

# BLUEMED Pilot: For a Plastic-free, Healthy Mediterranean Sea

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<http://www.blued-med-initiative.eu/pilot-action-on-a-healthy-plastic-free-mediterranean-sea/>

# The marine litter problem in the MED

## The Mediterranean is the most affected area worldwide:

- # 320 Millions inhabitants
- A closed basin
- 25- 30% of the maritime traffic
- A touristic destination
- Large rivers (Rhône, Nile, Po)



- Up to 1000 000 items/ km2 (Sea floor, submitted)

1% of the World's waters

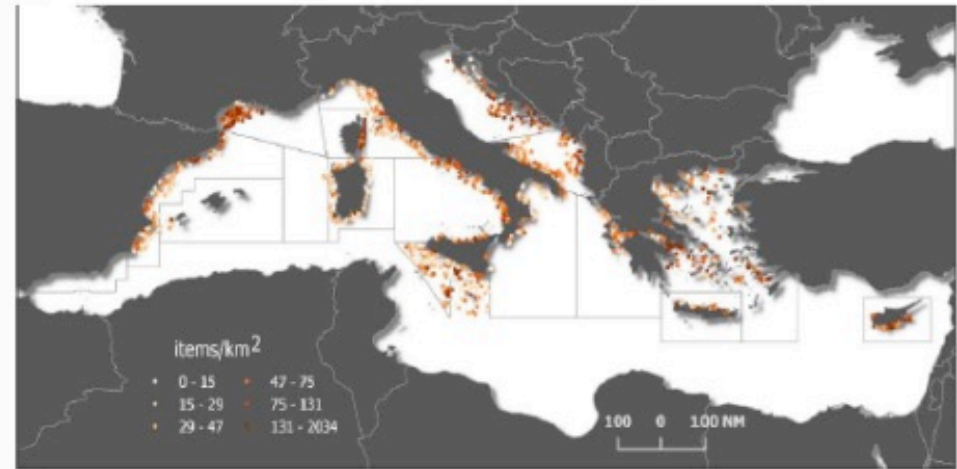
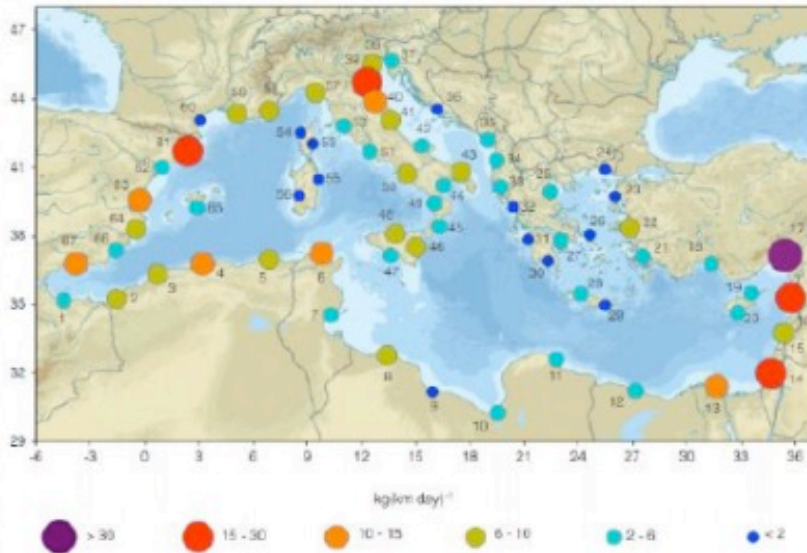
the Med Sea is a "plastic trap"

7% of all global microplastics

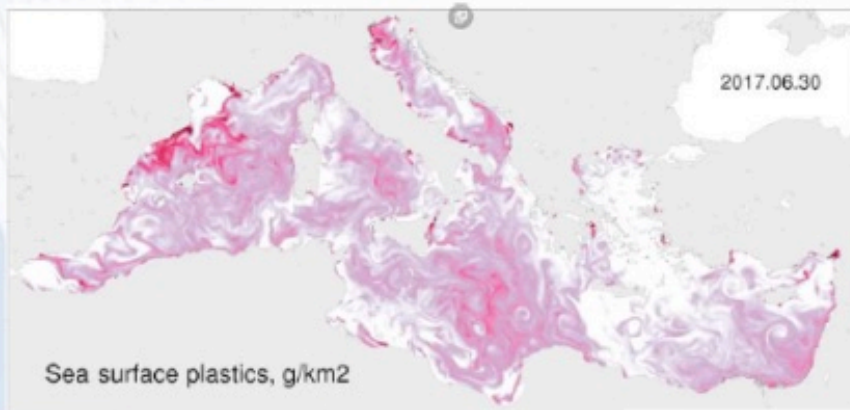


*After Gargani 2019*

# The marine litter occurrence in the MED



Total litter per km² seafloor (MEDITS)



