective authority should be clearly defined and duplication of effort removed.

- ii. Regardless of who does what, the monitoring should ensure compliance with the licence. It should consider how the site is run and how the fish and activity are managed. To avoid conflicting information, specific aspects of monitoring should not be carried out by more than one agency.
- iii. Such monitoring should be limited to assessing the most significant impacts. Once production has started, monitoring should show whether the mitigation or alternatives proposed in the EIS and actions taken by the aquaculture farmer are having the desired effect.
- iv. Having monitored for a reasonable period, and where the impacts are larger than those predicted, there should be a mechanism to allow for corrective action.

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 aquaculture farmer may be required to estimate the quantities likely to be released to the environment as part of the EIS submission and then to monitor the water quality locally to assess the impact of the estimated level of nutrients being added. Equally, for a flow-through pond system, 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 exceeded, especially where semi-intensive and intensive methods of production are being used. Such monitoring may be carried out by an appropriate state agency. In many developed countries, the requirement to monitor is placed on the aquaculture farmer, who would then employ environment specialists to do this, sending their reports to the state agency for review and consideration. 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.

- v. In conjunction with the aquaculture farmer, the CA or responsible state agency should propose and make changes to the site, management processes or the infrastructure in order to overcome the deficiencies or impacts identified.
- vi. Having identified what the changes need to be, the aquaculture farmer should be given sufficient time for the changes to be implemented and to conduct monitoring to see whether the changes have made any difference.

Refusal by the aquaculture farmer to carry out the changes, or an inability to overcome the problems identified or where the aquaculture farmer is not working to the conditions laid out in the licence could result in the need to change or remove 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 aquaculture farmer should cease production. In order to withdraw the license, there should be an appropriate legal mechanism.

- vii. The key to monitoring is to ensure that the impacts identified in the EIA procedure 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.

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Review of environmental impact assessment regulations and procedures relevant to aquaculture development in selected countries of the Central Asia and Caucasus region

1. Introduction

Realizing the importance of increasing aquaculture production, many countries in the Central Asia and Caucasus region recognize the need to develop aquaculture in an environmentally sustainable manner. There is also an availability of unpolluted water resources and areas of land that are essentially unsuitable for agriculture or any other development. In order to increase viability, there is a need to develop a suite of tools to help support the development of aquaculture.

Environmental impact assessment (EIA) in the development of aquaculture practices is increasingly gaining recognition as a tool to ensure adequate assessment and monitoring of aquaculture development in an environmentally sustainable manner. The decision to enact an 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 procedure than other sectors. It is an accepted view that more intensive production systems, or developments in areas that are environmentally sensitive, are more likely to require an EIA. This is because the risks associated with impacts are liable to be greater. It is important in this context to understand these risks fully and provide mitigation against them.

In many countries, fish production occurs on small-scale aquaculture farms and such farms are not subject to the EIA procedure. Some countries have a minimum requirement in terms of the extent of the farm, to be considered for any initial environmental examination (IEE) or EIA procedure. The cumulative effects of such small-scale farms on the environment are ignored or not considered. This issue can be addressed through a strategic environmental assessment (SEA) or an environmental assessment applied to clusters of farms, coupled with analysis of environmental capacity issues, preferably as part of a comprehensive natural resource planning and management system (GESAMP, 2001).

Many countries now have aquaculture-specific EIA legislation. Where aquaculture-specific laws are not in place, the requirements often 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 circumstances will definitely require an EIA (e.g. countries in Europe), but nearly all define aquaculture as an industry that may or may not require an EIA. The size of the development, the sensitivity of the area, the species being grown and the level of impact and risk are all reasons to trigger an EIA procedure. 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).

The review of the current status of the EIA legislation, regulations and procedures and their relevance to aquaculture development activities and projects in selected countries of the Central Asia and Caucasus region given in this document stems largely from documented literature.

1.1 Statement of purpose

The purpose of this review is to provide background information to the document on Guidelines on the Application of the Environmental Impact Assessment Procedure in Aquaculture in the Central Asia and Caucasus Region. This review provides information on the existing legislative and institutional frameworks in selected countries in the Central Asia and Caucasus region to evaluate the feasibility of implementing the Guidelines on the Application of the Environmental Impact Assessment Procedure in Aquaculture at national level. This evaluation includes important legislative acts and provisions related to the environmental legislation, institutional arrangements for environmental protection and governing laws on activities subjected to EIA.

The countries reviewed are: Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan.

2. Review of current status of legislative and institutional framework

The following review provides a summary of legislative controls currently in place, identifies the current key stakeholders in the procedure, and describes the current EIA procedure in selected countries in the Central Asia and Caucasus region. The review is not exhaustive, but serves to highlight the legislative and institutional frameworks for EIA or similar approaches that are in place to mitigate environmental impacts of development activities. Generally, these are not necessarily specifically designed for aquaculture developments. Such frameworks and procedures may easily be adapted or updated to incorporate aquaculture developments.

- 1) From the information available, there is no strategic environmental assessment (SEA) in the countries of the Central Asia and Caucasus region included in this review. In some countries, there is no explicit provision on SEA in legislation, but some strategic environmental decisions are defined as subject to state ecological expertise (SEE) (e.g. Law on Environmental Protection in Azerbaijan), while general provisions for the implementation of SEA and environmental audits are available in some countries (e.g. Environmental Code 2009 of the Kyrgyz Republic).
- 2) It is outside the scope of this document, but it is recommended that the Governments initiate an 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. However, an SEA should evaluate this more fully and identify where aquaculture-related legislation might be enacted, if appropriate. Most importantly in the context of EIA, it allows stakeholders to understand more fully the governmental view of aquaculture and its development, and it can incorporate EIA requirements. One outcome of the SEA should be the development of a “Strategic Plan for Aquaculture Development”.
- 3) Moreover, an SEA is widely recommended as a way to address the cumulative environmental effects of large numbers of small-scale aquaculture developments (GESAMP, 2001) that characterize the bulk of aquaculture not only in countries in the Central Asia and Caucasus region but also worldwide.
- 4) There are several basic laws and other important legislative acts that contain provisions related to environmental legislation in each country covered in this review (Table A1.1). There are some existing laws directly applicable to the environment and EIA, and which would be most applicable to the development of aquaculture within these countries, although neither law makes reference to aquaculture explicitly. These are the:
 - a. Law on Environmental Protection or Environmental Code (Azerbaijan, Kazakhstan, Kyrgyzstan and Tajikistan);
 - b. Law on Nature Protection (Armenia and Uzbekistan);

- c. Law on Environmental Impact Expertise (Armenia) or Law on Ecological Expertise (Kazakhstan, Uzbekistan) or Environmental Expertise (Kyrgyzstan).
- 5) The laws on environmental protection view environmental protection as a precondition for sustainable development. They are framework laws and cover all media (water, soil and air), ecological safety, protection of biodiversity, protected areas and ecological expertise. The laws stipulate measures to secure public and individual rights to a safe and healthy environment and prevent entrepreneurial and other activities from having a harmful effect on natural ecosystems. They preserve biodiversity, ensure the efficient use of nature and lay down regulations for environmental emergencies (Kazakhstan, Kyrgyzstan and Tajikistan). Thus, aquaculture is or can be considered as an economic and/or entrepreneurial activity that should take measures to operate in a secure healthy environment.
 - 6) Environmental laws are implemented through permits and licences, environmental standards, emission-limit values and limits on the use of natural resources (Armenia, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan). Sometimes, environmental permits and licences are issued even though there are no provisions on environmental licensing in domestic environmental legislation (Azerbaijan). In most cases, licences and permits are not clearly differentiated in law. Usually, licence holders are given the right to engage in a certain activity, while permits give the right to a certain resource. Sometimes, these terms are used interchangeably.
 - 7) None of these laws is acted upon for aquaculture developments, other than in simple and broad terms. In many of the countries, extensive pond aquaculture of carps has been practised for decades, and never been regarded as having negative impacts on the environment. However, the situation may change if culture practices become more intensive or if new species are developed. Therefore, it is necessary to put in place a suitable EIA procedure to screen and assess such practices.

