"An approach to assuring sustainable aquaculture and its position with the consumer"
“Our farm is 100 hectares and shelters migrating birds and protected animal species”. Carp production is one of our activities, but we have others. Sustainability is about safeguarding our water heritage through management of these ponds, which have been here for 800 years”.

Photo courtesy: L. Varadi
“Shellfish farmers are the gardeners of the sea. Our trays and beds stabilise the substrate and reduce coastal erosion. Sustainability is being able to produce high quality, safe, shellfish in pristine waters, not polluted by other activities”

Photo courtesy: F. Vidal
“We focus on feed management. Sustainability is being able to produce fish in the best possible conditions for them, and without adverse effects on the seabed”
“To me, sustainability is about handing on my business to my son/daughter”

Photo courtesy: V. Vassvik
« to provide and demonstrate to consumers the benefits of high quality, safe and nutritious farmed fish and shellfish grown in sustainable conditions »
Leading CONSENSUS stakeholders

Coordinated by the European Aquaculture Society
Main outputs

- **Trends and indicators for sustainable development**
  - 78 supporting indicators (under 8 themes) agreed by 120 stakeholders from 16 countries;
  - 25 indicators contributing to Codes of Best Practice at national or species level;
  - 30 indicators for benchmarking of the sector, with a potential use in European standards;
  - A new, updated Code of Conduct for the European Finfish sector

- **Balanced information for consumers**
  - Tested consumer messages on aquaculture sustainability;
  - Information brochure targeted at the 40 member organisations of the European Consumers’ Organisation (BEUC) and the Euroconsumers network;
  - Website, specifically for non expert visitors.
Measuring the path towards sustainability by indicators

1.3.3.1 Measuring the path towards sustainability by indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Reference</th>
<th>Description</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Impact</td>
<td>Measuring the environmental impact of businesses in terms of emissions, waste, and resource consumption.</td>
<td>Calculating the carbon footprint of businesses based on their operational activities.</td>
<td></td>
</tr>
<tr>
<td>Economic Impact</td>
<td>Assessing the economic impact of sustainability initiatives on business performance.</td>
<td>Analyzing financial data to evaluate the return on investment of sustainability projects.</td>
<td></td>
</tr>
<tr>
<td>Social Impact</td>
<td>Evaluating the social impact of sustainability measures on employees and communities.</td>
<td>Conducting surveys and focus groups to gauge stakeholder satisfaction and engagement.</td>
<td></td>
</tr>
</tbody>
</table>

1.3.3.2 Workforce Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Reference</th>
<th>Description</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Satisfaction</td>
<td>Measuring employee satisfaction levels to assess the success of workplace sustainability initiatives.</td>
<td>Surveys and feedback mechanisms to gather employee opinions.</td>
<td></td>
</tr>
<tr>
<td>Work-Life Balance</td>
<td>Assessing the balance between work and personal life for employees.</td>
<td>Analysis of time-use data and interviews.</td>
<td></td>
</tr>
</tbody>
</table>

1.3.3.3 Financial Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Reference</th>
<th>Description</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Savings</td>
<td>Calculating the cost savings achieved through sustainability initiatives.</td>
<td>Analysis of financial data comparing costs before and after implementation.</td>
<td></td>
</tr>
</tbody>
</table>

1.4.1.2 Short-term vs. Long-term Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Reference</th>
<th>Description</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term Indicators</td>
<td>Indicators that show immediate results.</td>
<td>Data collection from the implementation phase.</td>
<td></td>
</tr>
<tr>
<td>Long-term Indicators</td>
<td>Indicators that show sustained impact over time.</td>
<td>Data collection from the monitoring phase.</td>
<td></td>
</tr>
</tbody>
</table>

The combination of these indicators provides a comprehensive view of sustainability progress, enabling organizations to make informed decisions and optimize their sustainability efforts.
<table>
<thead>
<tr>
<th>LAND-BASED</th>
<th>SEMI-STATIC SYSTEM</th>
<th>FLOW-THROUGH SYSTEMS</th>
<th>RECIRCULATING SYSTEMS</th>
<th>COASTAL SHELLFISH SYSTEMS</th>
<th>COASTAL FINFISH SYSTEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carp culture in Central and Eastern European countries.</td>
<td>Trout culture in most European countries</td>
<td>Freshwater and Marine hatcheries.</td>
<td>Mussel farming (Bottom culture, stake culture, suspended culture).</td>
<td>Cage culture of salmonids (salmon and trout).</td>
<td></td>
</tr>
<tr>
<td>Culture of other freshwater species in extensive systems</td>
<td>Other freshwater species in intensive systems (catfish, pike-perch, sturgeon).</td>
<td>Land-based culture of freshwater species – catfish, eel.</td>
<td>Oyster farming (suspended culture, coastal lagoons)</td>
<td>Cage culture of marine species, including sea bass, sea bream, cod and tuna.</td>
<td></td>
</tr>
<tr>
<td>Wetland resource management and water use</td>
<td>Freshwater and marine hatcheries.</td>
<td>Land-based culture of marine species – turbot.</td>
<td>Clam culture</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Valliculture</em> in Italy</td>
<td>Land-based culture of marine species – turbot.</td>
<td></td>
<td>Seaweed farming</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTEGRATED AQUACULTURE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Special CONSENSUS groups

- Post-harvest operations
- Consumers
« stakeholder involvement is based upon the belief that expertise does not lie solely with professionals ».

