



Toolbox for Good Marine Litter Management in the Aquaculture Sector

SUMMARY OF OUTCOMES

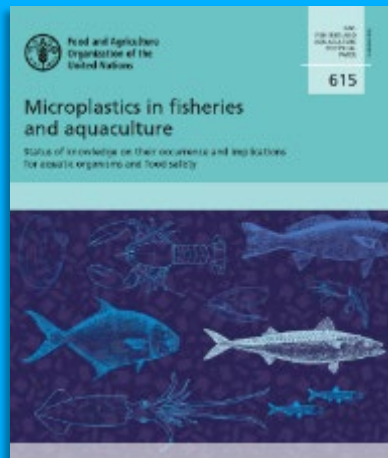


Preventive measures for averting the discarding of litter in the marine environment from the aquaculture industry

Why AQUA-LIT?

“There are no global estimates of the amount of plastic waste generated by the fisheries and aquaculture sector.”

FAO, technical paper 615, 2017



“Aquaculture is expected to be the sector that meets future demand for food, predicted to rise by 40 percent by 2030”

The State of World Fisheries and Aquaculture 2018





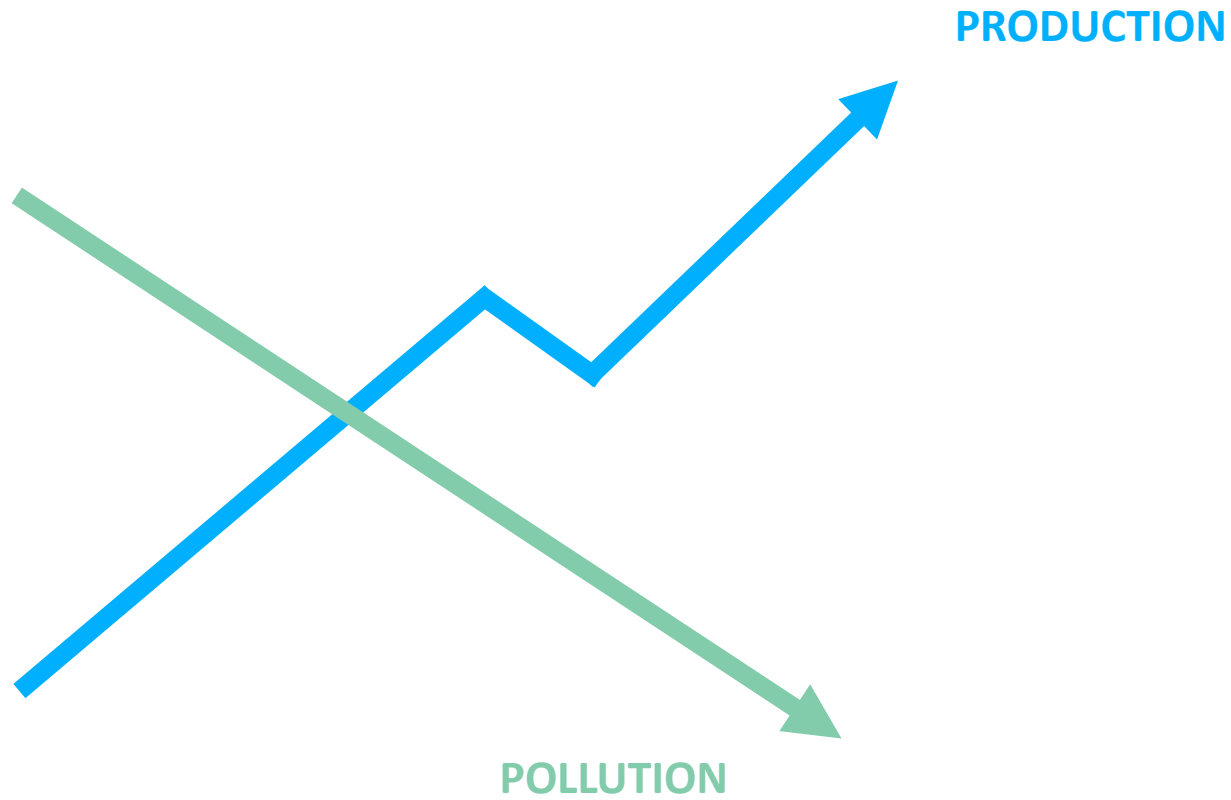
Why AQUA-LIT?

AQUA-LIT thus aims at **increasing the understanding, awareness and availability of solutions that tackle marine littering**, so the increase on aquaculture production doesn't imply an increase on marine littering.





Put simple





Who?



GEONARDO • SME, Hungary



European Centre for Information on
Marine Science and Technology •
Non-profit organisation, Portugal



Flanders Marine Institute •
Non-profit organisation,
Belgium



sustainable projects
GmbH • SME, Germany



Instituto Español de Oceanografía •
Public body, Spain



Regional Fund for Science and
Technology • Public body, Portugal



National Sea Centre in Boulogne-
sur-Mer • Local public
enterprise, France





Where?

