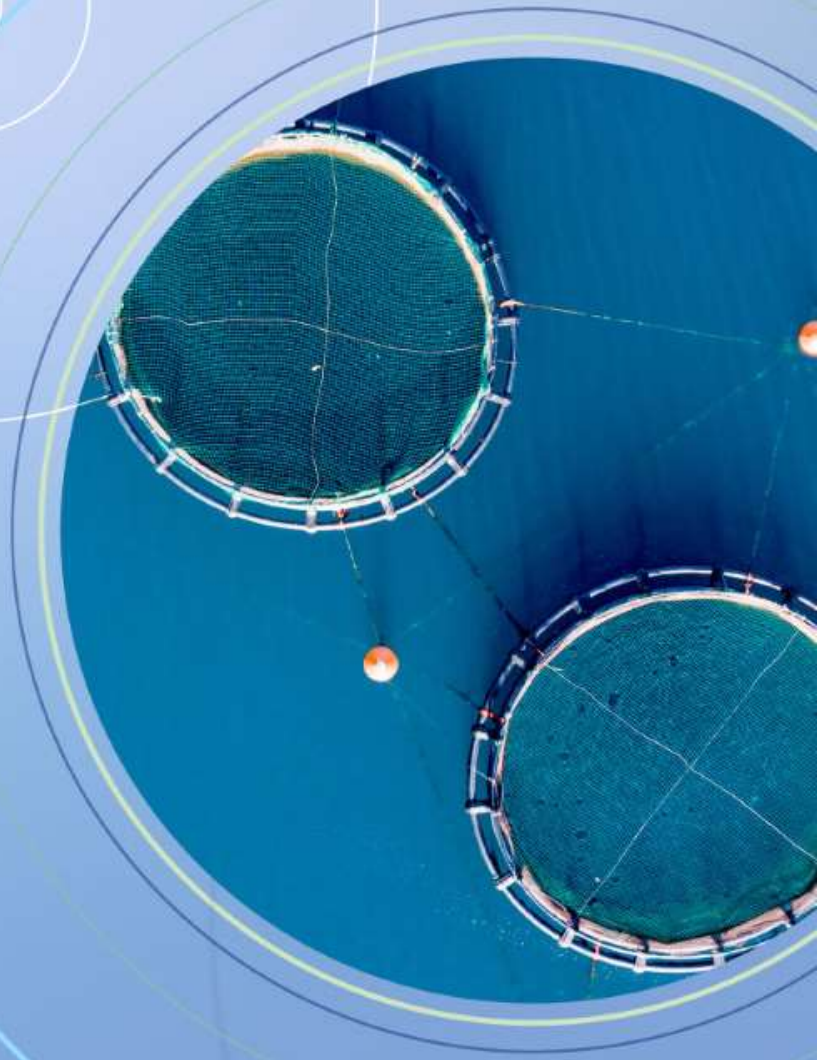
Workshop on ‘Climate change adaptation’



Aquaculture special event, Brussels

18th October 2023, 14:00-17:00pm

Evi Lardi (EC, DG MARE)

Alistair Lane (EAS, EU Aquaculture Assistance Mechanism)

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Agenda

14:00-14:10 Introduction to the workshop

14:10-16:00 Discussion around questions

16:00-16:40 Preparation of conclusions by co-moderators

16:40-16:55 Presentation of conclusions to WS participants

17:00-18:30 Presentation of conclusions in plenary session

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Introduction to the workshop

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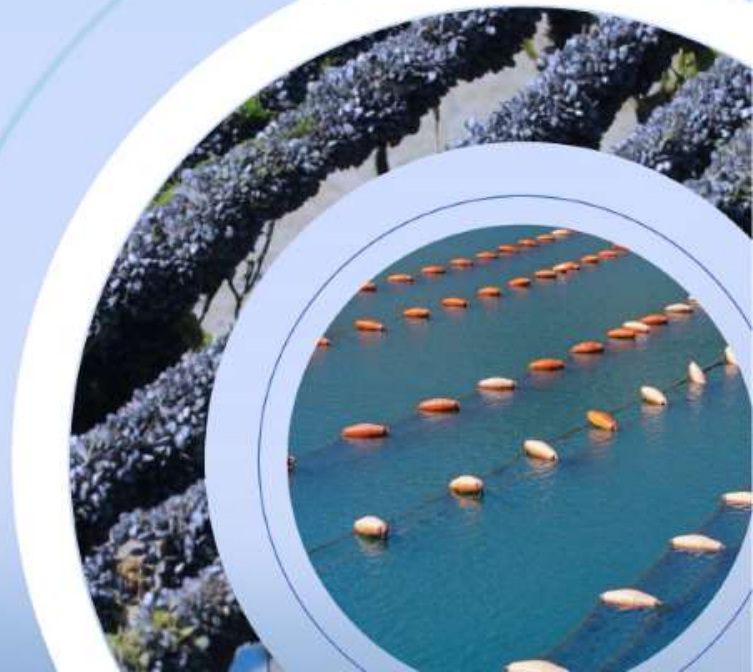
Discussion around questions



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Additional possible adaptation measures

Adaptation measures already **included in the Guidance Document** on Climate Change Adaptation include:

- Practical impact forecasting and decision-making tools
- Selective breeding for increased resilience
- Production opportunities and diversification
- Infrastructure adjustments
- Location planning and relocation
- Management of the introduction of non-native species

Do you have any examples of adaptation measures that are not mentioned in the document? Are there any existing examples of good practice associated with these new measures?

