

# Virtual Learning Lab Report



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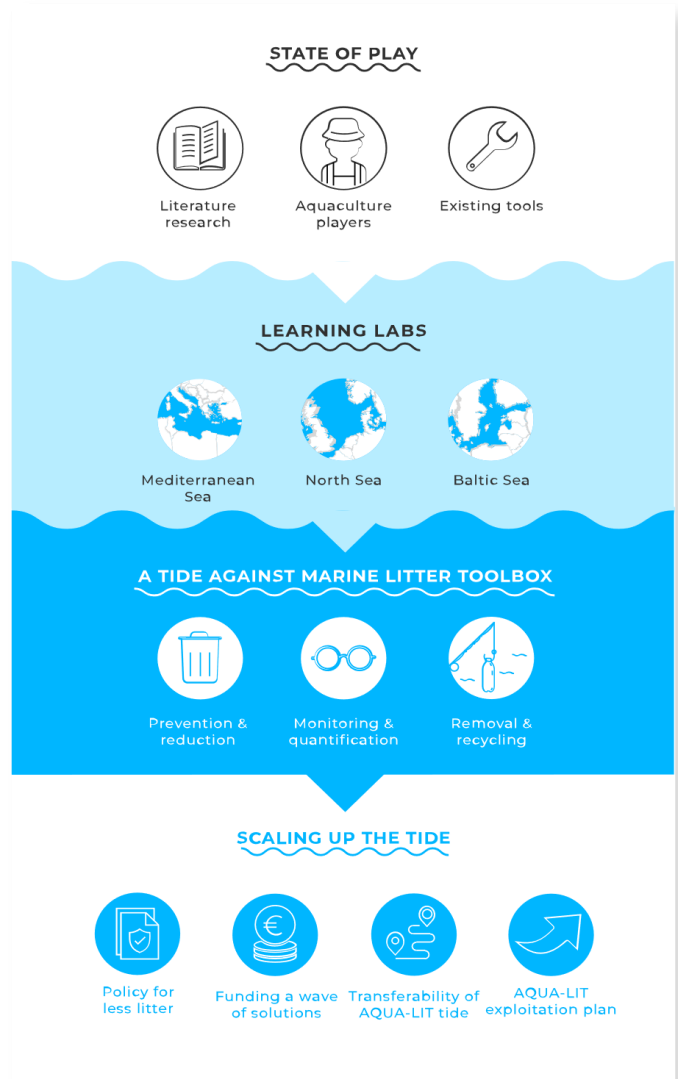
# AQUA-LIT project

**AQUA-LIT** is an EASME-EMFF funded project that aims at providing the aquaculture sector with a sustainable **toolbox** of innovative ideas and methodologies to address the 3 main components of marine littering: **prevention & reduction, monitoring & quantification, and removal & recycling.**

To fulfill this mission, we will be working face-to-face with aquaculture farmers in three **regional Learning Labs**: at the **Mediterranean basin, the North Sea and the Baltic Sea regions.** In parallel, we will identify and cluster existing, upcoming and already implemented tools on marine littering, and we will further **develop a platform and an app** for providing the **'Tide against marine litter toolbox'.**

Lastly, we will **'scale up the tide'** by developing the **'policy for less litter'** set of recommendations, by showcasing the **'funding a wave of solutions'** available for the sector and by coming up with a **transferability plan for outermost regions.**

Through this, we expect to help all stakeholders from the aquaculture chain to increase the understanding, awareness and availability of solutions, so a potential **transformation of the aquaculture sector towards a less polluting sector** can become possible.



## Project Consortium



Geonardo Environmental Technologies  
**(GEO)**



European Centre for Information on Marine  
Science and Technology **(EurOcean)**



Vlaams Instituut voor de Zee -Flanders  
Marine Institute **(VLIZ)**



Sustainable Projects GmbH **(s.Pro)**



Instituto Español de Oceanografía -Spanish  
Institute of Oceanography **(IEO)**



Société d'Exploitation du Centre National  
de la Mer - French National Sea Centre in  
Boulogne-sur-Mer **(Nausicaa)**



Fundo Regional para a Ciência e Tecnologia  
-Regional Fund for Science and Technology  
**(FRCT)**



