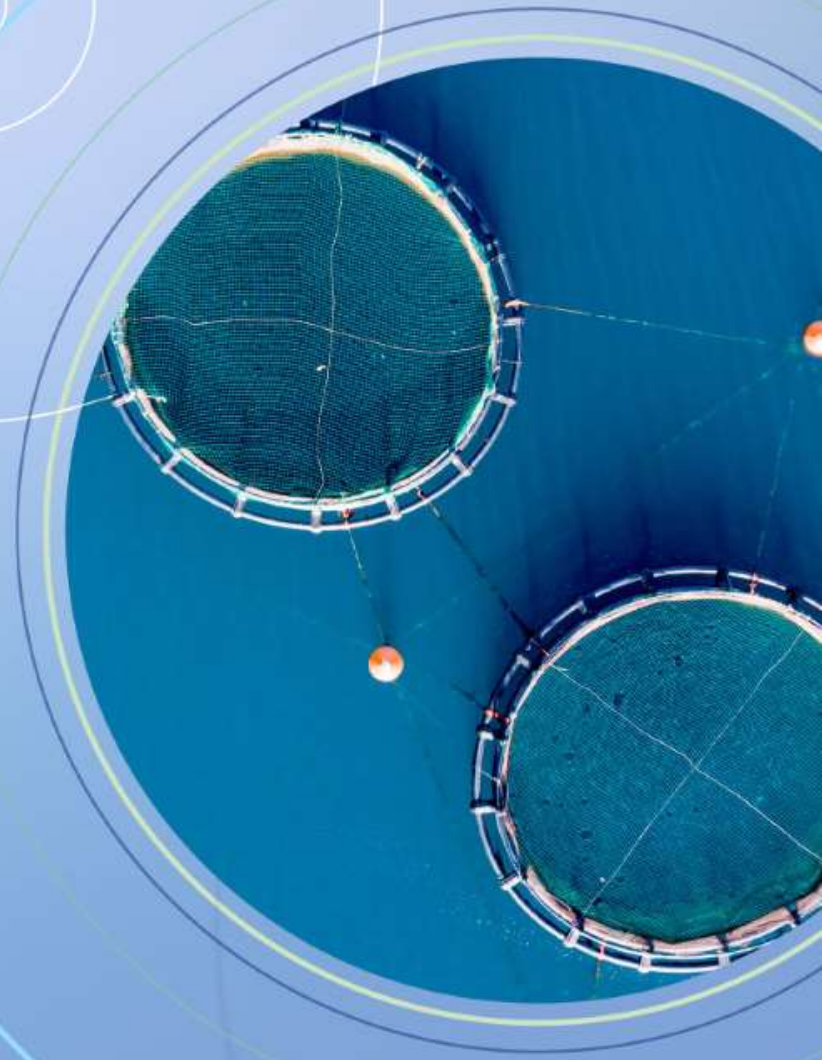
Workshop on ‘Access to Space and Water for Inland Aquaculture’



Aquaculture special event, Brussels

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

Emilia Gargallo Gonzalez (EC, DG MARE)

Tiziana Pacchiarini (NTT DATA, EU Aquaculture Assistance Mechanism)

Funded by the European Union

Agenda

14:00-14:10 Introduction to the workshop

14:10-16:00 Discussion around questions

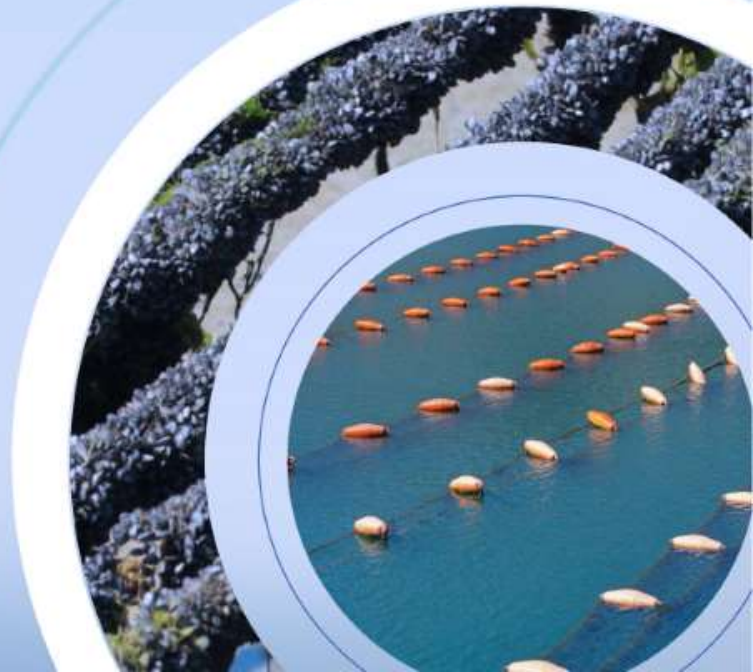
16:00-16:40 Preparation of conclusions by co-moderators