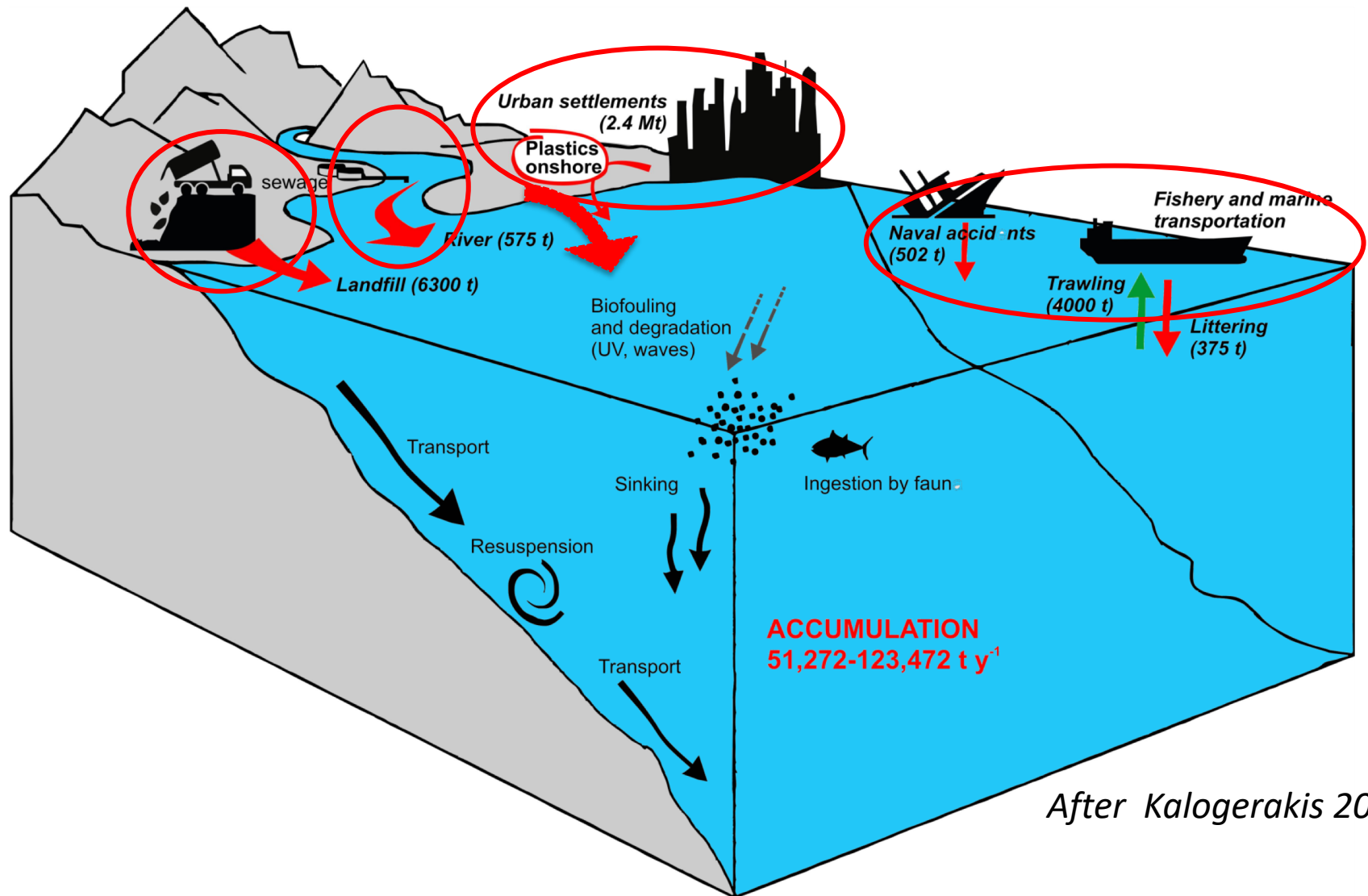
Floating plastics (modelled, *Liubartseva et al., 2018*)



% Sea turtles with ingested litter (INDICIT)

After Gargani 2019

# The marine litter sources



After Kalogerakis 2016



# Plastic marine litter: actions required (a)

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The majority of traditional plastics are not significantly biodegraded, either in the terrestrial waste disposal facilities and in marine habitats. Thus, the management of marine litter requires an integrated approach.