# AQUA-LIT's Virtual Learning Lab report

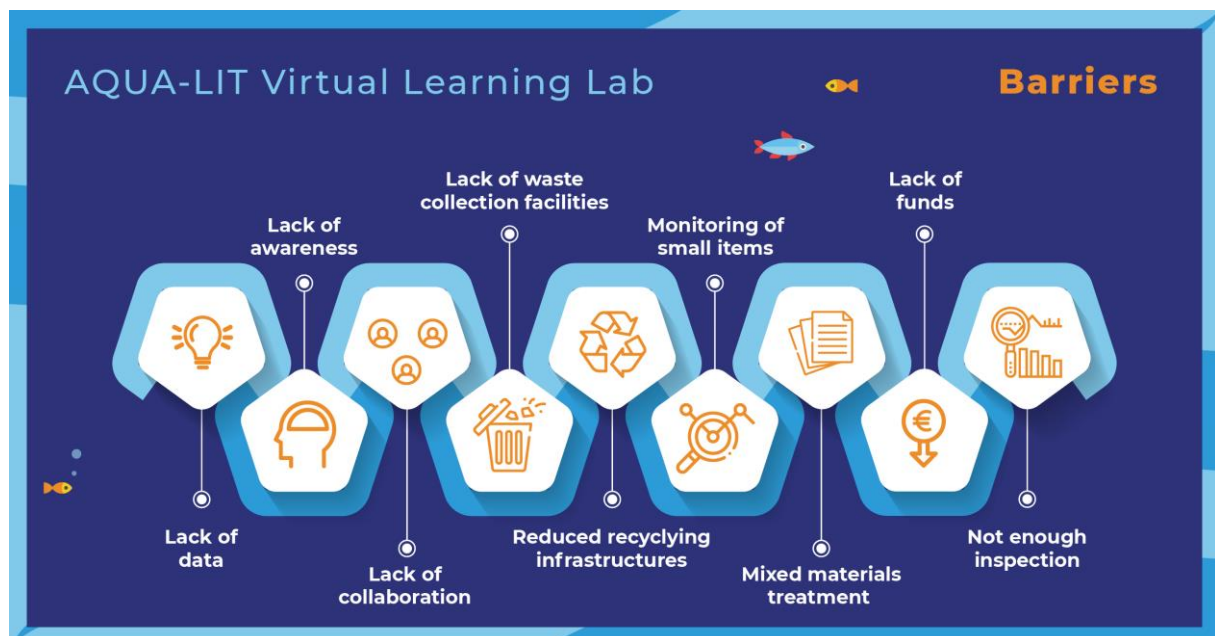
## Summary

On February 14th, 2020, the interactive workshop "[AQUA-LIT Virtual Learning Lab](#)" was held online to discuss "*How can the aquaculture sector contribute to reducing marine litter?*".