TABLE A1.1
Important legislative acts contain provisions related to the environmental legislation

Armenia	Azerbaijan	Kazakhstan	Kyrgyzstan	Tajikistan	Uzbekistan
<p>Principles of Legislation on Nature Protection 1991; Law on Specially Protected Areas 1991; Law on Environmental Impact Expertise 1995; Law on Atmospheric Air Protection 1994; Underground Resources Code 1992; Water Code 1991; Forest Code 1994; Land Code 1991; Law on Environmental Protection and Natural Resource Use Charges 1998; Law on Flora 1999; Law on Fauna 2000.</p>	<p>Law on Environmental Protection 1999; Law on Specially Protected Areas 1997; Forest Code 1999; Forest Code 1997; Law on Domestic and Industrial Waste 1998; Law on Access to Information on Environmental Matters 2002; Law on Phytosanitary Regulations 2006; Law on Nature and Protected Areas 2000.</p>	<p>Environmental Code, 2007; Forestry Code 1993; Water Code 1993; Land Code, 2003; Law on Licensing, 2007; Law on Specially Protected Natural Territories 2006; Law on the Protection, Reproduction and Use of Animals 2004.</p>	<p>Law on Environmental Protection 1999; Law on Environmental Expertise 1999; Law on Specially Protected Natural Areas 1999; Law on Air Protection 1999; Environmental Code 2009.</p>	<p>Law of the Republic of Tajikistan on Wildlife, No. 354 2008; Water Code of the Republic of Tajikistan, No. 125 2000; Land Code of the Republic of Tajikistan, No. 23 2004; Law of the Republic of Tajikistan on Licensing of Certain Activities, No. 37 2004; Law Republic of Tajikistan on Environmental Protection, No. 284 2007; Law of the Republic of Tajikistan on Ecological Expertise, No. 328 2007; Nature Protection 1993; Air Protection 2002; Law on Minerals 1992; Law on Wastes of Production and Consumption 2002; Law on Production and Safe Handling of Pesticides and Agrochemicals 2003; Law on Specially Protected Territories 2002; Law on Plant Protection 2003; Forestry Code 1996; Law on Certification of Products And Services 2007; Law on Standardization 1996; Law of the Republic of Tajikistan on Fishery No. 220 2006 (Fishery Law); General Fishery Regulations No. 313 2007 (Fishery Regulations); Law on Licensing 2003.</p>	<p>Law on Nature Protection 1992; Law on State Ecological Expertise 2000; Law on Protected Natural Areas 2004; Law on Subsoil Use of Energy 1997; Law on Waste addresses 2002.</p>
Basic environmental laws					
Other important legislative acts contain provisions related to the environmental legislation					
<p>Criminal Code 1999; Code on Administrative Offences 2007.</p>	<p>Code of Administrative Offences 2007.</p>	<p>Law on Veterinary 2002; Law on Natural and Technogenic Emergencies 1996; Law on Atomic Energy Use 1997; Law on Mandatory Ecological Insurance 2005; Law on Technological Regulation 2004; Law on Safety Of Food Products 2007; Law on Underground Resources and their Use 2010; Law on the Social Protection of Citizens Harmed by the Environmental Disaster near the Aral Sea 1992; Law on the Social Protection of Citizens Harmed by Nuclear Testing in the Semipalatinsk Nuclear Testing Polygon 1993; Law on Radiation Safety 1998.</p>	<p>Law on Water 1994; Law on Fishery 1997; Law on Subsoil 1997; Law on Fauna 1999; Land Code 1999; Forest Code 1999; Law on Industrial and Domestic Waste 2001; Law on Tailing Sites and Slag Heaps 2001; Law on Mountainous Areas 2002; Law on Sustainable Development of the Environmental and Economic System, Issyk-Kul 2004; Law on Protection and Use of Flora 2001; Water Code 2005; Law on the Ozone Layer Protection 2006; Law on State Policy and Regulation in the Sphere of Emission and Absorption of Greenhouse Gases 2007.</p>	<p>Law on Hydrometeorological Activity 2002; Law on Securing Sanitary and Epidemiological Safety of the Population 2003; Law on Veterinary Medicine 2003; Law on Salt Iodization 2007; Law on Quality and Safety of Food 2007; Law on Industrial Safety of Dangerous Industrial Facilities 2003; Law on Radiation Safety 2003; Law on Protection and Use of the Animal World 1993; Law on Plants Quarantine 2003.</p>	<p>Land Code 1998; Town Planning Code 2002; Law on the Protection and Use of Objects of Cultural Heritage 2001; Law on the State Programme for Forecasting and Preventing Emergency Situations 2007; Draft Law on Environmental Security, Draft Law on Water and Water Use.</p>

- 8) 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 the countries at present.
- 9) The provisions of the Law on Environmental Impact Expertise (EIE) or the Law on Environmental Expertise or the Law on Ecological Expertise forbids any economic unit to operate without a positive conclusion of a state environmental expertise or ecological expertise (SEE) review. Such a review is intended to: prevent negative impacts on the environment as a result of a proposed activity; forecast impacts from activities even though they are not necessarily considered damaging to the environment; and create databases on the state of the environment and knowledge about human impact on the environment. In cases where enterprises are economic activities but do not fall under the Law on Ecological Expertise, an “ecological passport” has been introduced under a by-law to include EIA (e.g. Kazakhstan) (UN, 2000a). Thus, the provisions are already available in the above laws to enable the implementation of EIA in aquaculture.
- 10) The outputs (reports/decisions) from an environmental or ecological expertise assessment in Kazakhstan are comparable with the development of the environmental impact statement (EIS) in Western Europe and the United States of America (UN, 2000a). In Uzbekistan, an EIA is a mandatory procedure that precedes an SEE on the planned activity. The Law on Environmental Expertise provides detailed regulations on the procedures of environmental expertise and EIA and covers both current and new environment-related programmes, plans and legislation in Kyrgyzstan (UN, 2009), and in Kazakhstan provides recommendations on EIA for biological resources (UN, 2000a).
- 11) Often, the procedural scheme of SEE does not appear to meet all the EIA requirements in line with international practices. The current provisions on ecological expertise in the Law on Environmental Protection in Azerbaijan, for example, are too general and not adequately developed. A draft law on environmental expertise and draft regulations on environmental impact assessments in Azerbaijan have been developed (UN, 2010a).
- 12) Overall environmental administration and coordination is the responsibility of ministries responsible for nature protection or ecological and natural resources (Armenia, Azerbaijan, Kazakhstan) (UN, 2000a; UN, 2010a; UN, 2000b) or state agencies or committees on environment or nature protection (The Kyrgyz Republic, Tajikistan, Uzbekistan) (UN, 2004; UN, 2009; UN 2010b). There are also other ministries and central offices with responsibilities for environmental management (Table A1.2).