North Sea



Baltic Sea

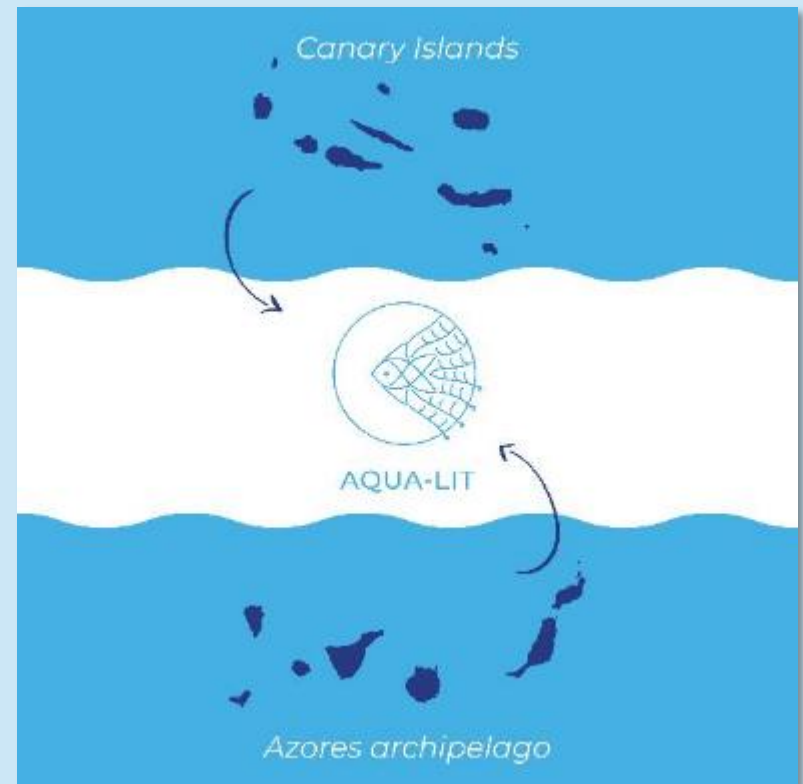


**Mediterranean
Sea**

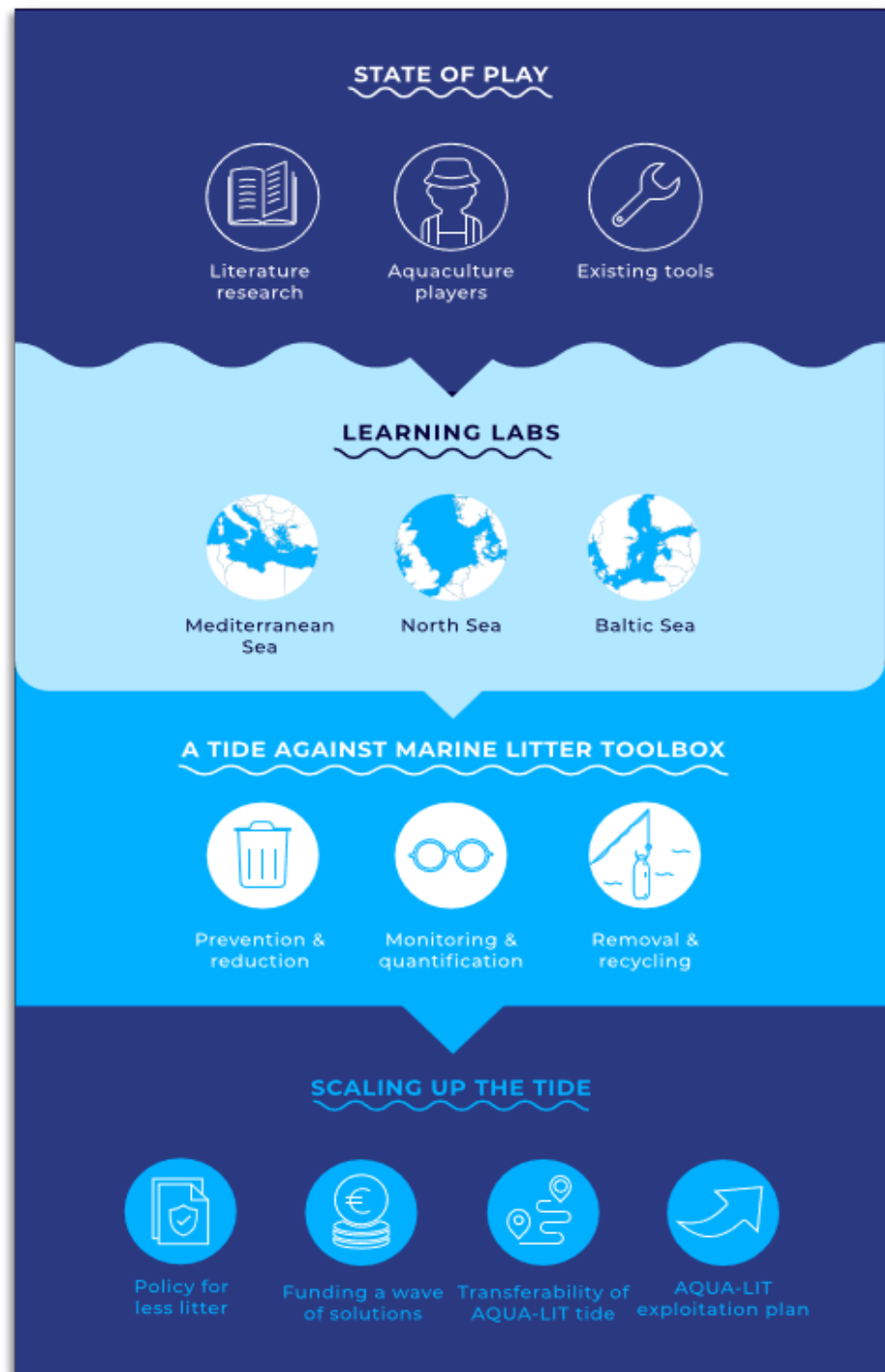
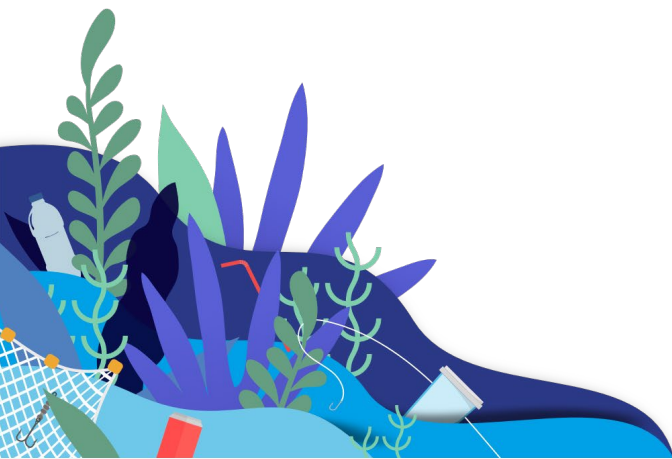




Where?



What?



State of Play



Literature
research



Aquaculture
players



Existing tools



Marine Litter inventory

A **solid knowledge base on marine litter from aquaculture activities**. This database includes information on the main types of debris as well as the quantities in which they occur in the marine environment, identifying specific sources of marine littering coming from aquaculture activities.



Regional maps on aquaculture litter

Sea basin maps generated for visualising information on the **geographic position of aquaculture facilities**, in combination with the **quantitative data of aquaculture-related litter**. These maps are provided for the three sea basins and give an initial indication of the source-sink story of aquaculture-related litter, which are a useful tool for the various stakeholders and policy makers.