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

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

Funded by
the European Union

Discussion around questions for the refinement of the Background Paper



Funded by
the European Union

Scope of the background paper

Production systems already **included in the background paper** are:

- Floating cages in lakes
- Extensive aquaculture and manmade wetlands modelled by pond aquaculture
- Sustainable intensification of ponds
- RAS
- Aquaponic
- IMTA
- Earthen ponds and raceways using flow-through systems

Do you agree with the selected production systems? In your opinion, which should be further explored in the document?

Key issues

Do you agree with the selected **key challenges and topics**? Which should be further explored in the document?

#	Key challenge	Related topics
1	**Access to space**	• Integrated spatial planning • Mapping systems • Site selection • Synergies and conflicts of interest with other activities • Consistency with environmental planning and aquaculture in Protected Areas
2	**Access to water**	• Water quality and availability & climate change
3	**Other issues relevant to space and water conservation**	

Identification of additional opportunities to ease access to space and water for inland aquaculture

Are you aware of River Basin Management Plans (RBMPs) that:

- Consider providing space and water to inland aquaculture as a tool in the implementation of the WFD?

- Consider inland aquaculture as a relevant activity with impacts on the local community and that take into account social, economic, and/or environmental factors?

Collection of additional good practice examples

- Are you aware of any European GIS app that shows **available sites for inland and/or land-based freshwater aquaculture**?

- Do you have information on a GIS app about new aquaculture sites in **estuaries**? If so, can you explain what technology or technique is foreseen for these spaces?

Access to space

Developing GIS-based tools & models for spatial planning

Description:

With the help of Online Geographical Information Systems (**GIS**) stakeholders (such as investors, private companies, researchers, and the public in general) can find where inland aquaculture facilities are located by consulting websites or application programs (app). These **GIS tools offer information** such as aquaculture facilities status (active/inactive), the technology employed and the species that are cultivated there. They also should include available sites for inland aquaculture in spaces such as lakes, rivers, and estuaries as well as land-based. GIS should also include facilities that have been closed or abandoned. Further information about the reason (socio-economic or environmental) for the closing would be also interesting to know, both for investors and citizens, to avoid conflict.

Using GIS, maps can be enriched with relevant data for inland aquaculture (hydrographic information, water quality, location of other activities, etc.) for a specific case study. These enriched maps, which are known as **GIS-based models can offer alternative scenarios** that can be explored interactively, and they are very powerful to identifying potential and new areas to allocate inland aquaculture facilities.

GIS-based models could also be supported by **carrying capacity assessments**, an important approach for ecosystem-based management, which helps to set the threshold of aquaculture production given the environmental limits and social acceptability of aquaculture, thus avoiding "unacceptable change" to both the natural ecosystem and the social functions and structures.

Relevant aspects to consider when developing GIS-based tools & models for inland aquaculture[1]

1. Identifying project requirements

To align on the inland spatial planning project basics, known as a multiple stakeholder decision-making situation, it is essential to develop a common understanding of decision support needs, project goals, GIS functionality.

2. Identifying data sources and gathering information

For inland integrated spatial planning consider data from satellite (e.g. images), economic and social factors from local authorities reports, and infrastructures. Environmental data can be gathered on the field such as i) administrative authorities, ii) hydrographic information (including the ecological status of the water body), and iii) protected areas.

Collection of additional good practice examples

Are you aware of any **nature restoration activity** that directly involves inland aquaculture as an approach to achieving good environmental status?