**1) Better define and assess the problem.** There are knowledge gaps on the litter composition, amounts, fate and actual impacts on the local ecosystems for some of the MED areas. Needs:

- a) build a denser marine sampling network with scientists/citizens of the area;
- b) better identify the local land-based sources of litter;
- c) build a Mediterranean marine litter data base.

The full engagement of scientists and citizens coming from all countries across both the Southern and Northern Mediterranean are required.

**2) Implement site specific strategies for removing/lowering the marine litter already existing in the basin.** Needs:

- a) removal of microplastics from surface, water column, seafloor and shore via the cooperation of pelagic and benthic trawlers;
- b) regular removal of beached debris from the beaches, plastics from rivers, watercourses and continental runoff waters, via fishermen and citizens;
- c) stimulate *in situ* biodegradation of marine litter components (?).

# Plastic marine litter: actions required (b)

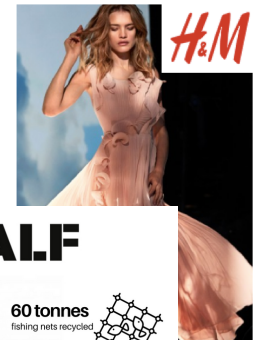
d) development of treatments/strategies for valorizing the collected materials to produce energy, new products or chemical building blocks.

These may include:

- ❑ dry and burn, to produce energy;
- ❑ fractionation and use of plastic fractions for the production of art products or objects;
- ❑ specific, innovative chemical and/or biological valorization processes for the production of useful chemical building blocks

Examples:

- ✓ Regenerated nylon and high-quality yarn fishing nets, then turned into brand new sustainable textiles.
- ✓ Conversion of plastic bottles (PET) and fishing nets into textiles, clothes and shoes
- ✓ Recycling of plastic litter and production of construction panels



# Plastic marine litter: actions required (c)

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## **3) prevention of marine litter.** Needs:

- a) selectively collect and recycle sustainably waste plastics by reducing use landfills;
- b) eliminate the land-based open and open-air dumps,
- c) remove (via filtration) plastics and tire fragments from highway and urban runoff, and wastewater treatment effluents;
- d) restrict use of mono-use products, non-essential plastic products and micro-granules in products;
- e) gradually adopt biodegradable (bio)plastics, by starting from those used in marine habitats (for fishing gears, tubular net for marine aquaculture, additives for painting and maintenance of ships and leisure boats...).

**4) Develop and promote:** a) effective and robust regulations/legislation, b) tailored incentives (for recovering plastics from the sea, for recycling plastics, etc), c) R&I actions, d) education and communication plans, e) robust partnerships between academia, industry, public institutions, regulatory bodies and the society, and f) long-term coordination of European/non-EU countries of the area, providing added value to regional, national and EU investments and efforts.

# IT hub: major actions identified

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- The majority of traditional plastics are not significantly biodegraded, either in the terrestrial waste disposal facilities and in marine habitats. Thus, the management of marine litter requires an **integrated approach**.

## Actions Identified:

- 1) Monitoring and Assessment
- 2) Preventing/ Recycling / Circular thinking
- 3) Collection and Valorization
- 4) Education/Trainig/Communication
- 5) Policies/Regulatory framework/Financing



# IT hub: major actions identified

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## **1) Monitoring and Assessment**

2) Preventing/ Recycling / Circular thinking

3) Collection and Valorization

4) Education/Trainig/Communication

5) Policies/Regulatory framework/Financing

# 1. Monitoring and Assessment

- ✓ Baseline, standards and guidance for monitoring methods;
- ✓ Smart monitoring devices and bio-indicators;
- ✓ Lakes and Rivers monitoring for presence of micro/nano plastics and their effects;
- ✓ Characterization of the impact of micro/nano plastics in the biota and ecosystem;
- ✓ Data modelling to produce maps of concentration of macro and micro litter;
- ✓ Data storage;