MARINE LITTER INVENTORY

[PLASTIC]



The item inventory is a solid knowledge base on marine litter from aquaculture activities which is divided into general [A], specific [B] and other potential [C] items. Each item is characterized by an identification



AQUA-LIT

Tahitians^[B11]

Item type
Structure

Material
Plastic



Description:

Plastic structure from oyster cultures

Aquaculture species: Bivalves (mussel)

Aquaculture type: Stake method / longline culture

Source: OSPAR beach litter guidelines nr 30



Item type
Structure

Material
Plastic

Heavy-duty longlines^[B12]

Description:

Sub surface longlines who smaller growth ropes together

Aquaculture species: Bivalves (oyster), brown seaweed

Aquaculture type: Longline culture

Source: Niaounakis, 2017

Synthetic ropes

Item type
Ropes

Material
Plastic



Description:

Synthetic ropes (marily made of polysteel which is a blend of PP and PE, which has a 25 percent higher tensile strength than PP. Although, polyester and PA can be used, they are more expensive and more elastic than polysteel)

Source: Lusher et al., 2017 and Stachowitsch, 2019

MARINE LITTER INVENTORY



Item type
Nets

Material
Plastic

General nets

Description:

Tangled nets/cord/rope and string + net repair pieces

Source: OSPAR beach litter guidelines nr.33



Plastic netting for cages

Item type
Nets

Material
Plastic



Description:

Made of UV-stabilized polyethylene

Source: Ntounakis, 2017



Item type
Floats and buoys

Material
Plastic

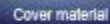
Markers buoys

Description:

Made of moulded PE and filled with PU or PS for additional buoyancy

Source: OSPAR beach litter guidelines nr.37





Product	Price	Category	Brand	Material	Weight	Dimensions	Color	Availability	Lead Time	Notes
Product A	\$120.00	Electronics	Brand X	Plastic	1.5kg	10cm x 5cm x 2cm	Black	In Stock	2-3 days	Standard model
Product B	\$85.00	Electronics	Brand Y	Aluminum	0.8kg	8cm x 4cm x 1.5cm	Silver	Low Stock	5-7 days	Special edition
Product C	\$210.00	Electronics	Brand Z	Steel	3.2kg	15cm x 7cm x 3cm	Gold	Out of Stock	10-12 days	Customizable
Product D	\$95.00	Electronics	Brand X	Plastic	1.2kg	9cm x 5cm x 2.5cm	Black	In Stock	2-3 days	Standard model
Product E	\$150.00	Electronics	Brand Y	Aluminum	1.8kg	12cm x 6cm x 2.5cm	Silver	Low Stock	5-7 days	Special edition
Product F	\$300.00	Electronics	Brand Z	Steel	4.5kg	20cm x 10cm x 4cm	Gold	Out of Stock	15-18 days	Customizable
Product G	\$110.00	Electronics	Brand X	Plastic	1.3kg	11cm x 5.5cm x 2.2cm	Black	In Stock	2-3 days	Standard model
Product H	\$75.00	Electronics	Brand Y	Aluminum	0.7kg	7cm x 3.5cm x 1.2cm	Silver	Low Stock	4-5 days	Special edition
Product I	\$180.00	Electronics	Brand Z	Steel	2.8kg	14cm x 7.5cm x 3.5cm	Gold	Out of Stock	12-14 days	Customizable
Product J	\$90.00	Electronics	Brand X	Plastic	1.1kg	9.5cm x 5cm x 2.3cm	Black	In Stock	2-3 days	Standard model
Product K	\$135.00	Electronics	Brand Y	Aluminum	1.6kg	11.5cm x 6cm x 2.8cm	Silver	Low Stock	5-7 days	Special edition
Product L	\$250.00	Electronics	Brand Z	Steel	3.8kg	17cm x 9cm x 4cm	Gold	Out of Stock	14-16 days	Customizable
Product M	\$105.00	Electronics	Brand X	Plastic	1.4kg	10.5cm x 5.8cm x 2.4cm	Black	In Stock	2-3 days	Standard model
Product N	\$70.00	Electronics	Brand Y	Aluminum	0.6kg	6.5cm x 3.2cm x 1.1cm	Silver	Low Stock	4-5 days	Special edition
Product O	\$165.00	Electronics	Brand Z	Steel	2.6kg	13.5cm x 7.2cm x 3.2cm	Gold	Out of Stock	11-13 days	Customizable
Product P	\$80.00	Electronics	Brand X	Plastic	1.0kg	8.5cm x 4.5cm x 1.8cm	Black	In Stock	2-3 days	Standard model
Product Q	\$125.00	Electronics	Brand Y	Aluminum	1.7kg	12.5cm x 6.5cm x 2.6cm	Silver	Low Stock	5-7 days	Special edition
Product R	\$220.00	Electronics	Brand Z	Steel	3.5kg	16.5cm x 8.5cm x 3.8cm	Gold	Out of Stock	13-15 days	Customizable
Product S	\$100.00	Electronics	Brand X	Plastic	1.2kg	10cm x 5cm x 2.5cm	Black	In Stock	2-3 days	Standard model
Product T	\$65.00	Electronics	Brand Y	Aluminum	0.5kg	6cm x 3cm x 1cm	Silver	Low Stock	4-5 days	Special edition
Product U	\$175.00	Electronics	Brand Z	Steel	2.9kg	14.5cm x 7.8cm x 3.6cm	Gold	Out of Stock	12-14 days	Customizable
Product V	\$92.00	Electronics	Brand X	Plastic	1.1kg	9.2cm x 5.2cm x 2.2cm	Black	In Stock	2-3 days	Standard model
Product W	\$140.00	Electronics	Brand Y	Aluminum	1.9kg	13cm x 7cm x 3cm	Silver	Low Stock	5-7 days	Special edition
Product X	\$260.00	Electronics	Brand Z	Steel	4.2kg	19cm x 11cm x 4.5cm	Gold	Out of Stock	16-18 days	Customizable
Product Y	\$115.00	Electronics	Brand X	Plastic	1.3kg	11.5cm x 5.8cm x 2.4cm	Black	In Stock	2-3 days	Standard model
Product Z	\$78.00	Electronics	Brand Y	Aluminum	0.7kg	7.8cm x 3.8cm x 1.3cm	Silver	Low Stock	4-5 days	Special edition