TABLE A1.2
Institutional arrangements for environmental protection

Armenia	Azerbaijan	Kazakhstan	Kyrgyzstan	Tajikistan	Uzbekistan
Ministry of Nature Protection.	Ministry of Ecology and Natural Resources (Department Environmental Protection).	Ministry of Environmental Protection.	State Agency of Environmental Protection and Forestry (SAEPF).	State Committee for Environmental Protection and Forestry.	State Committee for Nature Protection.
Overall environmental administration and coordination					
Other agencies responsible for environmental protection					
Ministry of Agriculture, Ministry of Health, Ministry of Finance, Ministry of Internal Affairs and Justice.	Ministry of Health, Ministry of Transport, Ministry of Agriculture, Ministry of Economic Development, Ministry of Emergency, State Committee on Land and Cartography, National Department of Environmental Monitoring, Agency for Amelioration of Water Resources	Ministry of Oil and Gas, Ministry of Agriculture	Ministry of Emergencies, Ministry of Health, Ministry of Industry, Energy and Fuel Resources, Ministry of Agriculture and Melioration, State Agency of Geology and Mineral Resources.	Ministry of Health, Ministry of Industry, State Committee for Land Administration, Ministry of Agriculture, Ministry of Land Reclamation and Water Resources, Ministry of Economy and Trade, local majlis (Councils of People's Deputies).	Ministry of Health, Ministry of Agriculture and Water Management, State Inspectorate for Safety in the Manufacturing and Mining Industries and Municipal Sector, State Committee on Land Resources, Geodesy, Cartography and State Cadastre.
Institutions responsible for environmental monitoring, information and education					
The Ministry of Nature Protection is responsible for ambient environmental monitoring.	National Department of Environmental Monitoring, Caspian Complex Monitoring Administration and the Geological Exploration Service, National Hydrometeorological Department, Scientific and Research Fishery Institute, Department of Biological Diversity Protection, the Specially Protected Nature Areas Development and the Caspian Integrated Ecological Monitoring Department, National Academy of Science, Scientific and Technical Council.	Ministry of Environmental Protection, Information and Analytical Centre of Environmental Protection, Kazhydromet, Kazakh Scientific Research Institute of Ecology and Climate; Eurasian Centre of Water Information and Analytical Centre of Oil and Gas, Ministry of Agriculture, Committee of Fisheries, Kazakh Scientific Research Institute of Fisheries, Agency on Statistics, Agency on Health Affairs Processes, Ministry of Education and Science (Department of Higher and Postgraduate Education), Regional Environmental Centre for Central Asia (CAREC).	Directorate on Hydrology (Kyrgyzhydromet), Division of State Environmental Control, Ministry of Health, Ministry of Agriculture and Melioration, State Agency of Geology and Mineral Resources, SAEPF, Institute for Biology and Pedology of the National Academy of Sciences, Kyrgyz National University, Kyrgyz State Technical University, Kyrgyz Agrarian University in Bishkek, Osh Technical University and Talas State University, Schools.	Hydrometeorological Agency, Tajik Geological Agency, Sanitary-epidemiological Laboratories of the Ministry of Health or analytical laboratories of the Committee for Environmental Protection under Government of Tajikistan, Ministry of Land Reclamation and Water Resources RT, Ministry of Internal Affairs RT, State Committee for Statistics, Schools, Tajik State University, Tajik Technical University, Tajik Pedagogical University and the Universities of Khujand, Kulyab and Khorugh.	Centre of Hydrometeorological Service, Ministry of Agriculture and Water Management, the Ministry of Health monitors, Aral Sea Operating Company, State Committee on Geology and Mineral Resources, the Research Institute of Soil Sciences and Agrochemistry, State Specialized Inspectorate for Analytical Control, Academy of Sciences, Schools, Ulugbek National University, Andijan, Bukhara, Karakalpakstan, Samarkand and Termez Universities, Tashkent Economic University, Urgench University.

- 13) These agencies are responsible for formulating and implementing environmental policy and management, environmental protection measures, screening projects for potential adverse environmental impacts, monitoring implementation of environmental legislation, nature protection, rational natural-resource use, and conservation and biodiversity. Agencies that have the overall responsibility of environmental administration and management are the primary apparatus to maintain interdepartmental or interagency coordination.
- 14) Environmental administration operates at the regional or local levels through regional departments or subcommittees (Azerbaijan, Tajikistan and Uzbekistan), inspectorates to control environmental pollution (Armenia), and interregional or regional environmental protection administrations (the Kyrgyzstan, Kazakhstan).
- 15) As per the environmental laws, for the purpose of preventing negative impacts on the environment of an economic activity, certain procedures have been put in place by these countries (Table A1.3). A two-stage procedure for decision-making has been established by Kyrgyzstan. This procedure applies to specific activities that in general can be expected to generate environmental risks. Such activities can be carried out only after conducting an EIA and obtaining a positive SEE report (UN, 2009). In Kazakhstan, regulations are in place to provide guidelines for the initiation of an economic activity and the development of project and pre-project documentation and taking account of public opinion during the EIA. However, it requires only the distribution of information and not actual public participation in the procedure (UN, 2000a). In Azerbaijan, the EIA procedures have been applied to economic activities, most of which concerned the construction or modernization of highways and motorways, oil and manufacturing projects. In Azerbaijan, there are no legally binding provisions on EIAs in current legislation, and an EIA procedure is not incorporated into the decision-making system for public and private projects with a potentially significant environmental impact (UN, 2010a).
- 16) In the interest of both economic recovery and environmental protection, EIA procedures should not be unnecessarily time-consuming or expensive (for both project developers and environmental authorities); they should be “reasonably applicable” by the environmental inspectors and other managers involved, and they should provide an instrument for “effective public participation” (OECD, 2005).
- 17) In some cases, SEEs are extremely centralized and all the issues related to them and to project EIAs are decided directly by the state expertise administration (Azerbaijan) and public hearings are conducted on large projects subject to the EIA procedure (UN, 2010a). In other cases, the so-called public environmental expertise, an instrument for public involvement in EIA, prescribed by the Law on Environmental Protection has been implemented (e.g. Kyrgyzstan and Tajikistan) but on a voluntary basis only; the conclusions of this assessment are not mandatory for the developer (UN, 2009). While state ecological expertise is a prerequisite for beginning any activity that may have an adverse environmental impact, public ecological expertise becomes binding only after its results have been approved by a state ecological expertise body (UN, 2004). Sometimes, the regulations on state ecological expertise contain references to public hearings as part of the EIA procedure (e.g. Uzbekistan) but the discretionary power to hold public hearings when this is necessary lies with the SEE authority (UN, 2010b).
- 18) Despite the existence of provisions in the legal frameworks and a suitable inherent structure for EIA in the countries of the Central Asia and Caucasus region subject to this review, there is not currently a working EIA procedure for aquaculture in place. It is important to appreciate the significance of the existence of an inherent structure in terms of the extent to which these Guidelines can influence and change the current practices. It is expected that anything that added clarity and transparency to the procedure would be an improvement.

