

BACKGROUND

Fisheries are one of the most significant renewable resources that Eastern and Southern Africa (ESA) and Indian Ocean (IO) countries have for food security, livelihoods and economic growth. Efforts, however, need to be made to ensure that as the population in these countries grows, and demand for food and employment likewise grows, the benefits that aquaculture development provide are protected through sustainable and responsible planning and management.

The Smartfish training workshop held in 2013, the workshop report and the simple manual for undertaking aquaculture EIAs, including environmental monitoring plans provided theoretical and practical insights as well as recommendations for practitioners to address the specific considerations of aquaculture and for regulators to aid the identification of main risks and evaluate environment impact statements and reports.

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Environmental Impact Assessment (EIA) is defined as "The process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made".

Worldwide EIA is the most commonly utilised tool for evaluating environmental concerns, sustainability issues and developing mitigation measures for new development projects.

The EIA system must recognize the interlinked way and complexity of impacts on the environment and social system sometimes yielding unexpected effects. It must recognize that some of the key impacts of developments are found away from the project site: elsewhere in the ecosystem, outside in the community or are linked to parallel developments in the supply chain.

EIA serves at least three main purposes:

- Inform a consenting or licensing decision;
- Identify mitigation measures which will minimise any possible environmental impacts;
- Provide the framework for the follow up.



Broodstock and nursery hapas at Source of the Nile fish farm, Jinga, Uganda. © PGW

EIA was developed for other sectors but has been adapted for Aquaculture¹. The requirements and implementation of aquaculture EIAs varies from country to country, depending on the technology and systems applied (intensive vs extensive, large-scale small-scale, fed vs non-fed etc.).

EIA is most commonly applied to intensive marine finfish and shrimp culture and to proposals for large-scale shrimp farm developments. However,



Broodstock and fry ponds at Source of the Nile fish farm, Jinga, Uganda. © PGW

some countries do not apply EIA to aquaculture development, but rather rely on a range of alternative environmental management procedures.

Full EIA is not applied to the bulk of global aquaculture production. This is because most production is small-scale, and in many cases is a traditional activity. It is important to recognize that many small scale aquaculture activities could have significant impacts on the recipient water body and therefore some form of strategic environmental impact assessment is needed to cover such added effects. Properly implemented EIA seeks to:

- Concentrate on significant environmental impacts, taking into account the issues that matter;
- Adjust to the realities, issues and circumstances of the project proposals based on the best available information;
- Provide appropriate opportunities to inform and involve the interested and affected parties, and their inputs and concerns should be addressed explicitly;
- Be a clear, easily understood and open process with public consultation;
- Apply the "best doable" methodologies to address the impacts and issues being investigated;
- Identify measures for impact mitigation that work and can be implemented;
- Be carried out with rigour, fairness, objectivity and impartiality;
- Impose the minimum cost burden on proponents consistent with meeting process requirements and objectives;
- Provide the framework for assessment of impacts during operation and adjustments to minimize these when appropriate.



Tilapia nursery hapas at Source of the Nile fish farm, Jinga, Uganda. © PGW

REGIONAL CONTEXT

Aquaculture is rapidly developing in the African continent. The major drive for this expansion are the potential socio-economic benefits arising from the increasing demand for fish in lieu of declining catches and increasing populations. Consequently, what was initially an agricultural activity promoted primarily to improve household

nutrition among smallholder subsistence farmers, is now an activity being promoted as an enterprise to improve livelihoods and rural development.

Hence, the expansion in African aquaculture is now not just about having more ponds. More intensive and efficient systems of aquaculture production that promise higher yields and greater profit margins are increasingly being adopted. Such systems, however, demand more in terms of natural resources, notably water, feed, space both on land and water, energy, also human-resource requirements (skill levels) etc. and have a higher likelihood of having negative impacts on the environment. Experience from aquaculture in more advanced countries shows that if such development is not done with due consideration to environmental consequences vis-à-vis resource requirements it can become a disastrous adventure resulting in losses to investors and serious negative environmental and social consequences. Rectifying such situations has a cost and affects the ability of other resource users to derive livelihoods from these same resources.

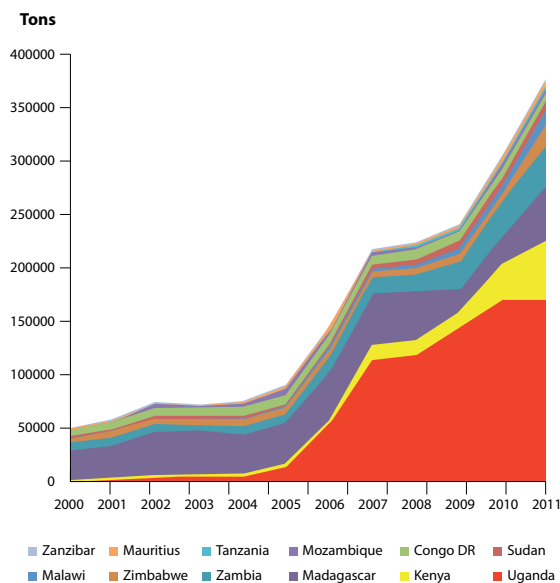
Environmental impact assessment and environmental management must take into account all the needs and potential impacts of an enterprise (in this case aquaculture), bearing in mind the needs and access rights of other, current and future, resource users. In so doing, a more balanced and rational approach to development and the operation of enterprises is realized such that in the long run guarantees their viability and sustainability. However, to implement this effectively, planners, in-