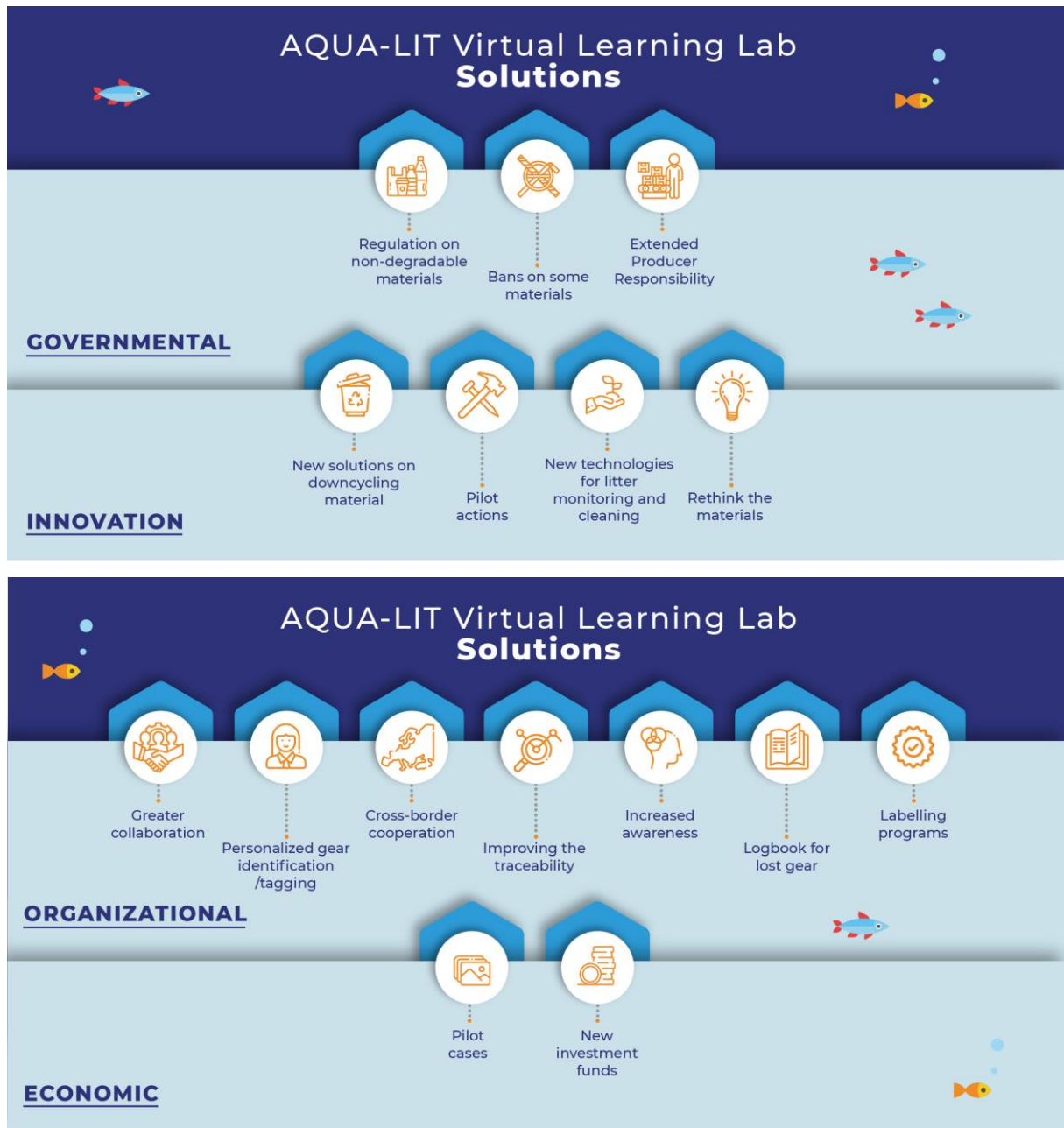
The last workshop from the [Learning Labs series](#), aimed at bringing together all range of stakeholders from the aquaculture sector to discuss the existing barriers on marine litter management, and to boost the knowledge exchange and brain-storming on solutions that help tackling marine litter in the Mediterranean, North Sea and Baltic regions.

With a total of 16 participants, the 4-hour workshop gathered stakeholders from nine different countries across Europe, being able to identify 9 different barriers affecting marine litter management from the aquaculture sector and proposing 17 potential solutions to improve prevention & reduction, monitoring & quantification, and removal & recycling practices (also [section 6 of this document](#)).

## BARRIERS



## SOLUTIONS



The results obtain from this workshop will help feed AQUA-LIT's "[Tide against Marine Litter Toolbox](#)" to be published by the end of the project (December 2020).

We thank all the participants who collaborated on finding solutions with us!

# 1. What is an AQUA-LIT Learning Lab?

A learning lab is a methodology for transforming systems with local stakeholders. It develops productive partnerships by forming inclusive problem-solving teams of multiple local stakeholders. They share common values and design behavioural support systems responsive to their diverse needs, strengths, practices and goals and develop locally meaningful, socially just, mutually valued, culturally acceptable and sustainable systemic solutions to a common problem.

The AQUA-LIT' Virtual Learning Lab consisted of a webinar-type of stakeholder engagement focused on an interactive workshop to reflect on '*How to tackle marine litter from the aquaculture sector*'?