TABLE A1.3
Environmental impact assessment

Armenia	Azerbaijan	Kazakhstan	Kyrgyzstan	Tajikistan	Uzbekistan
Governing laws					
Law on Environmental Impact Expertise 1995.	Law on Environmental Protection 1999; draft Law on Environmental Expertise and draft Regulations on environmental impact assessments.	Environmental Code 2007.	Law on Environmental Protection 1999, Law on Environmental Expertise 1999.	Law on Nature Protection 1993, and in the Law on Ecological Expertise 2003.	Law on Nature Protection 1992, Law on Ecological Expertise 2000, State Ecological Expertise contain references to public hearings as part of the EIA procedure, when necessary.
Activities subject to SEE may involve EIA					
Any economic unit, implementation of any concept, programme, scheme including the explanation of processes, plans, or master plans.	Public and private projects involving construction, modernization, new equipment and technologies, oil contracts, manufacturing industries.	The law requires the preparation of SEE for all projects of economic activity, reconstruction, preliminary design and design documents, concepts, investment projects, contracts, draft versions of normative regulatory acts, regulations of emissions to the environment, documents for application of new technologies and documents reasoning for yield of natural resources. Public environmental expertise is voluntary and not financed from the state budget.	Four categories of projects have been identified based on the significance of the impacts on the environment: I – high risk; II – medium risk; III – low risk; and IV – local impact.	Development planning of all facilities subjected to SEE and EIA activities that may have an impact on the environment under four categories of environmental impact: I – high risk; II – medium risk; III – low risk; and IV – local impact. Requirements and terms of SEE and EIA differ according to the category of a facility.	Facilities subjected to SEE and EIA come under four categories of environmental impact: I – high risk; II – medium risk; III – low risk; and IV – local impact. Requirements and terms of SEE and EIA differ according to the category of a facility.
EIA/SEE procedure					
Registration of a project, reception of the documents, report of the result.	Screening of projects to determine whether they need to be subject to EIA on the basis of the project classification by the World Bank. There are no provisions on environmental licensing in domestic environmental legislation. Public hearings are conducted on large projects subject to the EIA procedure.	Determination of type and level of environmental impact of the activity on the. The prediction of probable environmental changes if the project is implemented, development of environmental protection measures in the project implementation, defining environmental protection requirements, alternatives to the proposed action, including no action. Socio-economic effects are included in the EIA on monitoring environmental requirements during the operation applications for licenses and certificates for the use of natural resources.	The SEE report is usually based on a feasibility study or EIA prepared as part of the project documentation. No public participation in the SEE procedure.	An application for SEE registered by the local executive body (hukumat), review by the state ecological expertise. Should be public hearings, as required by the operative laws	Preliminary review of the environmental impact conducted at the initial design stage, normally before a construction site is selected and before the facility is financed. Review of the environmental impact, which is prepared prior to the approval of a project feasibility study, review of the environmental consequences conducted prior to the commissioning of a facility.

- 19) There are no specific guidelines for an aquaculture application procedure, to inform stakeholders of the required procedure and to identify the key questions and information needed. The lack of guidelines, and a lack of knowledge in developers 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.
- 20) Even when aquaculture developments are granted permission or an aquaculture licence is issued, there appear to be few or no conditions attached to them, regardless of aquaculture production type. Limited information in licences 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 a production facility. There is also confusion in the systems as to what aquaculture activity has been approved and what constitutes legal and illegal aquaculture activity. Finally, the lack of conditions in the permission or licence means that previous approvals are difficult to change, for example, in the event of revised scientific advice.
- 21) Often, the permission and/or licensing authority that presides over all such decisions is a closed group from within one agency (often the state agency responsible for environmental protection) 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 procedure is both fair and reasonable and taking account of all stakeholder responses and responsibilities.
- 22) Under the environmental laws in the countries covered in this review, the issuance of a licence rests clearly with one agency and, therefore, by definition this agency gives the final decision on approval or non-approval. However, this does not require that it is also the sole decision-maker in relation to approval of aquaculture activities. Some other state agencies do contribute to providing information in the current systems, but this contribution 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.
- 23) The closed group or one agency that grants permission or issues licenses cannot be considered a one-stop-shop, as the group often belongs to one agency. Alternatively, a group or committee representing all key stakeholders that have a role in the assessment of an application for an aquaculture development could function as a one-stop-shop to assess the application in order to recommend granting permission or issuing licenses for aquaculture developments.
- 24) In most cases, international standards and EIA procedures have taken years to develop into effective and efficient systems. While a better system can be applied in the countries concerned, under the banner of EIA and taking account of the above-mentioned laws and instructions given herein, it will take the will of Governments and other stakeholders and an improved capacity within the country to transform the information provided in this report into a fully functioning and beneficial procedure. The Guidelines on the Application of the Environmental Impact Assessment Procedure in Aquaculture in the Central Asia and Caucasus Region are a guide only, and state agencies, especially the environmental agencies within the existing laws that have the authority to implement an EIA procedure, will decide whether to implement procedures based on the guidelines and recommendations in the present or a changed form.
- 25) There is a lack of widespread professional expertise on the impacts of aquaculture development on the environment. There are many experts on ichthyology, on environmental issues, on EIA (although not for aquaculture), and other scientific expertise needed for the development of aquaculture within these countries. However, almost all of this expertise resides within state agencies. There is a more general lack of expertise across the sector as a whole, with training required for EIA practitioners and certifying trained EIA practitioners for aquaculture.

- 26) 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. An EIA procedure for aquaculture would be a new procedure in the countries and this will be addressed in the guidelines document. More fundamentally than this, there would appear to be a lack of experience – as regards the State in knowing what key questions to ask and on what information should be provided to be able to evaluate an aquaculture development, and as regards the aquaculture farmer a lack of knowledge on EIA, but also a lack of private-sector expertise from which to seek advice. The proposed Guidelines on the Application of the Environmental Impact Assessment Procedure in Aquaculture provide some answers but are not the panacea.
- 27) The regulations on fisheries and/or aquaculture and relevant environmental laws and/or regulations that have a bearing on aquaculture development should adequately include requirements for the following aspects that are essential components of a sustainable aquaculture development.
- environmental management, such as baseline assessments and routine monitoring of allocated areas/leases;
 - identification of aquaculture farming zones both for land- and water-based aquaculture development;
 - management controls, which set out the activities that may take place in an aquaculture farming zone, including the environmental testing required and the limits of water quality in and around aquaculture farming zone.

