

Ecosystem Approach of sustainable aquaculture

WP 2 : Indicators

Where Are We?



Objectives

Identify quantitative indicators
of the effects of aquaculture on ecosystems

DELIVERABLES

D 7 , Mth 12: Annotated list of indicators including specific formulae,
field of application, and reference

D 10 Mth 12: Report on the relevance of indicators to quantify
the impact of aquaculture on ecosystems



1- Collect information

Each partner involved in WP2 may propose indicators of the interactions between aquaculture and environment

2 Evaluate indicators for use in WP 4 and 5

From accepted criteria, an evaluation is performed within ECASA community

3 Reporting: Establish an annotated list of indicators (D7) and Report on the relevance of indicators to quantify the impact of aquaculture on ecosystems (D10)



Task 1 : collect information

- 53 indicators proposed, which were grouped into categories
 - benthic fauna
 - sediment
 - water quality
 - Coastal Zone management
 - Genetics
 - Escapees
- Annotated sheets were produced:some should be completed.
- Comments (annotated **list**) were also made for several indicator

Is the task completed?



Ecosystem Approach

At First, a confused birth, which is worth remembering

- Biodiversity conservation point of view (UNCED)
- Use and conservation of living aquatic resources (FAO)
- All aspects are interrelated, and management should be (UNCLOS)

An operational point of view:

Aquaculture should preserve the

- the ecosystem functions
- the ecosystem structure
- the ecosystem services

Flux of matter and energy
Communities and key-species
Production of resources, and
waste treatment



- **Fluxes**

Input and fate of organic matter is essential

Addressed in several benthic indicators

Input : quantity of food used

Nitrogen cycle?

- **Communities**

Impact on benthos : OK

Nursery or spawning areas

protected areas (Bird/habitat directives)

Pelagos? Chl_a ...

Primary production (filter feeders)

Zooplankton

Marine mammals (seals)



- Services

Degradation of organic matter

Any idea for an indicator?

Algae filtration for filter feeders

Available space

Removal of aquaculture wastes: considered by stakeholders

Comments on the list of indicators?



Task 2 : Evaluate indicators

- Criteria were given in Annotated SheetS
- More comments from UGOT and CREMA:
Indicators should remain practical
They should focus on the main impact,
due to organic matter, driven by hydro energy
and confinement
- Working groups are at work!

-
-



**New indicators should go
through the same process
for evaluation by ECASA Community**



What else?

Communicate report of benthic indicators assessment to ecasa list

Reactions to the socio-economics indicators

Coastal zone management and the place of (and for) aquaculture
ICZM context for EIA



Task 3 : deliverables

Annotated list : OK, when required material is available includes references, for each indicator.

Report:

Ecosystem approach, in an aquaculture perspective

Indicators : definition, role and use, within the context of EIA and site selection. Their relevance to quantify the impact of aquaculture

Indicators guidelines : to be included in the Tools box?