Access to Space
Restoration of abandoned facilities
Description: In this practice, the access to space refers to areas that are already existing but not in use any longer such as ponds or old industrial facilities. This approach also contributes to revitalising social development by creating new jobs. - Restoration of abandoned ponds regenerates degraded wetlands and recovers biodiversity. - Restoration of old industrial facilities generates new suitable sites for aquaculture. This land revaluation practice can be used to rehabilitate industrial areas where companies are no longer operating or where the land is not suitable for agriculture, and to avoid conflicts between these two sectors. MS could develop projects focused on identifying available spaces as well as carry out activities to offer and share with citizens a catalogue with information about them. Promotion of the opportunities offered by these spaces should also be foreseen in such projects.
Main steps to prepare a strategy to support the re-opening of abandoned facilities [1]. • Identify and assess inland abandoned facilities to determine their status and potential for restoration. This may involve conducting site visits, reviewing historical records, consulting experts and assessing the status (quality and availability) of water resources in the zone. • Address legal and administrative issues that may be hindering restoration efforts. This may involve obtaining permits, resolving property ownership disputes, or addressing environmental concerns. • Develop a restoration plan that includes specific actions to be taken, timelines, and funding sources. The plan should be based on the assessment of the abandoned facility and should consider environmental and regulatory standards. • Identify funding opportunities to support investors and the implementation of the restoration plan and give assistance on how to obtain the permit. • Monitor the restored facility to ensure that it is functioning properly and meeting environmental and regulatory standards. This may involve conducting regular inspections, collecting data on water quality and fish populations, as well as addressing any issues that may arise.

Collection of additional good practice examples

- Are you aware of any programme for the development of the **multifunctional approach** that directly involves inland aquaculture?
- Do you have any examples of **synergies** between **inland aquaculture and agriculture**?

Access to space
Adopting multifunctional approach & special provisions
Description:
There are examples in MS where space for inland aquaculture has been optimised creating synergies with other activities. This is the case of the multifunctional approach, where synergies between different sectors are developed allowing companies to develop their economic activity while people can use the same space for other scopes. For instance, tourism services (tours, visits to the farms, fishing, or angling) or learning and educational activities have been successfully integrated within fish farms, adding value to the companies, and providing benefits to society. MS should provide guidance to advance in the multifunctional approach. For instance, they could implement a strategy aimed at promoting activities (e.g. training, information regarding permits, etc.) targeting investors from other sectors with the aim of transferring knowledge on how to include inland aquaculture in their activities. This approach can also allow to diversify inland aquaculture. In the case of public space (National, regional, or local authorities), special provisions to ensure the transparency of the process that led to the permit must be established to prevent conflicts. For instance, tenders and consultations should be granted. Furthermore, the quantity, timing, and quality of water necessary to support freshwater and estuarine ecosystems, as well as the human livelihoods dependent on these ecosystems, should be determined through ecological considerations (ecological flows). These considerations should be regarded as essential criteria that MS should employ to.
Long-term objectives of multifunctional use of inland aquaculture sites according to an EU-funded experience [1]:
• Offer to the investor a new vision for the inland aquaculture business. • Promoting a new strategy based on diversifying farms' sources of revenue. • Increase profitability and competitiveness of both aquaculture production and local tourism. • Lifelong learning and job creation in aquaculture areas.

Collection of additional good practice examples

- Do you know any **special assessment** to allow inland and/or land-based aquaculture in protected areas (including - but not only - Natura 2000 sites)?

- Are you aware of any Good Practices for aquaculture practised in **lakes, water reservoirs or dams**?

Access to space
Reinforce positive interactions within protected areas
Description: The "Guidance document on aquaculture activities in the context of the Natura 2000 Network" [2], promotes sustainable aquaculture practices that are compatible with the conservation objectives of Natura 2000 sites. It recognises aquaculture as an important economic activity if it is carried out in a sustainable manner. The latter provides guidance to minimise aquaculture activities' impacts as well as recommendations to avoid or mitigate them. The steps presented below can be useful for MS to know how inland aquaculture can be regulated in protected areas, natural parks, and natural reserves. This approach will allow MS to take advantage of these spaces to produce food while protecting the environment.
Main elements that MS should consider regarding establish inland aquaculture projects in protected areas. • Consider that belonging to a protected area is not a reason to prohibit aquaculture activities in a certain region. • Offer a catalogue or an online tool (e.g. web sites with public access to GIS), to show suitable sites where inland aquaculture can be performed in protected areas. • Provide guidance about the prohibitions in these sites as well as information regarding how the inland aquaculture can be compatible with these restrictions. • Conduct environmental assessments according to the space and the technology that will be used in the aquaculture project.