The **AQUA-LIT interactive workshop** is facilitated using a participatory method and encouraging knowledge sharing and co-creation in order to develop a mutually valued and acceptable toolbox, which could become exemplary and point out the path for other sectors. Three Learning Lab workshops were organised by the AQUA-LIT partnership in three different locations. Each of them focused on a specific sea basin: the Baltic, the Mediterranean and the North Sea. The **Virtual Learning Lab** didn't focus on a region specifically, but rather, on the potential solutions and ideas to tackle marine litter at different stages: prevention & reduction, monitoring & quantification, and removal & recycling.

The interviews and the workshops - '**learning labs**' for engagement across stakeholder groups focused on creation, observation and promotion of innovative actions. The learning labs provided a forum for mutual learning and work to aquaculture farmers, equipment manufacturers, engineering and construction companies, academic research groups, professional clusters and associations, NGOs, policy makers and implementers, port staff, certification bodies, waste processing companies and communicators.

## 1.1. Learning Lab objectives

The main objective of AQUA-LIT's Learning Labs is to encourage knowledge sharing, discussions, and co-creation of solutions that help tackle marine litter from an aquaculture industry perspective.

More specifically:

- 🐟 Federate aquaculture stakeholder community in a joint struggle against marine litter;
- 🐟 Facilitate the exchange of knowledge, expertise, tools, and best practice in preventing, reducing, monitoring, quantifying, removing and recycling aquaculture installations, gear or equipment that are lost or carried away by the sea
- 🐟 Facilitate the adoption of successful existing solutions through capacity building;
- 🐟 Explore potential innovative solutions to marine litter reduction, removal and recycling;
- 🐟 Improve the understanding of stakeholders' needs and maximise the project impact.



## 1.2. Learning Lab expected outcomes

Participating stakeholders will co-design tools for preventing, reducing, monitoring, quantifying removing and recycling marine litter (e.g. polystyrene floats, plastic ropes, food sacks, buoys, etc.). They will make use of their experience, best practice, lessons learnt to share, assess and select the existing tools or design new ones.

## 2. State of Play

**Aquaculture is the fastest growing food-producing sector in Europe**, with an annual expansion rate of 8% in the last three decades. With this growth rate, there is **an opportunity for such a booming industry to act as a precursor on fighting marine litter** by reflecting on preventive measures and innovative solutions on how to manage the non-organic waste, which could become exemplary and point out the path for other sectors.

Therefore, for each Learning Lab a State of Play was prepared to give the participants a good overview of the current situation in their sea region regarding marine litter and the aquaculture sector. In the case of the Virtual Learning Lab, the **State of Play** included the **context of the three sea basins AQUA-LIT is focusing on: the Mediterranean Sea, the North Sea and the Baltic Sea**. For consulting the full context on each sea basin, please refer to the following document found on AQUA-LIT's website.



<https://aqua-lit.eu/assets/content/State%20of%20Play%20-%20Virtual%20LL-EN.pdf>

## 3. Virtual Learning Lab workshop

### 3.1. General description

The Virtual Learning Lab took place on 14th February 2020 as an online workshop and it was focused on the co-development of ideas to tackle marine litter from the aquaculture sector, specifically at the North Sea, Mediterranean Sea and Baltic Sea regions. This **interactive workshop** assembled 16 stakeholders, and 6 members of the AQUA-LIT organising team. The save-the-date, invitation and programme of the learning lab can be consulted in **Annex a**, but an example is presented below.



The agenda, state of play and presentation used during the learning lab can be consulted at [the AQUA-LIT project website](#). All preparations of the learning lab were carried out following the guidelines documented in D3.1 'AQUA-LIT Learning Lab's Leading Lines'.

### 3.2. Participants

The Virtual Learning Lab registrants came from nine different countries (Belgium, Denmark, France, Greece, Italy, the Netherlands, Portugal, Spain, and the United Kingdom) and from a varied stakeholder group that consisted of governmental institutions, universities, research centres, non-governmental organizations, aquaculture technology centres and communicators.

### 3.3. Round tables & triggering questions

The participatory method used during the Learning lab encouraged knowledge sharing, co-creation and development of mutually valued and acceptable tools from three perspectives:

- 1) preventing and reducing,
- 2) monitoring and quantifying, and
- 3) removing and recycling of litter from the aquaculture sector.

The triggering questions used by the facilitator and all helping questions used to stimulate the discussion can be found below.