Therefore, actions are needed to fill these regulatory gaps in order to observe a sustainable aquaculture development.

- 28) Adequate provisions should also be made available under the governing laws on fisheries and aquaculture and/or relevant environmental laws and/or regulations that have a bearing on aquaculture development for the following actions:
- Preparation of aquaculture zonal plans: The purpose of the zonal planning is to detail areas that are suitable and able to be developed for land- and water-based aquaculture. Within each zone, specific locations are allocated, within which the actual areas to be developed into farms.
 - General environmental monitoring controls required by all aquaculture farmers, enhanced by adding detailed monitoring requirements specific to each farm added to the sites aquaculture licence. These may include conducting monitoring and maintenance of site management data for auditing purposes (some examples include: recording the total quantity of fish food used on each farm per year; quantities of potentially harmful chemicals added such as therapeutic treatments, antibiotics, hormones and antifoulants; and estimation of nutrient concentrations that may have been released from the fish farm operations into the aquatic environment or to the sediment).
 - General management controls required by all aquaculture farmers. These may include management practices and procedures that act to reduce unacceptable environmental impacts. One example might be having a procedure in place to re-capture escaped fish in the event of a catastrophic failure in nets and/or cages. Management controls may include estimating the carrying capacity of farming areas or cage culture areas that stipulate a maximum stocking density (in terms of kilograms per cubic metre), stipulating a distance between the sea bed and bottom of nets and/or cages at low tide (if applicable) under normal growing conditions to allow some water movement and dispersal of wastes from under the cages, and stipulating a fallow period or relocation of cages.

- Environmental controls required by all aquaculture farms, with detailed environmental control requirements specific to each farm to be listed in each aquaculture licence. This may include having no impact within a stipulated area outside the boundary of the farming area (outside a “zone of impact”). Relevant environmental parameters must be monitored in the farming area, within the stipulated area from the boundary of the farming area and at any control site (or sites) in accordance with the requirements specified in the relevant aquaculture licence.
 - Environmental restoration of habitat and land in the event that unnecessary or illegal environmental damage is caused, or the aquaculture farmer abandons a site, or the site is due for decommissioning should be made as a general condition to each aquaculture licence.
- 29) Confining aquaculture development to identified zones can be done in a simple form based on a set of criteria of suitability for particular aquaculture practices (i.e. one for land-based [ponds, hatcheries] and another for water-based aquaculture [cages]) and a set of criteria to evaluate the environmental incompatibility of these respective aquaculture practices. Aquaculture development restricted within an identified zone (or zones) enables a zone-wide application of those aspects of EIA. Mitigation measures can be applied throughout the zone and made a requirement of permit approval. At present, no zones have been identified for the development of aquaculture in the countries covered in this review; therefore, it is more likely that EIA is applied to single farm developments only, to grant final approval. While this approach is vital (EIA applied to single farms), one of the main weakness in this procedure is it cannot effectively address cumulative and wider environmental impacts of multiple farms in an area and, for example, cumulative effects such as nutrient enrichment. Moreover, experience elsewhere indicates that case-by-case EIAs have been weak on characterizing impacts in terms of their likelihood and consequences, and in terms of the uncertainty associated with the predictions.
- 30) If identified aquaculture development zones are available and EIA has been conducted for this general approval, the aquaculture farmers should be asked to perform case-by-case EIAs more specific to the site they request, considering the type, scale and nature of aquaculture operation within the identified zone. Aquaculture applications and EIA assessment for specific sites can then easily be evaluated within the context of wider zonal EIA, for approval for the site and for specifying site-specific mitigatory actions.
- 31) The level of environmental impacts of aquaculture practices are dependent on the site conditions, geographical locations, tidal characteristics (if applicable), species used, type of aquaculture practices, degree on intensification, quality of inputs (fish, feed, staff, training), management methods adopted, and the level of human awareness regarding the ecosystem. In addition, and in order for the impact of any EIA procedure to be effective, the existing fisheries and/or aquaculture regulations should also cover management of aquaculture practices and disease controls.
- 32) Therefore, adoption of operational management (siting, operation and management) and aquaculture management (disease control) regulations is recommended. The main purpose of these regulations is to implement provisions in regard to licensing of aquaculture enterprises, and to implement a comprehensive disease prevention and control programme in aquaculture. In order that, for example, aquaculture products from the Central Asia and Caucasus region are able to be traded to the European Union (Member Organization), EC Directive 91/67/EEC requires that such programmes be implemented and managed in order to obtain this access. The following aspects may be included in the aquaculture management (disease control) regulation.
- the regulation may be cited as the aquaculture management (disease control) regulations;
 - appointment of a panel of inspectors by the competent authority to inspect farms;
 - cleaning and disinfection controls;
 - collection of refuse and residues;

- disinfection of utensils, drains and pavements;
 - controlled feed preparation and storage;
 - provision of protective clothing for visitors;
 - requirement to display information posters about sanitary measures;
 - prevention of animals entering the farm;
 - use of protective garments and gear;
 - disposal of dead fish;
 - treatment of diseases;
 - medication, vaccination and artificial colouring;
 - general aspects, including record-keeping.
- 33) To regulate discharge of wastewater, particularly from intensive aquaculture practices, with higher nutrient inputs, it is recommended that standards be developed for the wastewater from pond and hatchery aquaculture and be included under environmental legislation and/or regulations as environmental guidelines. The environmental guidelines should be supported by technical manuals and decision-making management tools for farmers. In this regard, it is recommended that CACFish provides technical assistance to the relevant authorities in member countries to develop technical manuals and decision-making management tools.
- 34) It is recommended that monitoring be carried out in an area outside the identified zones for aquaculture production that is free from pollution to use as a reference site against which negative impacts from aquaculture on the environment can be assessed, and within each area to assess impact where approvals and/or licences have been issued. The monitoring should be carried out in the approved and/or licensed area before production begins as a baseline study to assess conditions, and also at specified intervals once the site is in operation as regular monitoring. The aim of the baseline monitoring is to provide a reference set of data that can be used to establish the conditions of the local ecosystem against which future change can be compared. These changes can also be compared with the conditions monitored at the reference site outside the identified zones of aquaculture development.
- 35) It is also recommended that countries in the Central Asia and Caucasus region develop good management practice (GMP) guidelines. These should aim to give aquaculture farmers sensible and practical guidelines to follow in the planning, management and operation of their farms. Such guidelines will be useful to implement environmental regulations as well to implement EIA outcomes. These guidelines are based on lessons learned from a country's own practice and international practice or scientific research. These guidelines should be revisited in the future based on the local experience gained as development of aquaculture takes place. The GMP guidelines are useful for improving ways of working, developing knowledge, skills, capacity and practices; and they would encourage responsible and sustainable production. It is hoped that these guidelines will be taken up by producer organizations, clusters of farmers and large farmers. It should be appreciated that it would be difficult for a farmer to implement all the guidelines immediately, but farmers should be encouraged to implement some immediately and gradually implement the others as time goes by.
- 36) The GMP guidelines should be supported with the development of technical manuals depending on species, culture system and geography. It is recommended that CACFish provides its support and technical expertise to relevant authorities in order to develop such technical manuals and management tools.