State of Play

REGIONAL MAPS



Percentage of litter originating from
aquaculture and/or fisheries

- 0
- [0, 5]
- [5, 10]
- [10, 15]
- > 15

Litter source

- ☐ Aquaculture
- ☐ Aquaculture/fisheries

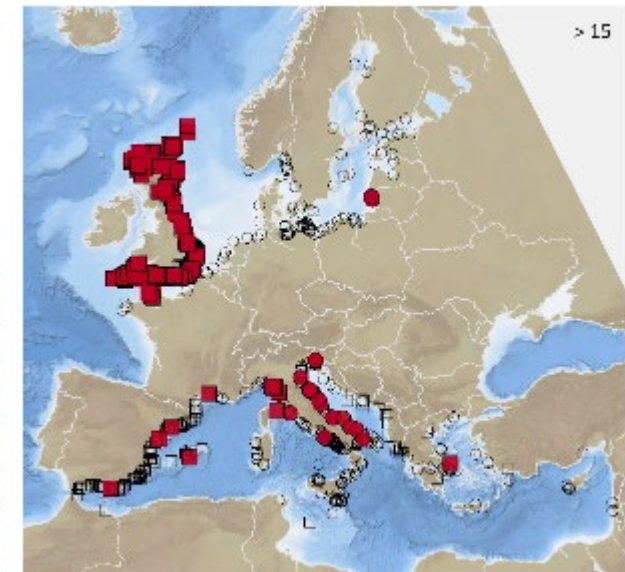
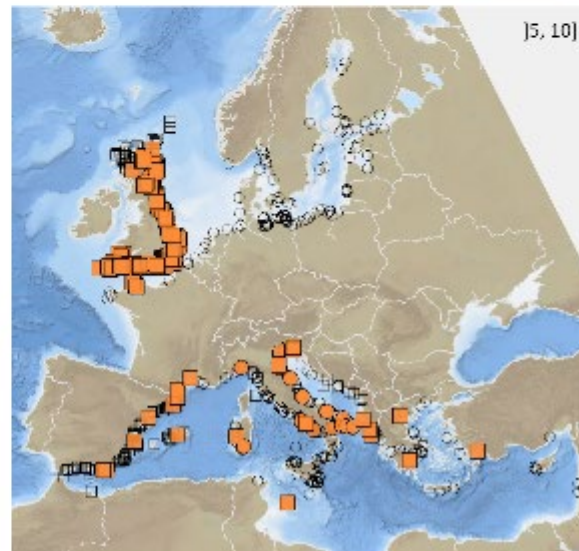
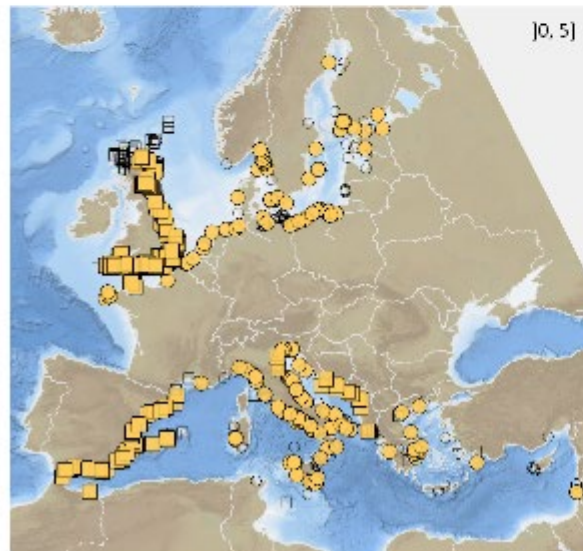
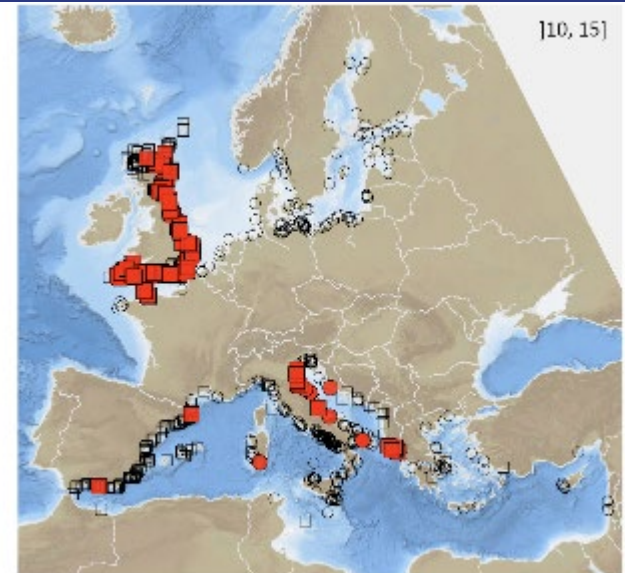
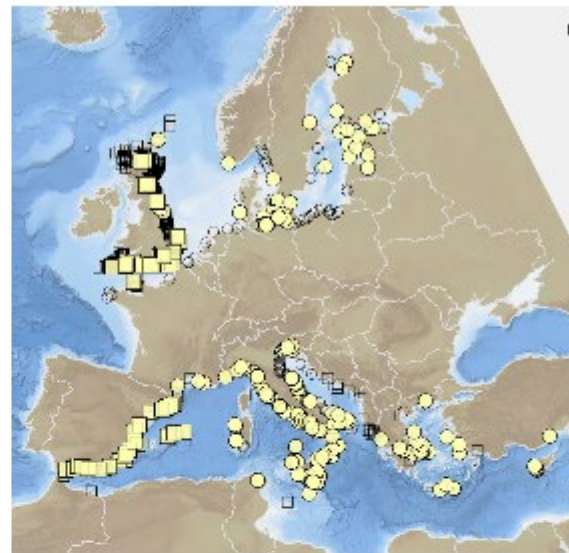
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Projection: Europe Lambert Conformal Conic

Source: GESCO; ESRI; OSPAR; HELCOM; Legambiente; Marine Litter Watch; Axelsen et al., 2017;
De Vries, 2011; MARNOBA; MCS UK; Morlino et al., 2018; MITED; Menzies et al., 2015; Paoletti et al., 2016; Provençal et al., 2018; Riccio et al., 2015; Wiedegmann et al., 2017; Wiedegmann, 2019



Beach

The monitored beaches in the North, Baltic and Mediterranean Sea basins and their reported percentage of aquaculture related litter