#### **1 – How can the aquaculture industry be more effective in preventing and reducing its non-organic waste?**

- 🐟 What are the barriers to preventing and reducing the loss, damage or discard of gear and other equipment in the aquaculture sector?
- 🐟 What are the (technical) innovative solutions, business models and (policy) measures to prevent or reduce the loss, damage or discard of gear and other equipment in the aquaculture sector?

#### **2 - How can the aquaculture sector be more effective in monitoring and quantifying its non-organic waste?**

- 🐟 What are the monitoring systems for non-organic waste quantification that you have applied in your activity or that you know of?
- 🐟 What monitoring measures and schemes should be introduced, improved or enforced to encourage and empower every stakeholder to tackle the issue efficiently?

#### **3 - How can the aquaculture sector be more effective in removing and recycling its non-organic waste?**

- 🐟 What are the barriers to removal and recycling of gear and other equipment that is damaged, discarded or lost?
- 🐟 What are innovative solutions and business models that can be used to remove or recycle the gear and other equipment that is damaged, discarded or lost?

## 4. Identified barriers, solutions and good practices

This section summarises the responses of the participants in the three round tables. It should be noted that some suggestions or solutions proposed for a specific topic/ round table are moved to another topic in the report if this better corresponded with the theme.



### 4.1. PREVENTION & REDUCTION OF MARINE LITTER

**Barriers:** What are the barriers to preventing and reducing the loss, damage or discard of gear and other equipment in the aquaculture sector?

- ✂ The gear material (e.g. usually nylon, for example, widely used by mussels' farmers) has high environmental impact if dispersed.
- ✂ The price of the gear (e.g. float equipment's used in shellfish farming are very expensive) and lack of funds/financial support to the development of the aquaculture sector with regard to new gear (more efficient and more sustainable material).
- ✂ Weather events (that are often not predictable in time and that are often neglected by the farmers). Sometimes the farmers try to claim their gear after a storm, but without success.
- ✂ The farmers have problems with the ropes in the case of shellfish farming (e.g. mussels), that can get broken and lost easily
- ✂ The aquaculture companies need to claim their gears. It doesn't happen often or the company itself doesn't realize that lost gear equipment.
- ✂ Competent authorities have difficulty in inspection.

**Solutions:** What are the (technical) innovative solutions, business models and (policy) measures to prevent or reduce the loss, damage or discard of gear and other equipment in the aquaculture sector?

- ✂ Best gear systems that are not so easy to lose (the North Sea is a good example of the use of sustainable gear systems).
- ✂ The identification of the gears by each aquaculture company. Personalized gear identification.
- ✂ Floating device against stable device (“very interesting issue”).
- ✂ Invest more in warning/raising awareness among farmers and other aquaculture stakeholders.
- ✂ Put the gear in containers and send it to companies that recycle them.



## 5.2 MONITORING & QUANTIFICATION OF MARINE LITTER

**Barriers:** What are the barriers to monitoring and quantifying of gear and other equipment that is damaged, discarded or lost?

- ✦ Lack of data (e.g. amount of waste produced in general or for mussel farms, lack of amount of nets lost).
- ✦ Big items are easier to be monitored, while small items no, such as elastic bands. These items should be made with biodegradable material).

**Solutions:** What are innovative solutions and business models that can be used to monitor or quantify the gear and other equipment that is damaged, discarded or lost?

- ✦ Existence of a logbook in order to be able to quantify the waste and the items lost. Accounting book in order to record the equipment's that are lost and and the amount of waste generated.
- ✦ Include in the licencing system criteria related to the recycling of gears and equipment.
- ✦ Invest on other types of monitoring equipment (e.g. drones).
- ✦ Implement certification system with marine litter criteria.
- ✦ Make use of national "Litter funds" for implementing innovative monitoring solutions (e.g. example of Sweden, which has a national litter fund that can be invested or used in litter management/monitoring).



## 5.3 REMOVAL & RECYCLING OF MARINE LITTER

**Barriers:** What are the barriers to removal and recycling of gear and other equipment that is damaged, discarded or lost?