Source: Davis et al. 2002. University of California, Davis
Involvement by tasks

CONCEPTION, education, information
FEEDBACK & views
DISCUSSION with two-way dialogue
ENGAGEMENT on (complex) issues
PARTICIPATION in implementation

Source: Health Canada (2000)
Involvement by levels

Within the CONSENSUS consortium:

- Platform Steering Committee
- Protocol Drafting Committee
- Industry Committee
- NGO Consultation Group
- Working Groups

Partners’ networks
Who’s missing?

• Who didn’t we invite?
• Who couldn’t come?
• Who wanted to come, but didn’t get invited?
• Who got invited, but didn’t want to come?

How do we get them involved?
Non-participation

Selected (identified) stakeholders

- It’s not my subject
- I’m not sufficiently informed to participate
- I don’t want to look like a fool

Non-selected (identified) stakeholders

- I wasn’t asked
- How can I have my say?
- This initiative is flawed
CONSENSUS workshops

Pre-workshop position papers, briefings, daily objectives, group work, monitoring, panel discussions and wrap-up sessions
desired trends – then indicators

• **Economic viability**
  – Continuous product supply
  – Decrease the proportion of production costs in total operating cost

• **Resource use**
  – Ensure the availability of good quality water
  – Sustainable supply of juveniles

• **Health management**
  – Improve health status of farms
  – Optimise fish welfare

• **Biodiversity**
  – Increased biodiversity around/on farms
  – Minimise the negative impact of aquaculture on wild fish populations
Implementation aspects

- Easy of measurement
- Frequency of measurement
- Responsibility for monitoring/recording

- Data recording
- Data storage
- Data availability and access

- Farm level – as ‘normal practice’
  Farm level – new needs
  Local or regional level
  National level
  European level

- Current tools/legislation
- New tools/legislation
- New research
- New technology
### ‘master list’ of indicators

<table>
<thead>
<tr>
<th></th>
<th>FISH</th>
<th>SHELLFISH</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic viability</td>
<td>12</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Public image</td>
<td>12</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Resource Use</td>
<td>8</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Health management</td>
<td>9</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Environmental standards</td>
<td>5</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Human resources</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Sectoral issues</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Packaging &amp; transport</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>18</strong></td>
<td><strong>78</strong></td>
</tr>
</tbody>
</table>
consultation

• **Through industry**
  – Finfish producers (FEAP) - preparation of CoC
  – Shellfish producers (EMPA)
  – Feed manufacturers (FEFAC)
  – Broader aquaculture sector (meetings & events)

• **Through the public**
  – Environmental and conservation NGOs (EBCD)
  – European Parliament hearings
  – Consumer organisations (TEST ACHATS/Euroconsumers)
  – The wider public – “Have your say”
Indicators for Best Practice

• Where the indicator would be measured (on farm, local or national and European levels)
• Whether the indicator is an existing legal requirement
• Whether the indicator represents personal/confidential information
• Whether the indicator can be considered integral to good practice
Indicator reduction (25)

Point of Measure
27 indicators on-farm; 1 local; 26 National and 14 European.

Existing legal requirement
11 required legally; 5 partially required and 52 not required.

Personal or Confidential Information
7 indicators – each related to financial considerations

Integral to Good Practice
43 indicators reflect good practice
Reduced to 25 when overlapping indicators were consolidated
On-farm measured good practice related to 17 indicators
Indicators for benchmarks

• Which indicators reflect **effective components of a European standard for the measurement of actions** relevant to responsibility/sustainability within European fish farming?

• How are selected indicators measured, **on a repetitive and a comparative basis**, and transformation of these into protocols for adoption?

• What are the **measurable benchmark positions** from which certifying agencies are able to make unequivocal judgement?
indicator reduction (30)

- Biodiversity (3)
  - species index, polyculture, escapes
- Economic viability (5)
  - diversification, investments
- Environmental standards (2)
  - site selection, monitoring
- Governance (3)
  - BEP, best use of sites
- Sectoral issues (1)
  - reliable sector data
- Health & welfare (4)
  - fish welfare index
- Human resources (3)
  - age, gender, education, training
- Public image (5)
  - promotion, visitors, certification programmes, demand
- Resource use (4)
  - feeds, energy, juvenile supply
FEAP Code of Conduct

- Relevant indicators implemented at farm level
- Linked to chapters of the FEAP Code of Conduct
- Incorporated in a ‘web’ structure
- Linked to background and other information

See www.euraquaculture.info
Guidelines for Aquaculture Certification

Integrated Farm Assurance Standard

Aquaculture Dialogues
consumer partners

European Consumers Organisation (BEUC)
www.beuc.eu

Test Achats (Euroconsumers)
www.test-achats.be

to deliver balanced messages about aquaculture
• Implementation of the EC Labelling Directive;
• Contaminants in farmed fish products;
• Food claims regarding Omega-3;
• The (lack of) differences between wild and cultured fish.
We are all faced with a conundrum: health experts tell us to eat more seafood; environmentalists tell us to eat less.

Aquaculture provides fresh, healthy and sustainable seafood.

Aquaculture can bridge the gap by demonstrating its sustainability.

Research shows that the sector has already come a long way.
CONSENSUS is about bringing together stakeholders to measure the path towards sustainable aquaculture in Europe.

www.euraquaculture.info