Collection of additional good practice examples

Are you aware of any **code, standard, certification, recognition** (a part of Organic Aquaculture) that can be adopted by inland farmers that would help **to highlight the sustainability** of their activity?

Other issues relevant to space & water conservation
Providing access to space to types of aquaculture that have lower or positive impact in nature
Description
The overwhelming majority of inland freshwater aquaculture facilities performed in ponds applies extensive (<500 kg/ha) or semi-intensive (<2000 kg/ha) technologies[(1)] and takes place in harmony with nature. The manmade wetland for pond farming are among the most ecologically valuable and species-rich cultural landscapes due to their sustainable and nature-friendly management. Development over long periods of time has led to very stable ecosystems without the need for any major alterations that contribute to the improvement of water management and maintenance of biodiversity. Ponds play an irreplaceable role in water retention, groundwater regulation, and flood control as well as other ecosystem services that ensure the good status of water bodies and the conservation of wetlands. Their management prevents the deterioration of this valuable area.
What can authorities do to valorise these valuable spaces?
Environmental protection can be combined with inland aquaculture by providing access to space for types of aquaculture that have a minor or positive impact on nature. This can also be a tool in the restoration of nature, that also provides food supply, as described above (Good Practice 4.1.2). It is for this reason that MS should consider the promotion of the implementation of data-driven practices in the inland sector to share the knowledge about the benefits that the facilities bring to nature. Data analysis can offer also valuable insights into the farm's performance, allowing authorities to provide targeted support to those farms exhibiting best practices and results. The development of public certification, technical standards, and codes of conduct that farms can adopt to demonstrate their adherence to best practices, should be also promoted.

Collection of additional good practice examples

Do you know any **projects** for additional information on the main issues on access to space and water, site selection or to provide access to water **in response to temperature rise and extreme events occurrence**?

Access to water
Developing measures and tools to inform on water quality and availability
Description: Climate change is compromising the **availability of good quality water,** which is a decisive factor for the establishment of new inland aquaculture facilities. In this regard, the implementation at the national level of **public websites with up-to-date information on water quality and quantity** could be a very powerful tool that the authority can offer to companies, entrepreneurs and the citizen in general. The value of these tools for the access to water for inland aquaculture relies in the fact that reliable data can support decision-making in the opening of new facilities as well as in the management of running aquaculture facilities. At the same time, Internet could be also used for the dissemination of **water treatment solutions.** On these websites, farmers could access information on how to **recycle water**, and fish producers could learn about how to take advantage of alternative sources of water.
Main steps that led to a dynamic and flexible management of surface water at National Level(1)
• Develop a network of sensors that can measure water indicators in real time (e.g. acidity, salinity and temperature). • Carefully chose locations to locate sensors. MS should consider not only streams, canals, rivers etc. but also the subsoil near sewerage and water treatment plants. • Use self-learning algorithms to analyse the data from the sensors and combine it with other sources of information (e.g., measurement from other networks aimed at environmental control). • Use the outputs to produce hydrological models that can support inland aquaculture, as well as all kind of water-related decisions**.**

Collection of additional good practice examples

Are you aware of **projects**, **studies**, or **measures** (e.g. administrative procedure) **to ease access to space and water for inland aquaculture** that have not already been mentioned in the document?