- ✦ In certain locations (e.g. Greece) mussels farm are in muddy areas where the recovery of lost nets is very difficult.
- ✦ The recycling process of the aquaculture gears is hard. This process needs to be improved; Gears are made of material that is hard to be recycled, plus a cleaning process from organic material is needed.
- ✦ Sometimes aquaculture gears are treated with wax which is difficult to take off. Moreover, aquaculture gears are used a lot, and the material is easily deteriorating.



- ✂ The material that is being recycled is still very little. For a recycling process, a high quantity of material is needed. It is necessary to recycle more material, that can come from different sectors (partnership between aquaculture and fisheries sectors).
- ✂ The material must be collected in more sites, but unfortunately nobody wants to put their hand in this "dirty" material.
- ✂ Lack of funds/financial support for a proper waste management and recycling of the material.
- ✂ Some ports still do not have proper facilities for waste collection.

**Solutions:** What are innovative solutions and business models that can be used to remove or recycle the gear and other equipment that is damaged, discarded or lost?

- ✂ Reuse of gears by farmers (e.g. mussels farmers reuse their equipments).
- ✂ Production and utilization of nets made from easily recycled materials.
- ✂ Consult aquaculture companies in order to understand if there are alternative sustainable materials to make the equipment.
- ✂ Fisheries and aquaculture nets should be made with same material in order to optimise the recycling process.
- ✂ Separation by type of material for each type of aquaculture gear.
- ✂ Boost the utilisation of single material for the net production, in order to make it more recyclable.
- ✂ Provision of appropriate recycling equipment in strategic sites/places where nets are deposited (e.g. ports).
- ✂ Label the farm that are producing in a sustainable way.
- ✂ Include in the licensing system something related to the recycling of equipment.
- ✂ Art with nets has been used for many years. As a good initiative, nets should be reused, when possible, for a period of for example, 5 years. This will depend on the type of aquaculture.
- ✂ Better coordination of funds and financial support.
- ✂ Invest on new farm space cleaning equipments.
- ✂ In some cases, the material can be downcycled (e.g. in Italy there is a company making fuel from nets material) – being the material down into the ocean for many years, downcycling it can be a more effective option.
- ✂ EPR could be applied having producer taxes supporting the gears recycling system.

## 5. Summary of identified barriers and proposed solutions

### AQUA-LIT Virtual Learning Lab

#### Barriers



**Lack of data**

We do not know the amount of waste that is produced by the sector.

**Lack of awareness** (especially farmers)

Lack of familiarization with the problem of marine litter from aquaculture.

**Lack of collaboration** between maritime sectors.

**Lack of waste collection facilities**

Some ports still don't have appropriate facilities for waste collection and management.

**Reduced recycling infrastructures**

Reduced number for recycling equipment from fisheries and aquaculture.

**Monitoring of small items**

Small gear such as elastics, tags, etc. are difficult to monitor when lost.

**Mixed materials treatment**

Difficulty in recycling equipment of different materials.

**Lack of funds**

Financial support needed for accessing more efficient and sustainable gear.

**Not enough inspection**

Competent authorities have difficulty in inspection.

## AQUA-LIT Virtual Learning Lab Solutions



**Greater collaboration** /synergies between maritime sectors (e.g. Fisheries and Aquaculture).

**Personalized gear identification/tagging**

**Cross-border cooperation**

**Improving the traceability** of the item produced.  
Step-by-step organization in order to find out who is responsible for marine litter or lost gear.

**Increased awareness** of farmers (e.g. mussels' farmers).

**Logbook and monitoring** methodology for lost items.

**Labelling programs**  
Inclusion marine litter criteria.



**Regulation on non-degradable materials**

**Bans on some materials**  
A new approach in legislation for aquaculture sector, namely with bans (e.g. bans material like nylon).