State of Play



Literature
research



Aquaculture
players

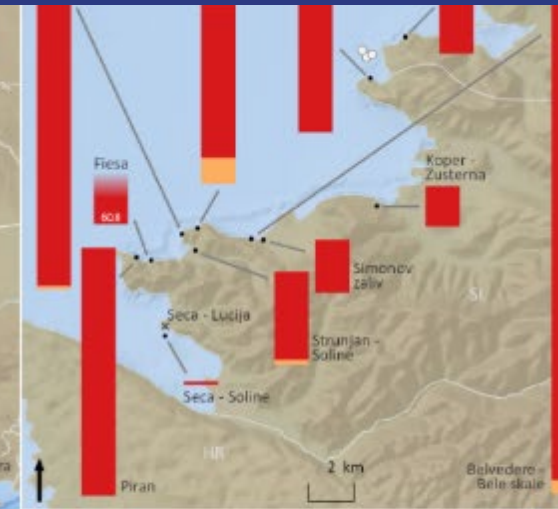
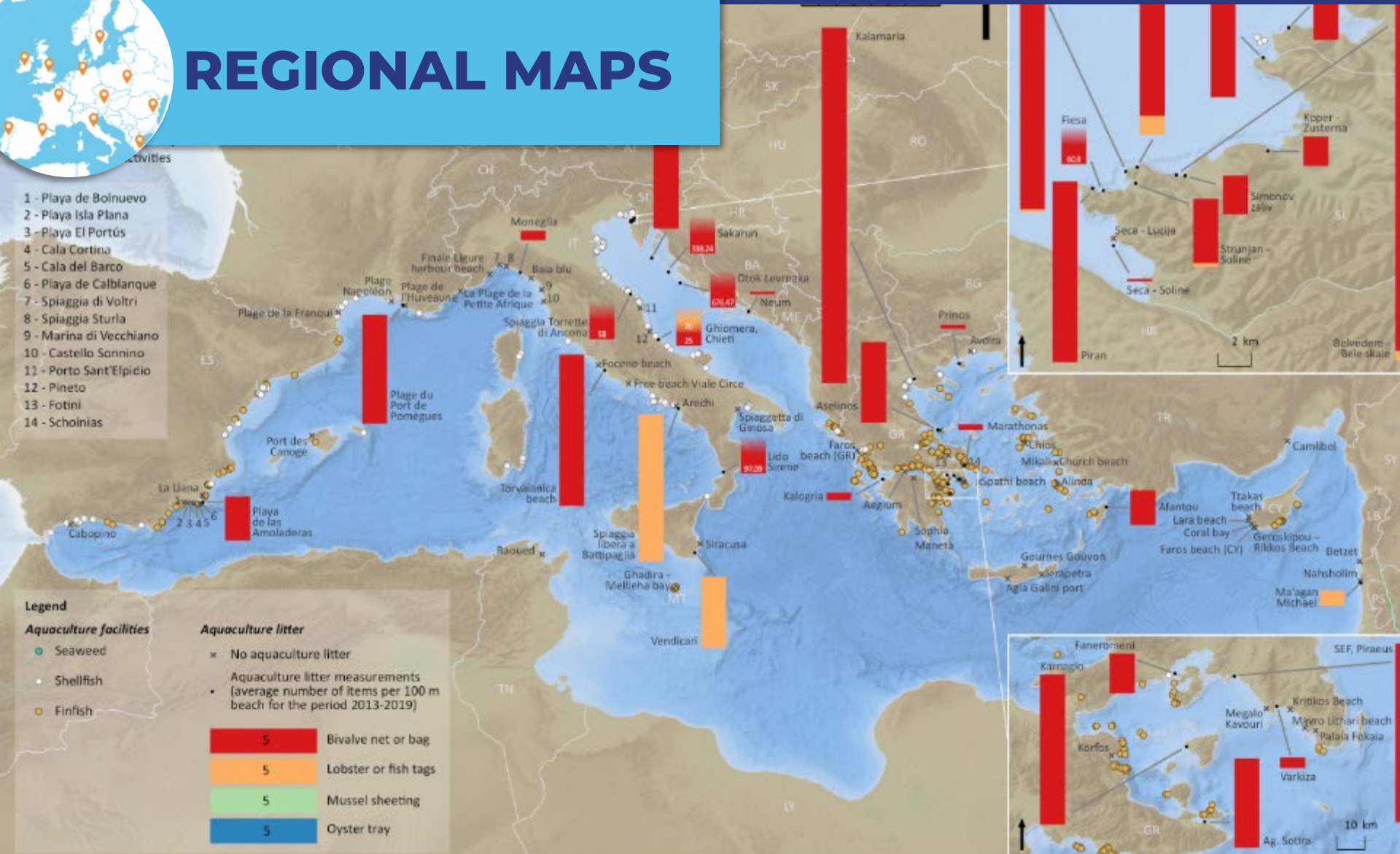


Existing tools



REGIONAL MAPS

- 1 - Playa de Bolnuevo
- 2 - Playa Isla Plana
- 3 - Playa El Portús
- 4 - Cala Cortina
- 5 - Cala del Barco
- 6 - Playa de Calblanca
- 7 - Spiaggia di Voltri
- 8 - Spiaggia Sturla
- 9 - Marina di Vecchiano
- 10 - Castello Sonnino
- 11 - Porto Sant'Elpidio
- 12 - Pineto
- 13 - Fotini
- 14 - Scholinias



State of Play



Literature
research



Aquaculture
players



Existing tools

Available policy tools and measures



Overview of the global, regional, European and national action plans and documents that contain measures to reduce or avoid marine litter from the aquaculture sector