Additional good practice examples (with the adaptation measures that are already included in the Guidance Doc) (1/2)

ADAPTATION MEASURE	GOOD PRACTICE	COUNTRY
Practical impact forecasting and decision-making tools	Artificial Intelligence (AI) to automate the process of identifying HAB. Weekly bulletin for farmers.	UK
	Automated data integration to existing systems to provide prediction measures for fish health & disease outbreaks.	Norway
	Provision of data on various environmental risks.	Italy
Selective Breeding for increased resilience	Key selection traits of current breeding programmes: examples of good practice in the management of breeding programmes and whether current strains are sufficiently tolerant to short term climate changes and/or disease threats.	Finland, France, Ireland, and Greece
Production opportunities and diversification	Fast growing and/or new finfish marketed at a large size.	Europe
	Diversification of species.	Croatia, Malta
	New trout strains.	Germany
	Production of tilapia and shrimp.	Europe
	Turning toxic algae blooms into business opportunities.	Lithuania
Infrastructure adjustments	Technical screening criteria for escapes from sea cages.	UK
	Technical Standard for marine finfish cages and equipment.	Spain
	Underwater Vehicles for continuous automated net cleaning.	Norway
	Annual risk analysis for specific farms and biosecurity analysis for farming locations.	Croatia
	Aquaculture Network to provide advice to SMEs on a case-by-case basis in the management of water use.	Germany
Location planning and Relocation	Using expert advice for relocation of farms/disease prevention plan.	Slovenia
	Urban farming: aquaponics systems to avoid climate effects and produce fresh locally available vegetables.	Germany, Czechia, and Belgium
	A “suitability index” for site location in estuaries for shellfish production.	Portugal
Management of the introduction of non-native species	FAO technical guidelines, including good practices on quarantine measures and monitoring programmes.	EU

Additional good practice examples (with the adaptation measures that are already included in the Guidance Doc) (2/2)

Do you have additional examples of good practices?

Examples from MS and also from Industry - especially on:

- infrastructure adaptations to extreme weather,
- husbandry management for temperature-related effects and relocation planning/new site planning where sites are no longer adequate for sustainable production,
- selective breeding for increased resilience or where new zones become attractive for aquaculture production, are welcomed.

Do you have any examples of relocation and the assistance provided for this by MS?

Identification of opportunities

Examples of **possible opportunities** offered by climate change include:

- Being able to expend the current selection with what we have
- Species diversification
- Turning risks into opportunities (related to increase of temperature)

Do you have concrete examples of the opportunities offered by climate change for cold-water marine, warm-water marine, and inland aquaculture?

If yes, can you describe/address the main challenges linked to those opportunities?

Validation of knowledge gaps & identification of other knowledge gaps – Research priorities (1/2)

Research priorities identified in the guidance document are split into current and emerging issues. They specifically apply to specific climate change and ocean acidification effects.

Current priorities for further information:

- Effects of CC and OA on pathogens and disease development, and on complex disease outcome.
- Development of vaccines for emerging new pathogenic bacteria and viruses.
- Development of models for forecasting the growth of aquaculture species at shifted temperature regimes.
- Fast development of in situ diagnostic tools for disease, but especially for welfare status.
- Effects of CC on the environmental impacts of aquaculture – e.g., assimilative capacity of receiving water bodies, including impacts at potential offshore sites.
- Understanding of the changing environmental factors under altered climate scenarios on the processes involved in the invasion, establishment and spread of a range of relevant non-native species.

Validation of knowledge gaps & identification of other knowledge gaps – Research priorities (2/2)

Emerging issues that will require more information:

- Information on offshore environment/ecosystem and potential impacts of CC and OA on the sustainable growth of offshore aquaculture.
- The synergistic effects of CC and OA and the effect of fluctuating compared to continuous exposure to these impacts on settlement (shellfish), growth and survival of aquaculture species.
- The capacity of aquaculture species at individual and population level to adapt to CC and OA.

Do you think there are any additional research priorities that are not included in the list?

Validation of knowledge gaps & identification of other knowledge gaps – Industry measures

Industry measures identified in the document include identification of support measures by MS to facilitate their implementation. These include:

- Develop breeding programmes for all EU species focused on increasing tolerance to temperature changes and including the identification of genes related to thermal adaptation.
- Monitor fish health, performance, and behaviour (using real time / in situ tools):
  - Daily measurements of dissolved oxygen and temperature.
  - Improved understanding of fish growth rates.
  - Data records on mortalities.
  - Data records on disease related mortalities (>500 individuals).
- Develop and adopt more robust (and automated) infrastructure for:
  - Feeding
  - Movement of fish
  - Cleaning processes in line with increased biofouling.
- Increase and further develop the use of aerators and other oxygen supply techniques.
- Apply adequate biomass management (where possible) to compensate for seasonal temperature profiles.