**Extended Producer Responsibility**  
Producer taxes to support gears' recycling system.



**Rethink the materials**

**Pilot actions** (e.g. awareness programs for farmers).

**New technologies for litter monitoring and cleaning**  
(e.g. drones)

**New solutions on downcycling material**  
which is not possible to recycle.



**Pilot cases**

**New investment funds**  
e.g. European or national funds) to improve the monitoring of marine litter from the sector.



## 6. Annexes

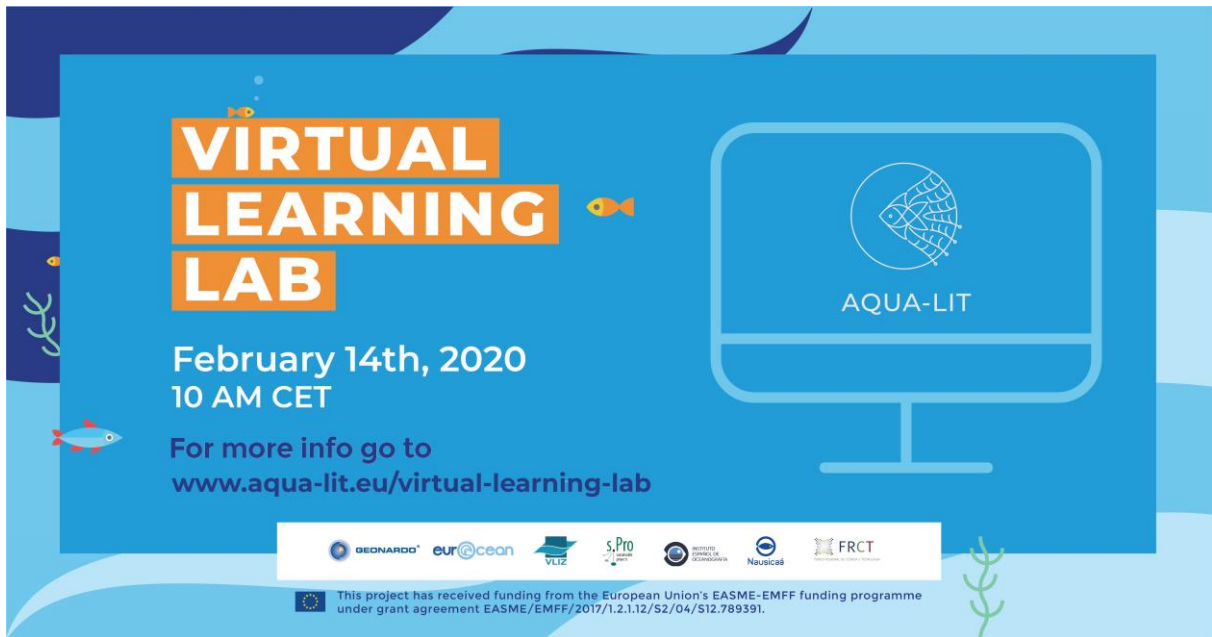
### 6.1. Annex a.

#### SAVE THE DATE (1)



Save the date flyer used in our social media to promote the Virtual learning Lab.

## SAVE THE DATE (2)



Save the date flyer used in our social media to promote the Virtual learning Lab.

## STATE OF PLAY



Visual used to announce the **State of Play** created for the workshop.

## AGENDA

### DRAFT PROGRAMME



#### AQUA-LIT's Virtual Learning Lab

**"How can the aquaculture sector contribute to reducing marine litter?"**

February 14th, 2020, 10:00-14:00 CET.  
<https://www.eventbrite.com/e/aqua-lit-virtual-learning-lab-tickets-907975247793>

The AQUA-LIT Virtual Learning Lab is an **interactive workshop** that will assemble stakeholders from the aquaculture sector to exchange their insights and opinions about the issue of marine litter and discuss possible solutions.

The Learning Lab will be facilitated using a participatory method in order to **encourage knowledge sharing and co-creation** and to **develop a mutually valued and acceptable toolbox**, which could become exemplary and point out the path for other sectors.

**The objectives of the Learning Lab are to:**

- ✦ Federate and engage stakeholder communities in preventing, reducing, monitoring, quantifying, removing and recycling marine litter from aquaculture operations.
- ✦ Facilitate the adoption of successful existing solutions through capacity building.
- ✦ Explore the potential of innovative solutions to marine litter reduction, removal and recycling.
- ✦ Improve the understanding of the specific needs of stakeholders to maximise the impacts of the project.

**Learning Lab expected outcomes**  
 Participating stakeholders will co-design tools for preventing, reducing, monitoring, quantifying removing and recycling marine litter (e.g. polystyrene floats, plastic ropes, food sacks, buoys, etc.). They will make use of their experience, best practice, lessons learnt to share, assess and select the existing tools or design new ones.