GLOBAL



OSPAR
COMMISSION

EU Strategy for the
Mediterranean and Ionian Region
USAIR

REGIONAL

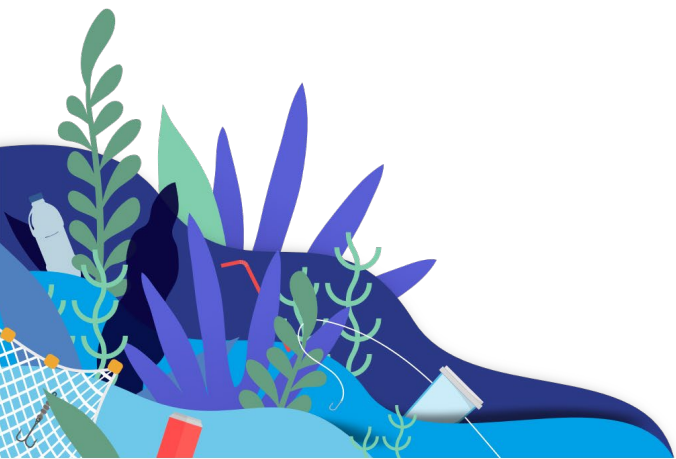
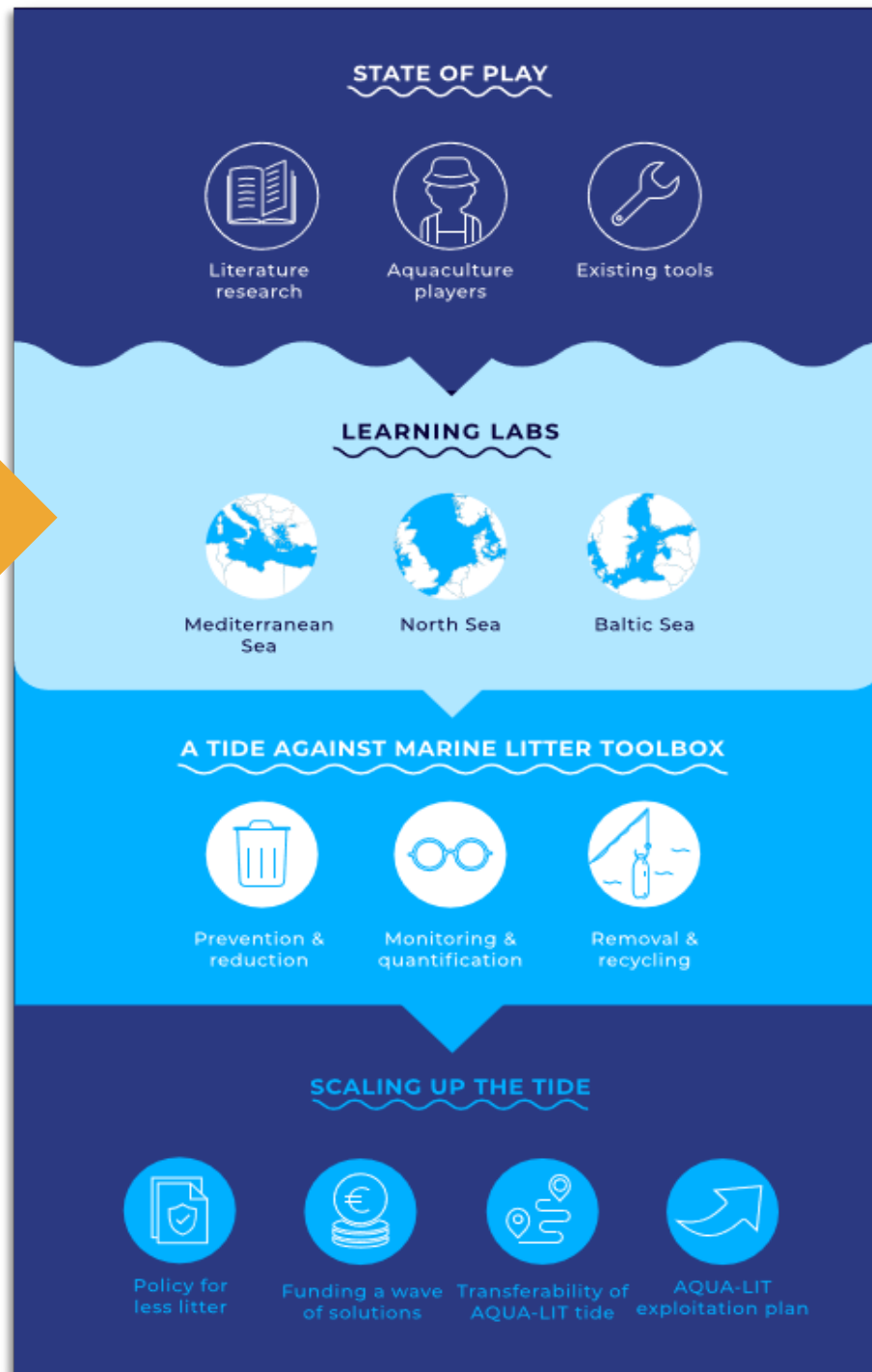
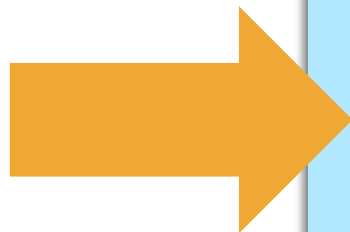
EUROPE



NATIONAL



How?



Learning Labs



Mediterranean Sea



North Sea



Baltic Sea

AQUA-LIT's LEARNING LABS

How can the aquaculture sector contribute to reducing marine litter?

AQUA-LIT's Baltic Sea Learning Lab,
an interactive workshop organised by i-Pro Sustainable Projects!
October 9th, 2019 - Berlin, Germany.

AQUA-LIT's North Sea Learning Lab,
an interactive workshop organised by the Flanders Marine Institute!
November 26th, 2019 - Ostend, Belgium

AQUA-LIT's Mediterranean Sea Learning Lab,
an interactive workshop organised by the Spanish Institute of Oceanography (IEO).
To be held in November in Spain (date and location coming soon!)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 845861/EMFF/2019/1.2.1.12/02/04/010 190501