Aquaculture is an integral part of the natural environment, and interactions between aquaculture and the environment are inevitable. In considering these interactions, it is essential to consider the environmental impacts of aquaculture and, hence, require an EIA procedure to be in place. This EIA procedure should include probable significant impacts of aquaculture operations on water sources, land, biodiversity and other resources required by other user groups. It is also important to recognize that the impacts may be negative or positive. It may also worth mentioning that aquaculture can certainly contribute positively to environmental improvement in many ways, including, for example, through biodiversity enhancement, a fact often not recognized in many discussions on the environmental impacts of aquaculture.

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Terms and definitions

Aquaculture: The farming of aquatic organisms including fish, molluscs, crustaceans and aquatic plants. Farming implies some sort of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. Farming also implies individual or corporate ownership of the stock being cultivated (FAO, 1997). Also defined as the farming of aquatic organisms in inland and coastal areas, involving intervention in the rearing process to enhance production and the individual or corporate ownership of the stock being cultivated (FAO Glossary of Aquaculture, available at: www.fao.org/fi/glossary/aquaculture/).

Better management practice (BMP) (good management practice [GMP]): Management practices aimed at improving the quantity, safety and quality of products taking into consideration animal health and welfare, food safety, environmental and socio-economic sustainability. BMP implementation is generally voluntary. The term “better” is preferred rather than “best” because aquaculture practices are continuously improving (today’s “best” is tomorrow’s “norm”) (FAO, 2010).

Biodiversity, or biological diversity: The variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. Diversity indices are measures of richness (the number of species in a system); and to some extent, evenness (variances of species’ local abundance). They are therefore indifferent to species substitutions, which, however, may reflect ecosystem stresses (such as those due to high fishing intensity) (FAO, 1997). Also defined as the variability among living organisms from all sources, including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part (CBD, 1992).

Biosecurity: Broadly speaking, “biosecurity” in food and agriculture describes the concept and process of managing – in a holistic manner – biological risks associated with food and agriculture (in the broadest sense, i.e. including agronomy, livestock husbandry, forestry, fisheries and related environmental aspects). This usage also implies that transboundary movements or the use of novel genotypes are involved in some way (Cock, 2003).

Cage culture (cage fish culture): Rearing facility enclosed on the bottom as well as on the sides by wooden, mesh or net screens. It allows natural water exchange through the lateral sides and in most cases below the cage (FAO Glossary of Aquaculture, available at www.fao.org/fi/glossary/aquaculture/).

Certification: Procedure by which an official certification body or officially recognized certification body gives written or equivalent assurance that a product, process or service conforms to specified requirements. Certification may be, as appropriate, based on a range of audit activities that may include continuous audit in the production chain (FAO, 2009). Also defined as procedure by which accredited certification bodies, based on an audit, provide written or equivalent assurance that food safety management systems and their implementation conform to requirements (GFSI, 2007).

Competent authority: Any person or organization that has the legally delegated or invested authority, capacity or power to perform a designated function. Similarly, once an authority is delegated to perform a certain act, only the competent authority is entitled to take accounts therefrom and no one else.

Ecosystem: An organizational unit consisting of an aggregation of plants, animals (including humans) and micro-organisms, along with the non-living components of the environment (FAO, 2003).

Environmental audit: An analysis of the technical, procedural and decision-making aspects of an EIA carried out sometime after a proposal has been implemented (FAO, 1995a).

Environmental impact: A change in effect on an environmental resource or value resulting from human activities including project development, often called an “effect” (FAO, 1995a).

Environmental impact assessment: The procedure 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 (IAIA, 1999).

Environmental impact statement: A document or report that contains the results of an EIA study. The EIS is also referred to in some countries as environmental statement (ES) (FAO, 1995a).

Environmental monitoring: Observation of effects of development projects on environmental resources and values (FAO, 1995a).

Environmental scoping: The procedure of determining the content and extent of the matters that should be covered in the environmental information to be submitted to a competent authority for projects that subject to EIA (European Commission, 2001).

Extensive aquaculture: Aquaculture systems that receive no intentional nutritional inputs but instead depend on natural food in the culture facility, including that brought in by water flow, e.g. currents and tidal exchange (FAO, 1998).

Fishery: The term “fishery” can refer to the sum of all fishing activities on a given resource, for example, a hake or shrimp fishery. It may also refer to the activities of a single type or style of fishing on a particular resource, for example, a beach seine fishery or trawl fishery (FAO, 2003). The term is used in both senses in this document and, where necessary, the particular application is specified.

Guidelines: Documents that provide guidance on implementation of codes of conduct, codes of practice, procedures, certification principles, criteria and standards.

Indicator: A variable that can be monitored in a system, e.g. a fishery, to give a measure of the state of the system at any given time. Each indicator should be linked to one or more reference points and used to track the state of the fishery in relation to those reference points (FAO, 2003).

Initial environmental examination: A preliminary attempt to evaluate environmental impacts in order to determine whether a full-scale environmental impact assessment is needed. Also called initial environmental investigation (IEI), partial EIA or “preliminary EIA” (FAO, 1995a).

Intensive (aquaculture): The increase of production in an aquacultural or agricultural system through increasing the stock or planting density (and expected production) in the existing water or wetland area (FAO Glossary of Aquaculture, available at www.fao.org/fi/glossary/aquaculture/). Intensive aquaculture production is generally one where feed is added.

Licence (aquaculture): A document giving the producer the right to operate in a fishery or a fish farm according to the terms established by the regulating authority (FAO Glossary of Aquaculture, available at www.fao.org/fi/glossary/aquaculture/).

Mitigation: For environmental protection: the elimination, reduction or control of the adverse environmental impacts of a project, including countermeasures against negative environmental impacts of development (FAO Glossary of Aquaculture, available at www.fao.org/fi/glossary/aquaculture/).

Monitoring: Systematic recording and periodic analysis of information over time (FAO Glossary of Aquaculture, available at www.fao.org/fi/glossary/aquaculture/).

Non-governmental organization: Private organizations that pursue activities to relieve suffering, promote the interests of the poor, protect the environment, or undertake community development, (World Bank Operational Directive 10.70) (FAO, 1995b).

Non-statutory consultees: Organizations and bodies, identified in national planning policy, that should be consulted on relevant planning applications (Department for Communities and Local Government, 2009).

Precautionary approach: A set of agreed measures and actions, including future courses of action, that ensures prudent foresight and reduces or avoids risk to the resource, the environment, and the people, to the best extent possible, taking into account existing uncertainties and the potential consequences of being wrong (FAO, 2011).

Pond (fish culture pond): Relatively shallow and usually small body of still water or with a low refreshment rate, most frequently artificially formed, but can also apply to a natural pool, tarn, mere or small lake (FAO Glossary of Aquaculture, available at www.fao.org/fi/glossary/aquaculture/).