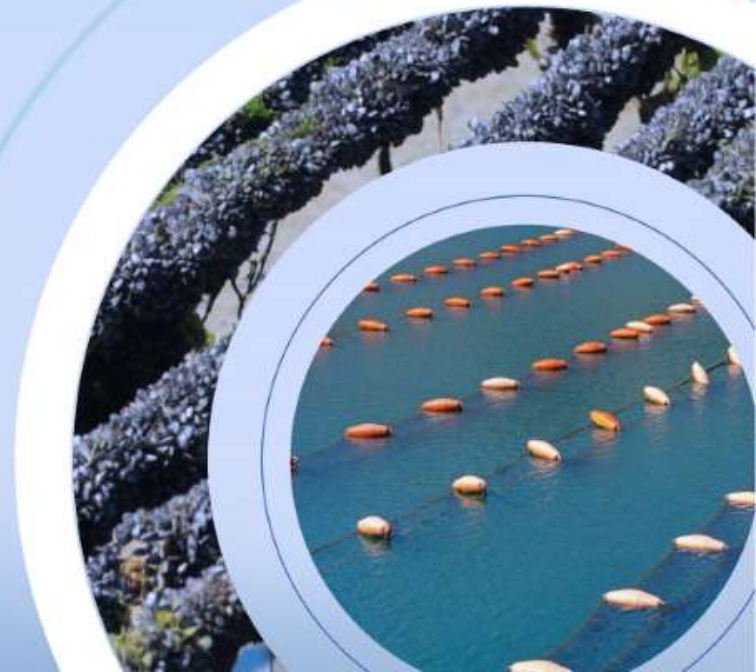
Other issues relevant to space & water conservation
Strengthening space & water saving innovative technologies
Description: Effluents from **RAS** can be directed to hydroponics systems allowing **Aquaponic.** These kinds of systems allow the production of both fish and edible plants in the same facility, occupying the same space and water(1). This technology allows to perform Horticulture, taking advantage of the fertilization provided by the fish farming. It can also contribute to reducing the conflicts between aquaculture and agriculture in their competition for water and soil. **Freshwater IMTA** systems are becoming popular on lands and allow food production in spaces that are not suitable for agricultural scope. Both technologies can provide two different kinds of products using the same space and water. That is especially relevant for landlocked countries that can produce fish or shellfish along with vegetable, avoiding conflicts with agriculture and being more self-sufficient in the production of food.
What are the authorities doing to support these innovative techniques? In some countries, authorities support certain types of aquaculture. Austria, for example, is strengthening innovative technologies and practices, such as Combined Intensive-Extensive (CIE) systems (see Annex II), RAS, and the production of new species (e.g. pike-perch and African catfish). Germany has designated areas that may be well-suited for RAS, including commercial areas mainly. Transport links (especially for feed delivery) were often considered. Some municipalities offer special support conditions (e.g. tax relief is granted for the settlement of generally all types of businesses); and fewer requirements are expected for settlement projects that will produce less than 1000 metric tonnes per year

Readibility

Do you consider the document sufficiently clear, practical and user-friendly?
If not, how could it be improved?

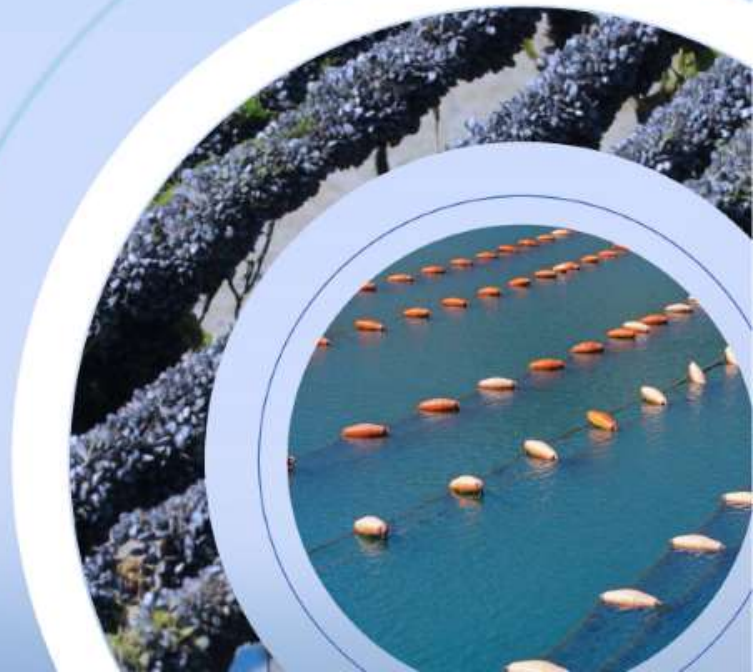
Preparation of conclusions by co-moderators

Coffee break for workshop participants



Funded by
the European Union

Presentation of conclusions to WS participants



Funded by
the European Union

Thank you!

Funded by
the European Union

tiziana.pacchiarini@nttdata.com