Learning Labs



Mediterranean Sea



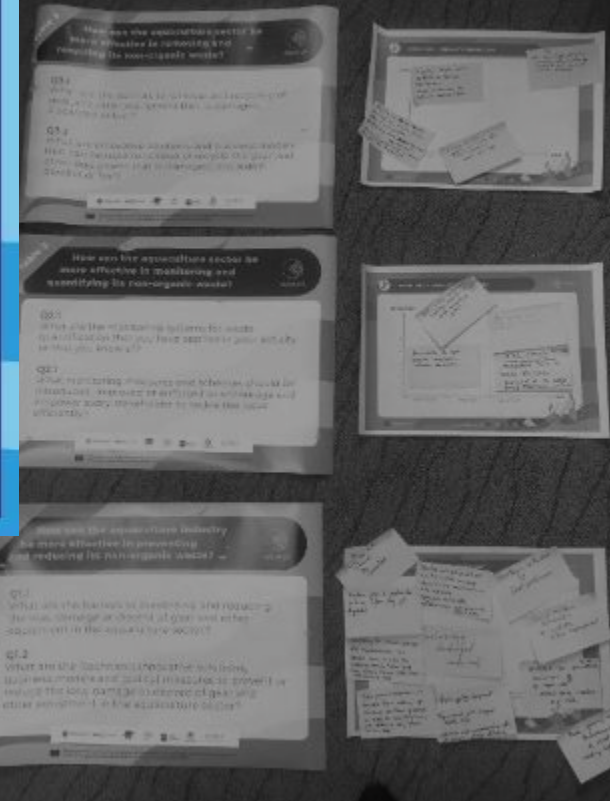
North Sea



Baltic Sea

AQUA-LIT Virtual Learning Lab

Barriers



Learning Labs



Mediterranean Sea



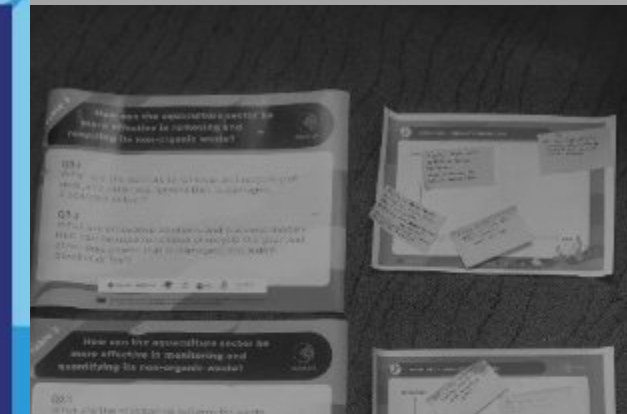
North Sea



Baltic Sea

AQUA-LIT Virtual Learning Lab

Barriers



AQUA-LIT Virtual Learning Lab Solutions

GOVERNMENTAL



INNOVATION





What?

A toolbox against marine litter addressing:



**Prevention &
Reduction**



**Monitoring &
Quantification**



**Removal &
Recycling**



TIDE AGAINST MARINE LITTER

TOOLBOX



**SOLUTIONS &
MEASURES**

**PORT
FACILITIES**

**FUNDING
OPPORTUNITIES**

**SUBMIT
INFORMATION**

**MARINE LITTER
INVENTORY**

**ACTION PLANS AND
POLICY
RECOMMENDATIONS**





SOLUTIONS & MEASURES

BY STAGE



BY MEASURE



BY SEA BASIN



BY TYPE OF AQUACULTURE



BY STAGE OF MARINE LITTER



PREVENTION AND
REDUCTION



MONITORING AND
QUANTIFICATION



REMOVAL AND RECYCLING

BY MEASURE



KNOWLEDGE



LEGISLATION



RESPONSIBILITY



SUPPORT

BY AQUACULTURE OF MARINE LITTER



FISH



SHELLFISH



SEAWEED



SUPPORT MEASURES



Incentivize the development and implementation of sustainable innovative design of materials and equipment.



FINANCIAL
SUPPORT



e.g. mussel socks with
cotton strands





SUPPORT MEASURES



Related Barriers:

There is a lack of standardised criteria for environmental monitoring systems (e.g. in Spain each Autonomous Community deals with their own regulation).

There is a lack of monitoring systems for marine litter and for non-organic marine litter from aquaculture activities specifically.

There is a lack of specific data related to material losses from aquaculture activities.

There is a lack of specific information on the impact of marine litter from the aquaculture sector to showcase the problem.

There is a lack of knowledge to identify aquaculture items in marine litter collections.

The standardised forms used at a European level to collect information about the floating marine litter and the debris located on the seafloor are not complete or updated as they lack item categories that are frequently found in the Mediterranean Sea.

The current monitoring performed and promoted by the government is not efficient enough in Spain.



Related Good Practice:

M&Q GP4.1

The Spanish Ministry for the Ecological Transition and the Demographic Challenge (MITECO) is involved in the marine litter monitoring. Spanish MITECO is involved in the marine litter monitoring through two departments. Firstly, the Directorate for the Coast and the Sea has been involved in the monitoring of the marine litter on beaches for more than 12 years. Currently (2020), there are 26 beaches included in the monitoring scheme, which is performed by

TIDE AGAINST MARINE LITTER

TOOLBOX



**SOLUTIONS &
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**PORT
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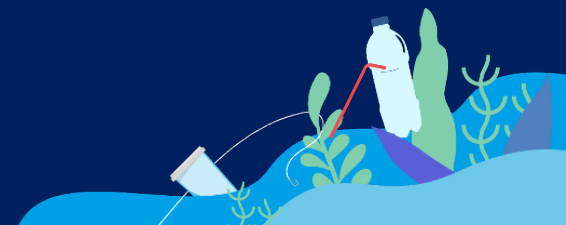
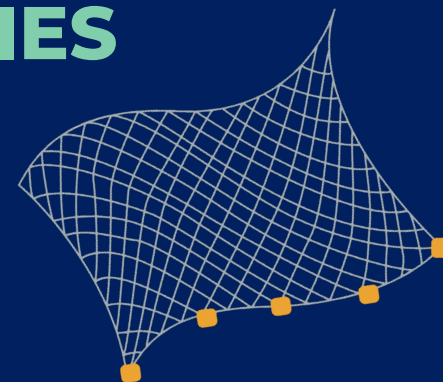
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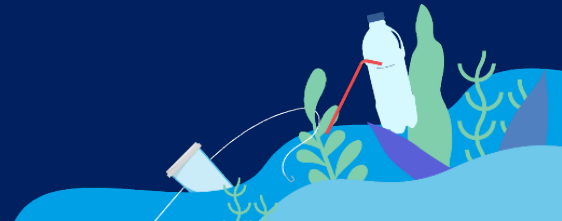
PORT RECEPTION FACILITIES



PORT RECEPTION FACILITIES



- **Boulogne-sur-mer**
- **Calais**
- **Dunkerque**
- **Rouen**
- **Le Havre**
- **Brest**





Dunkerque

Type of waste

Domestic waste, food scraps, wood, paper, cardboard, glass, oil filters, batteries, fluorescent tube, paint bucket, solvents, ashes, oil, polluted fuel, polluted waters

Is there a fee?

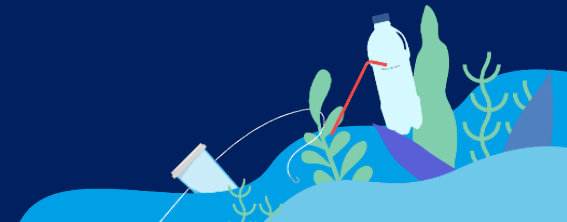
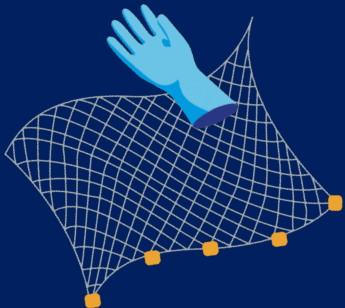
No information available

Is there any limitation (e.g. forbidden type of waste)

For liquid waste, the ship must get in touch with approved companies. The port doesn't directly manage liquid waste. For dangerous waste, the port must be advised. For medical waste, the ships must contact an approved company

Where can I find more information?