<b>10:00-10:15</b>	<b>Welcome + logistics</b>
<b>10:15-10:45</b>	<b>Plenary Session</b> <ul style="list-style-type: none"> <li>▪ Introduction to AQUA-LIT</li> <li>▪ State of play of non-organic litter from the aquaculture sector</li> <li>▪ Objectives of the Learning Lab and expected outcomes</li> </ul>
<b>10:45-11:00</b>	<b>Division of groups and access to new link</b>
<b>11:00-13:15</b>	<b>Round tables</b> Interactive workshop where participants will work in groups to identify and assess solutions and methodologies from three perspectives:
<b>11:00-11:45</b>	<b>Part 1 – Prevention and Reduction</b> How can the aquaculture industry be more effective in <b>preventing and reducing</b> its non-organic waste?
<b>11:45-12:30</b>	<b>Part 2 – Monitoring and Quantification</b> How can the aquaculture sector be more effective in <b>monitoring and quantifying</b> its non-organic waste?
<b>12:30-13:15</b>	<b>Part 3 – Removing and Recycling</b> How can the aquaculture sector be more effective in <b>removing and recycling</b> its non-organic waste?
<b>13:15-14:00</b>	<b>Plenary Summary Session</b> <ul style="list-style-type: none"> <li>▪ Presentation of results by 3 keynote speakers &amp; rapporteurs</li> <li>▪ Discussion &amp; wrap-up</li> <li>▪ Participant questionnaire</li> </ul>
<b>-14:00</b>	<b>Closing of the session</b>





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Announced draft **programme** of the Virtual Learning Lab published in our website.



## 6.2. Annex b.

Triggering questions used by facilitators of the interactive workshops.



### PREVENTION & REDUCTION OF OF MARINE LITTER



**Table 1**

**How can the aquaculture industry be more effective in preventing and reducing its non-organic waste?**

**Q1.1**  
What are the barriers to preventing and reducing the loss, damage or discard of gear and other equipment in the aquaculture sector?

**Q1.2**  
What are the (technical) innovative solutions, business models and (policy) measures to prevent or reduce the loss, damage or discard of gear and other equipment in the aquaculture sector?

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#### Triggering subquestions

- 🐟 What is your opinion about following a Circular Economy Design?
- 🐟 What are reusable product alternatives for cages, gear?
- 🐟 What kind of cooperation between research and aquaculture business is in place in your area? Please list them.
- 🐟 What do you think of the Life Cycle Assessment Design?
- 🐟 Which best practices are the most efficient for your business?
- 🐟 Please list the measures for a sustainable aquaculture production (including farm & technology approvals) that you know of.





## MONITORING & QUANTIFICATION OF MARINE LITTER

**Table 2**

**How can the aquaculture sector be more effective in monitoring and quantifying its non-organic waste?**

**Q2.1**  
What are the monitoring systems for waste quantification that you have applied in your activity or that you know of?

**Q2.1**  
What monitoring measures and schemes should be introduced, improved or enforced to encourage and empower every stakeholder to tackle the issue efficiently?

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### Triggering subquestions

- 🐟 Monitoring frequency: in your company/organization, is there any kind of monitoring after storms? or is it seasonal-monitoring?
- 🐟 Type of monitoring/quantification: is it done categorising products or materials or type of gear?
- 🐟 Is your company reporting to any organism/institution? If yes, do you receive any feedback from this institution?
- 🐟 Is your company/institution keeping that information in a database/excel/...? Do you make any analysis on that?
- 🐟 Is your monitoring/quantification system standardized? (using international/national indicators?) If yes, do you think that harmonizing the scope (regional/sea basin/national) and the monitoring/quantification methodologies would help to improve the system/would it make the system more useful/would it be more useful for environmental purposes?
- 🐟 Are you monitoring the carbon-water footprint regarding the energy usage? (this is not about litter, anyway)
- 🐟 Is there any national/sea basin/international regulation that is being applied by your company/institution regarding the monitoring/quantification tasks? Do you need any (kind of) support to apply it?
- 🐟 Which best practices are the most efficient for your business?