## INITIATIVES

- Less Plastic more Mediterranean – campaign (awareness, Greenpeace + R&I Centers)
  - Mayday SOS Plastica – biodiversity exp campaign (CNR; Tirreno sea)
  - Blue Panda Campaign (from FR, to IT and GR)
  - Goletta Verde (Legambiente, seas and river)
  - Arcipelago Pulito (Tuscany region/fishermen, Min Env., Legambiente «Salmare Decree»)
  - Fondali Puliti (fishing litter)
  - Goletta dei Laghi (lakes monitoring CNR, ENEA)
  - SCOR Working group 135 - Floating Litter and its Oceanic TranSport Analysis and Modelling (FLOTSAM)
- <https://www.researchitaly.it/en/news/macro-and-micro-plastics-in-the-mediterranean-cnr-researchers-on-the-rainbow-warrior/>
  - <https://www.greenpeace.org/italy/storia/5374/parte-il-nostro-tour-mayday-sos-plastica/>
  - [https://www.wwf.it/blue\\_panda.cfm](https://www.wwf.it/blue_panda.cfm)
  - <https://www.legambiente.it/golettaverde/>
  - <https://www.legambiente.it/legambiente-presenta-a-ecomondo-i-dati-dei-progetti-fishing-for-litter/>
  - <https://www.legambiente.it/spiagge-e-fondali-puliti/>
  - <https://www.legambiente.it/parte-la-goletta-dei-laghi-di-legambiente/>
  - <https://scor-int.org/group/153/>

# 1. Monitoring and Assessment

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- ✓ *Data storage;*

## PROJECTS

- **PRIN EMME**– Exploring the fate of Mediterranean microplastics: from distribution pathways to biological effects
- **Plastic Buster MPA** (Coordinator) - <https://plasticbustersmpas.interreg-med.eu>
- **INTERREG MEDSEALITTER** (Coordinator) (Developing Mediterranean-specific protocols to protect biodiversity from litter impact at basin and local MPAs scales, ended in July 2019) - <https://www.interreg-med.eu/>
- **INDICIT I, II** (Partners) - <https://indicit-europa.eu/> (tartaruga carretta)
- **Life Blue Lakes** (Coordinator)
- **LIFE CleanSeaLife** (Coordinator) - <http://cleansealife.it>
- **ENPI CBC MED COMMON** (Coordinator)
- **H2020 ODYSSEA** (Partner) - <http://odysseaplatform.eu>
- **H2020 CLAIM** (Partners), Cleaning Litter by developing and Applying Innovative Methods in European seas - <http://www.claim-h2020project.eu>
- **Marine Litter Database, EMODnet Chemistry** (Coordination) - <https://www.emodnet-chemistry.eu/marinelitter>; data access [https://emodnet-chemistry.maris.nl/v\\_cdi\\_v3/search.asp](https://emodnet-chemistry.maris.nl/v_cdi_v3/search.asp)
- **RESPONSE JPI Oceans** (Coordinator) Toward a risk-based assessment of microplastic pollution in marine ecosystems
- **Mediterranean Plastic Free**, National Geographic Explorer Grant

# IT hub: major actions identified

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- 1) Monitoring and Assessment
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# 2. Preventing/ Recycling / Circular thinking

- ✓ Plastic waste management and recycling;
- ✓ Treatment plant monitoring;
- ✓ Circular economy based smart app.
- ✓ Macro plastic removal and collection from river, watercourses and municipal wastewater streams;
- ✓ Plastic collection from Lakes;
- ✓ Smart manufacturing and Eco design of plastic-based products;
- ✓ Development and production of biodegradable / biocompostable plastic;

## INITIATIVES:

- Goletta dei Laghi (Legambiente)
  - #RisparmiamoPlasticaAlMare (Marevivo)
  - #StopMicrofibre (Marevivo)
  - Mercato Circolare (Start up, digital)
  - PlasticsEurope
  - Assobioplastiche/Novamont
  - CASTALIA / COREPLA
  - NetworkMinosse (awareness/training)
- <https://www.legambiente.it/golettadeilaghi/>
  - [https://marevivo.it/news/risparmiamo\\_plastica\\_al\\_mare-1002/](https://marevivo.it/news/risparmiamo_plastica_al_mare-1002/)
  - <https://marevivo.it/news/stopmicrofibre-1169/>
  - [www.mercatocircolare.it](http://www.mercatocircolare.it)
  - <https://www.federchimica.it/associazioni/plasticseurope-italia>
  - <http://www.assobioplastiche.org>
  - <https://lnx.castalia.it/it/rimini-07-10-novembre-2017-castalia-partecipa-ad-ecomondo-2017/>
  - <http://www.corepla.it/news/conclusa-con-successo-la-prima-sperimentazione-di-raccolta-dei-rifiuti-sul-po-combattere-il-mar>
  - [http://www.aqualabfondazione.it/4598\\_Network+MINOSSE](http://www.aqualabfondazione.it/4598_Network+MINOSSE)



