Why undertake environmental management?

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Presentation summary

• Impacts of aquaculture
  • Acceptable
  • Unacceptable

Why do we need Environmental management

• Environmental Management
• Aquaculture Planning and Management
• Ecosystem Approach to Aquaculture
Aquaculture impacts

Impacts of aquaculture can be in 3 categories

• Physical
  • Physical structures, cages, pens, jetties along the coast
  • Visual (problem for tourism)
  • Net friction to water exchange

• Chemical
  • Oxygen depletion
  • Antifoulants boats and nets
  • Medications and treatments

• Biological
  • Faeces and waste feed – sediment oxygen and biodiversity
  • Excretion – Water quality nutrients and eutrophication
  • Genetics and Biodiversity
  • Diseases and parasites
What are acceptable environmental impacts?

Aquaculture is a continuing to grow rapidly and has the potential to continue this growth for some time.

• It is necessary to determine what impacts are acceptable, i.e. whether the impact is reversible or whether the ecosystem is able to assimilate the aquaculture impact.

• Impacts involving permanent damage clearly have to be considered more carefully than those that can be reversed by natural recovery or remedial action.
Acceptable impacts of aquaculture?

The acceptable impacts of aquaculture differ from country to country and is a sliding scale.

- Richer countries can afford stronger restrictions on aquaculture impact (such as Scotland, Norway and Canada).
- Poorer countries have different priorities and may be more concerned with hunger and poverty alleviation than environmental impacts and therefore be willing to accept higher impacts.
- However there should be some overriding limits as to what are acceptable impacts or rather what are unacceptable.
Aquaculture impacts should not

• Cause impacts that are irreversible
• Cause changes in water quality that could harm human health or the safety of human beings
• Jeopardise the future productive base for short term economic benefit
• Adversely affect essential ecological processes
• Adversely affect biodiversity or sensitive habitats
• Should not utilise fishmeal or fish oil from heavily exploited fisheries stocks
Why “Environmental Management”

- What are peoples views?

- What is the role of the Government?
  - Aquaculture Department
  - Environment Department
- How good is the coordination between Aquaculture and Environment Departments
- What is the role of the farmer?
Motivation for environmental management

The level of environmental management practiced by producers is a factor of the following:

- What the laws and regulations are
- What the regulators enforce
- What the producers do
  - Economically (i.e. reducing overfeeding)
  - Voluntarily (i.e. prevention of self pollution)
  - Under peer pressure (i.e. producer codes of conduct)
- What other users of the aquatic resource demand (i.e. tourism)
- What the markets impose (i.e. certification schemes)
Aquaculture planning and management

Present aquaculture planning and management is governed by:

- Aquaculture policy, strategy and action plans
- Lead government agencies and other related agencies
- Aquaculture legislation and regulations as well as others (e.g. food safety)
- Other voluntary instruments (e.g. Certification, BMPs)
The need for aquaculture management

- Aquaculture requires aquaculture planning and management to guarantee the sustainability of aquaculture activities
- Aquaculture;
  - Is a new rapidly growing sector competing with more established sectors
  - Uses natural and physical resources
  - Can cause negative impacts
  - Interacts with other sectors and can cause conflicts
Why an EAA is needed

The Ecosystem Approach to Aquaculture

• is a practical way to implement sustainable development principles
• covers the human or social elements of sustainability
• includes conventional aquaculture management and doesn’t need complete knowledge about the ecosystem
• Can be applied at different scales
The ecosystem approach to aquaculture (EAA) and its relevance to achieve sustainability objectives of the sector
EAA strategy

“An Ecosystem Approach for Aquaculture is a strategy for the integration of the activity within the wider ecosystem such that it promotes sustainable development, equity, and resilience of interlinked social-ecological systems”.

The strategy can be implemented in a water body, in a country in a region although ecological and social boundaries have to be considered.
The EAA is guided by three main principles:

1. Aquaculture should be developed in the context of ecosystem functions and services (including biodiversity) with no degradation of these beyond their resilience.

2. Aquaculture should improve human-well being and equity for all relevant stakeholders.

3. Aquaculture should be developed in the context of other sectors, policies and goals.
The core ideas underlying the EA

- Humans are an integral part of important ecosystems, and people should be at the center of biodiversity management.
- Ecosystems provide services that underpin most human activity, and that we need to ensure that we do not threaten the sustained delivery of these services through damage to ecosystem functions.
- Given our ignorance of the functioning of these highly complex systems, there is a need for a precautionary and adaptive approach.
- Some activities threaten or reduce the quality of ecosystem services available to society at large and therefore represent a cost that should be accounted or internalized.
The core ideas underlying the EA

- Waste products from one activity or sector may serve as inputs to another, thus enhancing productivity and reducing pressure on ecosystem functions and services.
- Ecosystems function at a range of scales from highly local to global, and we therefore need a “nested” approach with different approaches to management according to scale.
- There is a need for analysis and understanding of the broader social, economic and environmental implications of meeting targets and for transparency of decision-making in relation to trade-offs between social, economic and environmental objectives.
The Strategy has these three objectives at the core:

- Ensuring ecological well being
- Ensuring human wellbeing
- Ensuring the ability to achieve both (governance)
EAF strives to balance diverse societal objectives, by taking account of the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries.

**Ecosystem Approach to Aquaculture (EAA)**

**Conventional approach**
- Top-down
- One objective: production
- Sectoral
- Farm scale (most common)
- Predictive
- Scientific knowledge
- Prescriptions
- Corporate

**Ecosystem approach**
- Participatory
- Multiple objectives (inc. Soc&Env)
- Interaction with other sectors
- Multiple (nested) scales
- Adaptive
- Extended knowledge
- Incentives
- Public / Transparent
Thank you