Raceway (fish culture raceway): Structure, usually above ground, with a long, linear configuration; high water turnover rate; highly controlled environment; often terraced with water reuse (FAO Glossary of Aquaculture, available at www.fao.org/fi/glossary/aquaculture/).

Receptor (environmental receptor): Any ecological or other defined feature (e.g. human beings) that is sensitive to or has the potential to be affected by an impact (Institute of Ecology and Environmental Management, Glossary, available at www.ieem.net/glossary).

Recreational fisheries: Fishing of aquatic animals that do not constitute the individual's primary resource to meet nutritional needs and are not generally sold or otherwise traded on export, domestic or black markets. The unambiguous demarcation between pure recreational fisheries and pure subsistence fisheries is often difficult. However, using fishing activity to generate resources for livelihood marks a clear tipping point between recreational fisheries and subsistence fisheries. Globally, angling is by far the most common recreational fishing technique, which is why recreational fishing is often used synonymously with angling (FAO, 2012).

Responsible aquaculture: Aquaculture conducted according to the principles provided in the FAO Code of Conduct for Responsible Fisheries (FAO, 1995b).

Risk: In aquaculture: the probability of negative impacts on aquatic animal health, environmental biodiversity and habitat and/or socio-economic investments (FAO Fisheries Glossary, available at www.fao.org/fi/glossary/default.asp).

Scoping: The procedure of identifying the content and extent of the environmental information to be submitted to the competent authority under the EIA procedure (EC, 2001).

Screening: The procedure by which a decision is taken on whether or not an EIA is required for a particular project (EU, 2001).

Semi-intensive aquaculture: Aquaculture systems dependent largely on natural food that is increased over baseline levels by fertilization and/or use of supplementary feed to complement natural food (FAO, 1998).

Small-scale farmer: Individuals or groups of individuals involved in aquaculture production that has a small volume of production or relatively small production area. These farmers may also have limited resources or assets and often have limited technical or financial capacity (adapted from FAO 2007).

Socially responsible aquaculture: Aquaculture that is developed and operated in a responsible manner, i.e. that benefits the farm, the local communities and the country; that contributes effectively to rural development, and particularly poverty alleviation; has employees who are treated fairly; maximizes benefits and equity; minimizes conflicts with local communities; ensures worker welfare and fair working conditions; minimizes risks to smallholders; and provides training to workers in responsible aquaculture practices (FAO/NACA/UNEP/WB/WWF, 2006)

Stakeholder: Any person or group with a legitimate interest in the conservation and management of the resources being managed. Generally speaking, the categories of interested parties will often be the same for many fisheries, and should include contrasting interests: commercial/recreational, conservation/exploitation, artisanal/industrial, fisher/buyer–processor–trader as well as governments (local/state/national). The public

and the consumers could also be considered as interested parties in some circumstances (FAO, 2003).

Standard: A criterion (or indicator, or reference point) that has been formally established and is enforced by an authority and on the basis of which constraining action can be taken (FAO Fisheries Glossary, available at www.fao.org/fi/glossary/default.asp). Also defined as a normative document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimal degree of order in a given context.

Statutory consultees: Organizations and bodies, defined by statute, that must be consulted on relevant planning applications. (Department for Communities and Local Government, 2009).

Sustainable development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (FAO, 2003).

Sustainable use: The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations (FAO, 2003).

Tank (fish culture tank): In aquaculture, a fish- or water-holding structure, usually above ground, typically with a high water turnover rate; highly controlled environment (FAO Glossary of Aquaculture, available at www.fao.org/fi/glossary/aquaculture/).

Wild fish: Fish that are obtained from capture fisheries (FAO, 2011).

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Templates for applications for aquaculture development projects, and roles and responsibilities in implementing the EIA procedure

(The following templates are adapted from originals developed by Richard Slaski at Epsilon Resource Management Limited under a project funded by the Scottish Government and Highlands and Islands Enterprise. Original Templates available at www.sarf.org.uk/projects/SARF024.php).

3.1 Pre-application consultation template

TEMPLATE FOR EIA PRE-APPLICATION CONSULTATION

Prior to issuing the pre-application consultation template, the aquaculture farmer should consider the best way to consult the statutory and non-statutory consultees, including the public.

The aim of the pre-application procedure should be for the aquaculture farmer 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 an aquaculture farmer, 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 aquaculture farmer goes ahead with the application may come out of the pre-application consultations procedure. 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.

To this end, those involved should read Planning Advice Note 81: Community Engagement – Planning with People (available at www.scotland.gov.uk/Publications/2007/03/07090708/0). There are a number of ways to seek public views and this can feed into any information that is submitted to the planning authority.

The letter above is a standard letter and it should be used in most circumstances. However, you can modify the text in order to elicit a response on a specific issue, or from a specific group or organization.

GUIDANCE ON THIS PRE-APPLICATION CONSULTATION 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

FILLING IN THE TEMPLATE

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/impacts 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 procedure 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, 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 our company and acted upon, if appropriate. If a formal planning application is lodged with the competent authority (name the agency responsible), 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:

E-mail:

Tel.:

EIA PRE-APPLICATION CONSULTATION TEMPLATE

PROPOSAL (to be completed by the developer)

Project name:

Location:

Date:

Signed:

Position:

Company:

Contact address:

Contact e-mail:

Contact tel.:

We provide additional material that 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 aquaculture farmer 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 aquaculture farmer 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. It should be a reasonably 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 and/or 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, fertilizer requirement [for ponds], and production timescales).

TEMPLATE TRANSFER GUIDANCE – 1

After the aquaculture farmer 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 e-mailing, 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.

3.2 EIA screening template**EIA TEMPLATE FOR SCREENING / INITIAL ENVIRONMENTAL EVALUATION**

NOTE: Completion of this screening template must comply with the requirements of the (name the law or laws on environmental protection). 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 aquaculture farmer within four weeks of the date of receipt of the template from the aquaculture farmer.

PROPOSAL *(to be completed by the developer)*

Project name:

Location:

Date:

Signed:

Position:

Company:

Contact address:

Contact e-mail:

Contact tel.:

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

We provide additional material that 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 aquaculture farmer should add documents, summaries of research and documents that 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 aquaculture farmer should familiarize herself/himself with the aquaculture EIA guidelines, the laws on environmental protection and any instructions 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 aquaculture farmer to come to the screening opinion.

The aquaculture farmer should start the procedure 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 relevant state agency 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 aquaculture farmer 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 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

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.

Aquaculture farmer: Save your version of the master file with your own unique filename.

The 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 aquaculture farmer.

Dear Statutory Consultees,

We have received this request for an EIA screening opinion, from the (name of the aquaculture farmer). Information on the proposal and supporting details are attached.

I would be grateful if your organization or agency, as a statutory consultee, would provide your advice *(at the relevant part of sections 4 and 5)* 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 effects” 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 to add date, allow four 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.

Signature of person at 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 aquaculture farmer 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 and/or 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, fertilizer requirement [for ponds], and production timescales).