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### PROJECTS:

- **H2020 ResUrbis** (Coordinator), Conversion of several types of urban bio-wastes into valuable bio-based products - <https://www.resurbis.eu>
- **KIC CLIMATE eCircular** (Coordinator), eCircular will promote smart manufacturing solutions, advanced eco-design approaches, new business models and alternative consumption patterns - <https://www.climate-kic.org/areas-of-focus/sustainable-production-systems/our-initiatives/ecircular/>
- **H2020 TERMINUS** (Partner) – for smart multi-layer packaging designed with intrinsic biodegradability properties - <https://www.terminus-h2020.eu/the-project/>
- **LIFE - Blue Lakes** (Coordinator)
- **Interreg Italia-Croazia NETWAP**, Network of small “in situ” Waste Prevention and management initiatives

# IT hub: major actions identified

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- 1) Monitoring and Assessment
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# 3. Collection and Valorization

- ✓ Technology for plastic removal/collection at coastal and sea level;
- ✓ Fishing for Litter;
- ✓ Cleaning activities by volunteers;
- ✓ Recovered plastics recycling, towards chemical materials and energy;
- ✓ Valorization of fishing waste, in particular disused gears and tools

## INITIATIVES:

- MANIFESTO HOM
  - <https://www.federpesca.it/manifesto-hom/>
- Fondali Puliti - Fishing for Litter
  - <https://www.legambiente.it/spiagge-e-fondali-puliti/>
- Tour Spiagge#PLASTICFREE
  - [https://www.wwf.it/spiagge\\_plastic\\_free.cfm](https://www.wwf.it/spiagge_plastic_free.cfm)
- Arcipelago Pulito
  - <https://www.legambiente.it/legambiente-presenta-a-ecomondo-i-dati-dei-progetti-fishing-for-litter/>
- #GenerAzioneMare - Campaign
  - <https://www.wwf.it/mediterraneanew.cfm>
- PFU (Tyres Disused) Campaign
  - [https://marevivo.it/news/riparte\\_la\\_campagna\\_pfu\\_zero\\_targata\\_marevivo\\_e\\_ecotyre-942/](https://marevivo.it/news/riparte_la_campagna_pfu_zero_targata_marevivo_e_ecotyre-942/)
- ECONYL regeneration System
  - <https://www.aquafil.com/it/sostenibilita/il-filo-econyl/> | <https://www.econyl.com/>
- EcocentroBlu
  - <https://www.minambiente.it/comunicati/rifiuti-porto-cesareo-inaugurazione-centro-la-plastica-raccolta-dai-pescatori>
- CASTALIA / COREPLA
  - <http://www.corepla.it/news/il-po-d-amare-torino-al-la-sperimentazione-di-prevenzione-del-river-litter-un-grande-nucleo-urb>
- Healthy Seas Initiative (Aquafil founding partner)
  - <https://healthyseas.org>



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## PROJECTS:

- una Rete per il Mare, PO FEAMP - <https://www.federpesca.it/presentazione-del-progetto-una-rete-per-il-mare-29-agosto-ore-1900-c-o-villa-matarazzo-a-castellabate-sa/>
- Life Project - Clean Sea Life - <http://cleansealife.it>
- Interreg Italia-Croazia, MarGNET – mapping and recycling of marinelitter and ghost nets on the sea floor - <http://www.margnet.eu/>
- H2020 - CLAIM (partner) - Cleaning Litter by developing and Applying Innovative Methods in European seas, <http://www.claim-h2020project.eu>
- Interreg Italia-Croazia, ML-REPAIR - REducing and Preventing, an integrated Approach to Marine Litter Management in the Adriatic Sea- <http://www.ml-repair.eu/it/about-project>
- Project PO-FEAMP, REsPoNSo: RiduzionE Pesca faNTasma in Sicilia -
- Regional project - Plastica in rete
- Progetto Pesca, Sicily - “Il nostro mare lo salvi chi può” - <https://www.progettopescaflai.it/evento/il-nostro-mare-lo-salvi-chi-puo-castellabate/>
- SIRIMAP - Sistemi di Rilevamento dell’Inquinamento MARino da Plastiche e successivo recupero-riciclo