¹ For more detailed information, see FAO. 2009. Environmental impact assessment and monitoring in aquaculture. FAO Fisheries and Aquaculture Technical Paper. No. 527. Rome, FAO. 2009. 57p. <http://www.fao.org/docrep/012/i0970e/i0970e00.htm>

Aquaculture Environmental Impact Assessment

investors (includes farmers) and all other stakeholders in the value chain, need to appreciate EIA principles and practice as well as abide by them. The current status quo in the Eastern and Southern Africa – Indian Ocean region is that most of the planners and a wide spectrum of stakeholders have a general perception about what environmental management is. EIAs are generally perceived as “an expensive permit investors need to get to satisfy government requirements” rather than as an investment to guarantee the viability and sustainability of an enterprise that includes safeguards for both the investor and other users in the society as a whole. The workshop was therefore conducted to provide participants with practical knowledge and some skills necessary to understand and apply EIA in a manner that does not impede aquaculture development but rather promote it based upon best management principles and practices to ensure win-win situations.

Aquaculture production in Eastern and Southern Africa (ESA) and Indian Ocean (IO) countries²



WHY EIA IS IMPORTANT IN AFRICA

Africa's economy depends almost entirely on the exploitation of its natural resources. It therefore makes sense that these natural resources are not just protected, but are exploited in a manner that fosters their regeneration, to address food and development demands by a growing population.

This need is particularly heightened by the fact that Africa is home to some of the largest aquatic biodiversity in the world, especially freshwater. In the midst of great opportunities and needs, it is important to make sure that aquaculture grows in a way that will promote socioeconomic development, food security without threatening the conservation of natural resources for the immediate needs of other ecosystem users, and for the future generations.

EIA should therefore have a holistic view taking into account the biophysical resources and socio-economic forces that drive and govern the use of these resources. In so doing, EIAs become better positioned to strike a balance ensuring the sustainable exploitation of available resources and meeting livelihood needs.

LESSONS LEARNED FROM THE TRAINING WORKSHOP

Participants learned the value of appreciating the rights and needs of other resource users as well as what benefits other users can provide to the enterprise. This illustrated the fact that aquaculture does not, or cannot, be managed as an isolated sector, but as one that receives benefits and can give benefits. It also highlighted the relevance of the ecosystem approach

to aquaculture (EAA) as a planning strategy to ensure additional sources of livelihood, hence rural development, while ensuring resources will also be available for future generations.

They agreed that EIA cannot be fully implemented by one department but all the relevant “primary” ones, notably those managing natural resources, environmental management and trade/industry, as well as the practitioners.

The SmartFish aquaculture training workshop report for undertaking aquaculture EIAs³, developing environmental monitoring plans and undertaking regular environmental monitoring, provides some guidance for practitioners to address the specific considerations of aquaculture when preparing an EIA as well as recommendations for policy makers and regulators in evaluating environmental impact statements (EIS).



Sampling tilapia fingerlings from hapa.
© Suzzane Njeri, Kamiti fish farm, Kenya

RECOMMENDATIONS ON HOW EIA SHOULD BE APPLIED TO HELP AQUACULTURE DEVELOPMENT IN AFRICA

First and foremost, there is a need for capacity building for all stakeholders (including government, development actors, policy makers and private sector). The resource use, outputs and potential impacts for all potential systems need to be fully analysed within the context of the local environmental status and socio-economic status of the communities within which they are placed. Avenues that promote wider environmental and socio-economic benefits should be opted for in the set-up and operations of aquaculture investments.

CONCLUSIONS

Fisheries are one of the most significant renewable resources that Eastern and Southern Africa (ESA) and Indian Ocean (IO) countries have for food security, livelihoods and economic growth. Aquaculture development is rapidly developing in many African countries but development needs to be undertaken responsibly and sustainably to ensure strong social benefits with minimal impact to the environment. The use of environmental impact assessment and environmental management planning for larger aquaculture projects or for clusters of smaller aquaculture projects, which have a potential for significant environmental impact, encourages responsible and sustainable aquaculture development. It also ensures that natural resources including biodiversity will be also available to future generations.

In addition, it allows:

- More efficient use of available resources permitting the development not just of aquaculture, but other sectors (e.g. irrigation downstream from large aquaculture establishments) which would really boost food production;
- Improved management of water resources, especially on land, as it encourages use of permitting systems and make it possible to planners to monitor the demands on use of water and other resources (e.g. land);
- Less conflict arising from access to, and use of, natural resources.

² Source : FAO Fishstat 2013.

³ White, P., Soto, D., & Isyagi, N. 2013. Report of the Training Manual on Environmental Impact Assessment and Environmental Management for aquaculture Managers. Report/Rapport: SF-FAO/2013/19. October/Octobre 2013. FAO-SmartFish Programme of the Indian Ocean Commission, Ebene, Mauritius

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