<https://www.spd-calais.com/fr>



TIDE AGAINST MARINE LITTER

TOOLBOX



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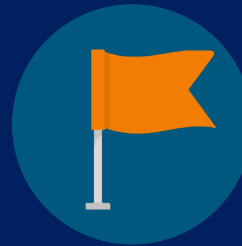
**ACTION PLANS AND
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FUNDING OPPROTUNITIES



EU-level



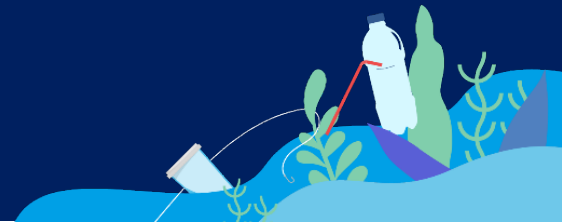
**National
level**



**Grants &
Investors**



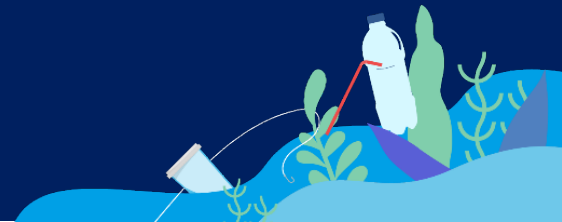
Trans-regional



TIDE AGAINST MARINE LITTER TOOLBOX

FUNDING OPPORTUNITIES

Name	Name of the mechanism/grant	Type	focus	Geographical scope	Link	Target	Description
SOA	Ocean Solution Microgrants	Grant	Projects on sustainable use of the ocean	International	https://www.seaalliance.org/leadership/ocean-solutions-microgrants?utm_campaign=Ocean%20Solutions%20Microgrants%202020&utm_source=facebook&utm_medium=social	Youth	The Ocean Solutions Microgrants program provides small grants to youth-led projects that support and promote the conservation and sustainable use of the oceans, seas and marine resources in accordance with United Nations SDG14.
Oceano Azul	Applications open for 3rd Edition of Blue Bio Value Accelerator	Grant	Projects and businesses linked to the sustainable blue bioeconomy	International	https://www.oceanoazulfoundation.org/news/applications-open-for-3rd-edition-of-blue-bio-value-accelerator/	Start Up	
Blue Horizon Ventures		Investor	Sustainable food system	International	https://www.bluehorizontventures.com/		
Ocean14 Capital		Investor	Blue Economy	International	https://www.ocean14capital.com/		
Blue Swell		Incubator	Blue Economy	International	https://blueswell.sea-ahead.com/	Start Up	
ZUG	Grant Programme against Marine Litter	Grant	Marine litter	Germany	https://www.zug.org/en/reports/abilities-and-tasks/grant-programme-against-marine-litter/	All	
EEA Grant	Small Grants Scheme #1	Grant	Marine litter	Portugal	https://www.eea.grants.gov.pt/en/programmes/environment/calls/small-grants-scheme-1-projects-to-prevent-and-raise-awareness-to-reduce-marine-litter/	All	
AQUA SPARKS		Investor	sustainable aquaculture businesses (with focus also on marine litter)	International	https://www.aqua-spark.nl/	Small to medium enterprise	
Katapult Ocean		Investor	sustainable aquaculture businesses	International	https://katapultocean.com/	U	



TIDE AGAINST MARINE LITTER

TOOLBOX



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SUBMIT INFO

Would you like to submit info?

Register to the platform!

Name

Last name

E-mail

Affiliation

SUBMIT



SUBMIT INFO

In this section you can submit information that you couldn't find in AQUA-LIT toolbox and that you believe it would be of use for other stakeholders.

Please select the category it belongs to and type the relevant information you have. Your submission will be reviewed by AQUA-LIT team and approve it before being uploaded.

Thank you for contributing and helping tackle marine litter!

Solutions and measures	▼
Prevention & Reduction	▼
Category of measure	▼
Support	
Legalization	
Responsibility	
Knowledge	
Type of measure	▼









SUBMIT INFO

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Thank you for contributing and helping tackle marine litter!

- * Solutions and measures 
- * Prevention & Reduction 
- * Support 
- * Financial support 
- * All sea basins 
- * Shellfish 
- *

NEXT



TIDE AGAINST MARINE LITTER

TOOLBOX



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MARINE LITTER INVENTORY

Learn more about the litter originating from aquaculture sources in the North Sea, Baltic Sea and the Mediterranean.



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AQUA-LIT



Tackling Aquaculture Debris

HOW CAN POLICY-MAKERS TAKE ACTION?

AUGUST / 2020



AQUA-LIT

Tackling Aquaculture Debris: How can policy-makers take action?

Marine litter, including plastic, is an increasing concern globally, since it causes harm to marine environment, coastal communities, and maritime activities, along with effects on economics, human health and safety. Therefore, it is considered a large challenge, which needs to be tackled.

Aquaculture and fishing activities are responsible for about 65% of the plastics released into the sea. However, very few measures to reduce marine litter, current and proposed, are related to aquaculture.

How AQUA-LIT can contribute for AVERTING THE DISCARDING OF LITTER IN THE MARINE ENVIRONMENT FROM THE AQUACULTURE INDUSTRY?

AQUA-LIT
Public Participation
Learning Labs & Interview

58 important recommendations for Policy-makers
Contribute to a healthy and sustainable ocean

Key Policy Recommendations

SUPPORT, namely technical, financial and organizational.

EDUCATION, TRAINING, COMMUNICATION and COOPERATION.

MONITORING losses and litter in the environment with innovative approaches and guidelines.

WASTE MANAGEMENT with waste collection points, deposit schemes, incentives, upcycling processes, waste flows.

PRECONDITIONS FOR LICENSING.

REGULATIONS through creation and inspections perform.

POLICY developing national law and incorporating and implementing policies in national laws.

HARMONISATION in licensing procedures and certification systems, of decommission.

CERTIFICATION including the standardisation of the labelling systems.

Identify the SHARED RESPONSIBILITY.

Identify the PRODUCER RESPONSIBILITY.

Identify the FARMER / USER RESPONSIBILITY.

Include criteria for CORPORATE SOCIAL RESPONSIBILITY (CSR).

MARINE DEBRIS MANAGEMENT through synergies among all the involved stakeholders.

DATA QUANTIFICATION on aquaculture debris.

RESEARCH and INNOVATION, enhancing knowledge and promoting interdisciplinary and international collaborations.

New MATERIALS and new DESIGNS for aquaculture equipment

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