# IT hub: major actions identified

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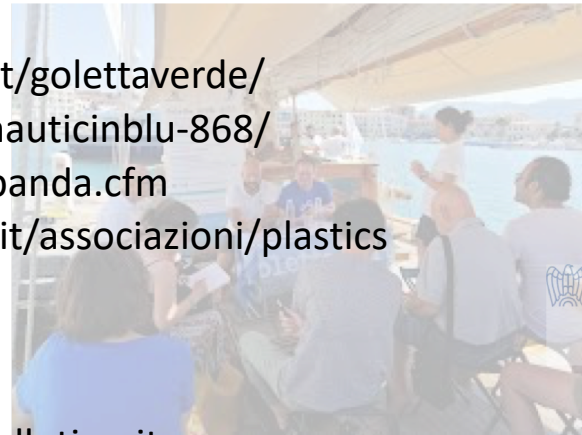


# 4. Education/Training/Communication

- ✓ High level conference/events and summer schools
- ✓ Massive Open Online Courses(MOOC)
- ✓ International Master Courses
- ✓ Public engagement, Citizen Science and e-learning training for general public
- ✓ New media use and gamification

## INITIATIVES:

- Goletta Verde
- Delfini Guardiani
- Blue Panda
- PlasticsEurope
- Annual International Conference - Micromed
- e-training and international master courses
- Mercato Circolare
- <https://www.legambiente.it/golettaverde/>
- <https://marevivo.it/news/nauticinblu-868/>
- [https://www.wwf.it/blue\\_panda.cfm](https://www.wwf.it/blue_panda.cfm)
- <https://www.federchimica.it/associazioni/plastics-europe-italia>
- <https://www.microplasticpollution.it>
- Conisma
- [www.mercatocircolare.it](http://www.mercatocircolare.it)



FEDERCHIMICA  
PLASTICSEUROPE ITAL  
Associazione Italiana dei produttori di materie pla



# 4. Education/Trainig/Communication

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- ✓ *New media use and gamification*

## PROJECTS:

- KIC CLIMATE e-Circular (coordinator)
- ML REPAIR (Partner)
- Blue Sentinels (confcommercio)
- Guardiani della Costa
- <https://www.climate-kic.org/areas-of-focus/sustainable-production-systems/our-initiatives/ecircular/>
- <http://www.ml-repair.eu/it/about-project>
- <http://dueproject.org/en/>
- <http://www.guardianidellacosta.it/i-partner/>

# Plastic marine litter: actions required

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- 1) Monitoring and Assessment
- 2) Preventing/ Recycling / Circular thinking
- 3) Collection and Valorization
- 4) Education/Trainig/Communication
- 5) Policies/Regulatory framework/Financing**

# 5. Policies/Regulatory framework/Financing

- ✓ Developing indicators for marine litter;
- ✓ Developing regulatory framework for collecting plastics at sea by fishermen;
- ✓ Developing standards for biobased plastics degradability at sea;
- ✓ Support Mediterranean Member States towards the implementation of the Marine Strategy Framework Directive;
- ✓ Promoting financial support to innovative enterprises or ideas

## INITIATIVES:

- MANIFESTO HOM
- ddi SALVA MARE
- Assobioplastiche
- Cariplo
- FLAG Trapanese
- Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise
- ISPRA
- <https://www.federpesca.it/manifesto-hom/>
- <https://www.minambiente.it/comunicati/salvamare-costa-bene-calendarizzazione-camera>
- <http://www.assobioplastiche.org>
- <http://www.fondazionecariplo.it/it/news/ambiente/plastic-challenge-sfida-alle-plastiche-monouso.html>
- <http://www.flagtrapanese.it/il-flag/>
- <http://www.izs.it/IZS/>
- <http://www.isprambiente.gov.it/it>

# 5. Policies/Regulatory framework/Financing

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## PROJECTS:

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- H2020 CLAIM (partners)
- INTERREG MEDSEALITTER, coordinator
- INDICIT I, II (partners)
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- <http://www.claim-h2020project.eu>
- <https://www.interreg-med.eu/>
- <https://indicit-europa.eu/>

*Thank You!*