3. IDENTIFICATION OF ENVIRONMENTAL RECEPTORS *(to be completed by the developer)*

Initial assessment of presence of environmental receptors

The **aquaculture farmer** should complete sections 3.1 and 3.2 to the best of his/her ability and knowledge. This section identifies the aquaculture farmer's 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.

3.1 Sensitive area

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

- | | |
|-------------------------------------|--------------------------|
| Site of special scientific interest | <input type="checkbox"/> |
| Land subject to nature conservation | <input type="checkbox"/> |
| International conservation sites | <input type="checkbox"/> |
| World heritage sites | <input type="checkbox"/> |
| National monuments | <input type="checkbox"/> |
| National parks | <input type="checkbox"/> |
| Transboundary issues | <input type="checkbox"/> |
| Other, please specify. | <input type="checkbox"/> |

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

3.2 Sensitive species or habitats (e.g. refer to country's 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 affected.

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:

3.3 Other environmental receptors

Is the proposed development liable to have 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 affected. 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 aquaculture farmer 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, it should clearly state this and briefly summarize the scope of its 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. Is water released to river, irrigation channel, lake or other?
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. Socio-economic, access and recreation	Need to consider current ownership, use and access to and through the site and how the new sites may restrict or otherwise curtail such current use.
9. Traffic and transport	May be relevant where feed is being delivered regularly and needs to take account of road conditions, local population and access. Also deliveries to site at commissioning and decommissioning.
10. Transboundary issues	Where development is planned close to international borders, or water resources to be used will flow across borders then effect of this needs to be considered.
11. Any other issue (please specify clearly)	Any issues that are not listed above.

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.

Please provide concise information, and refer it specifically to elements A to D where appropriate.

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. Socio-economic, access and recreation	
DEVELOPER	
STATUTORY CONSULTEE	
9. Traffic and transport	
DEVELOPER	
STATUTORY CONSULTEE	
10. Transboundary issues	
DEVELOPER	
STATUTORY CONSULTEE	
11. Any other issue (please specify clearly)	
DEVELOPER	
STATUTORY CONSULTEE	

TEMPLATE TRANSFER GUIDANCE – 1

*After the aquaculture farmer has completed the proposal box and sections 2, 3, and the relevant rows of section 4, the current version of the master template **should be e-mailed 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 e-mailed/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 e-mailed 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. Organization:

Contact name:

Directorate/division/agency:

Telephone number:

E-mail:

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 summarized as:

Signature:

Date:

TEMPLATE TRANSFER GUIDANCE – 3

*After each statutory consultee has completed its relevant part of sections 4 and 5, it should email or post **those sections only** back to the **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 4 on the name of the project and its location in order to identify which project it is 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 on which this version is e-mailed/posted to the competent authority.

6. COMPETENT AUTHORITY SUMMARY

Once the competent authority has received and analysed the responses from statutory consultees, and reviewed the aquaculture farmer's proposal, it should complete section 6. Use Annex 2 to provide a full statement of the reasons for the decisions taken. 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
A statement of our reasons is attached as Annex 2.
2. We require further information order to determine whether an EIA is required or not.
See below for details, and we urge you to provide the additional information.
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:

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 deadline period.

ANNEX 1 Aquaculture farmer TO USE AS REQUIRED FOR ADDITIONAL INFORMATION

Insert any attachments here.

ANNEX 2 COMPETENT AUTHORITY TO INSERT A FULL STATEMENT OF REASONS FOR THE DECISIONS TAKEN

Competent authority to insert letter here.

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

If this annex is to be utilized, the competent authority should paste in all the statutory consultee section 5 and 6 responses.

3.3 EIA scoping template

EIA TEMPLATE FOR SCOPING

NOTE: Completion of this scoping template must comply with the requirements of the (name the relevant law or laws on environmental protection). 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 aquaculture farmer within the agreed timescales after receipt of the template from the developer.

PROPOSAL (to be completed by the aquaculture farmer, same information as screening template)

Project name:

Location:

Date:

Signed:

Position:

Company:

Contact address:

Contact e-mail:

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 familiarize yourself with the aquaculture EIA guidelines and any legislation, regulations or instructions 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 aquaculture farmer 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 an outline requirement for the development of the environmental impact statement.

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 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.

Competent authority should continue to use the unique number assigned under screening to track this request. This reference should be used on all further correspondence related to this scoping opinion.

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 aquaculture farmer.

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 procedure is needed. The aquaculture farmer has been asked to produce an environmental impact statement.

The aquaculture farmer has asked for a scoping opinion. We would be grateful if your organization, as a statutory consultee, would now provide your advice to assist the aquaculture farmer 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 aquaculture farmer. Please refer back to your comments during the screening phase to ensure that 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 aquaculture farmer.

Your response is required by *[Competent authority to add date, allow two 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.

Signature of person at 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 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.

<p><i>Concern 1:</i></p> <p><i>Details you wish to see evaluated:</i></p>
<p><i>Concern 2:</i></p> <p><i>Details you wish to see evaluated:</i></p>
<p><i>Concern 3:</i></p> <p><i>Details you wish to see evaluated:</i></p>
<p><i>Concern 4:</i></p> <p><i>Details you wish to see evaluated:</i></p>
<p><i>Concern 5:</i></p> <p><i>Details you wish to see evaluated:</i></p>

Please add more boxes as required.

TEMPLATE TRANSFER GUIDANCE – 1

*After each statutory consultee has completed section 2, it should e-mail 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 e-mailed/posted to the relevant authority.

3. COMPETENT AUTHORITY SUMMARY

Once the competent authority has received the responses from statutory consultees, it 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 (EIS) should be prepared and submitted for consideration. The specific issues we would wish to see addressed in the EIS are set out in the attached scoping opinion(s) (Annex 1).

Signature:

Name:

Planning authority:

Telephone no.:

Date:

TEMPLATE TRANSFER GUIDANCE - 2

The relevant authority should now send (e-mail or post) this completed template to the aquaculture farmer within the deadline period.

**ANNEX 1 COMPETENT AUTHORITY TO INSERT ITS SCOPING STATEMENT
HERE ALONG WITH STATUTORY CONSULTÉE RESPONSES.**

Insert any attachments here.

The Guidelines on the Application of the Environmental Impact Assessment Procedure in Aquaculture in the Central Asia and Caucasus Region have been developed in support of Article 9 (aquaculture development) of the FAO Code of Conduct for Responsible Fisheries. The objective of the Guidelines is to contribute towards the development of an applicable procedure to assess the environmental impacts of aquaculture developments and projects in countries in the Central Asia and Caucasus region. A summary and the Guidelines cover a number of issues and stages relevant to the implementation of such a procedure, including: legal components, defining stakeholders, pre-application procedure, screening, scoping, preparation of environmental impact statement, reviewing adequacy of the environmental impact statement, consultation, decision-making and monitoring. The legal and institutional frameworks of selected countries in the Central Asia and Caucasus region have been summarized in this document to assess the enabling legal and institutional environments to implement an effective environmental impact assessment procedure for aquaculture developments and projects. The Guidelines were prepared based on widely accepted guiding principles of environmental impact assessment procedures.