Do you think there are any additional industry measures that are not included in the list?

Concrete policy actions and enacting the CAP (1/2)

As mentioned in the document, the **following adaptation measures should be adopted by MS and/or specific competent authorities**:

1. Allocate funds in support of breeding programmes to improve temperature sensitive traits.
2. Establish or upgrade monitoring programmes (with standardised format/content and easy access to pooled results for operators, on:
   - Site physio-chemical indicators of water quality (all sites)
   - Phytoplankton/zooplankton in ponds
   - Other appropriate environmental monitoring that provides the required data on climate change.
   - Husbandry indicators, including data on individual sizes; length of production cycles; stocking rates; winter biomass losses; mortality and disease outbreaks.
3. Integrate aquaculture spatial planning into the existing framework for Maritime spatial planning) and Inland Planning, including:
   - Identification of sites for potential relocation or reallocation of aquaculture activity by the further identification and establishment of AZAs where critical affecting parameters of climate change are less abrupt and hence allowing aquaculture production to adapt to changes more easily.
   - Adaption of legislation/licensing thresholds to finer scale and with a flexible framework for the designation of new farm sites.
   - Explore and promote co-location with other marine/maritime activities (for example aquaculture and wind farms).

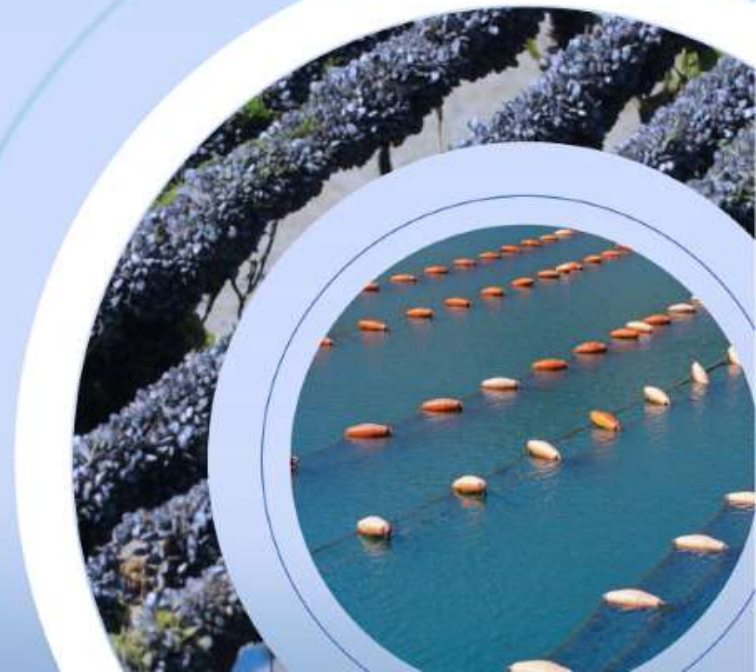
Concrete policy actions and enacting the CAP (2/2)

4. Map and monitor relevant habitats; promote habitat conservation or restoration measures (e.g., LIFE projects).
5. Further develop national and/or European support to insurance for climate-related events.

Do you think there are any additional policy actions that are not included in the list?

Preparation of conclusions by co-moderators

Coffee break for workshop participants



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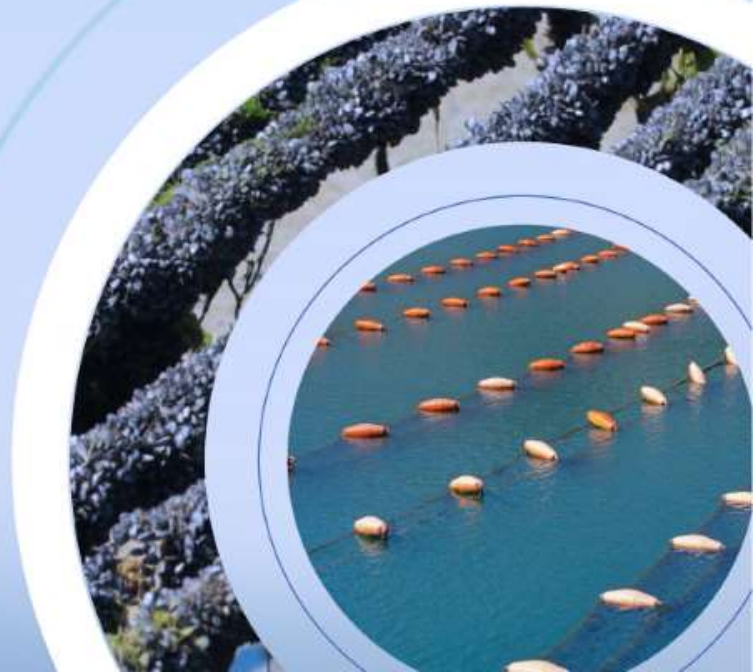
Presentation of conclusions to WS participants



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Thank you!

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