

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

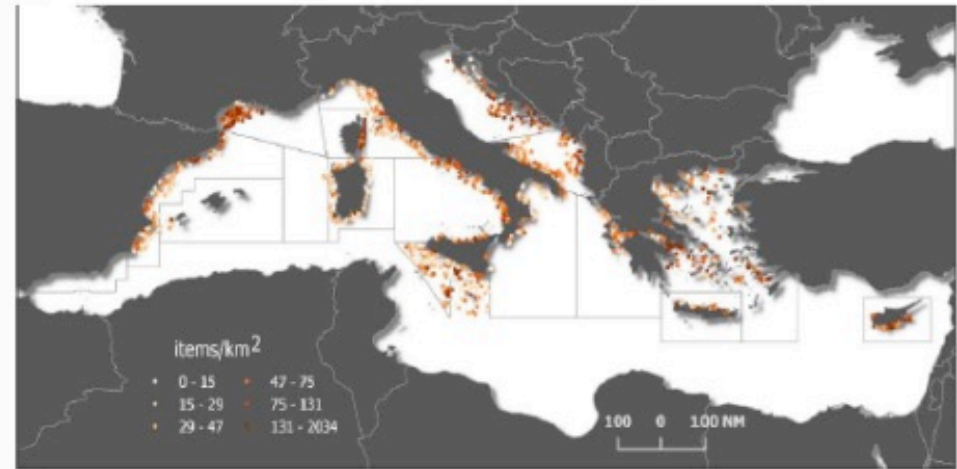
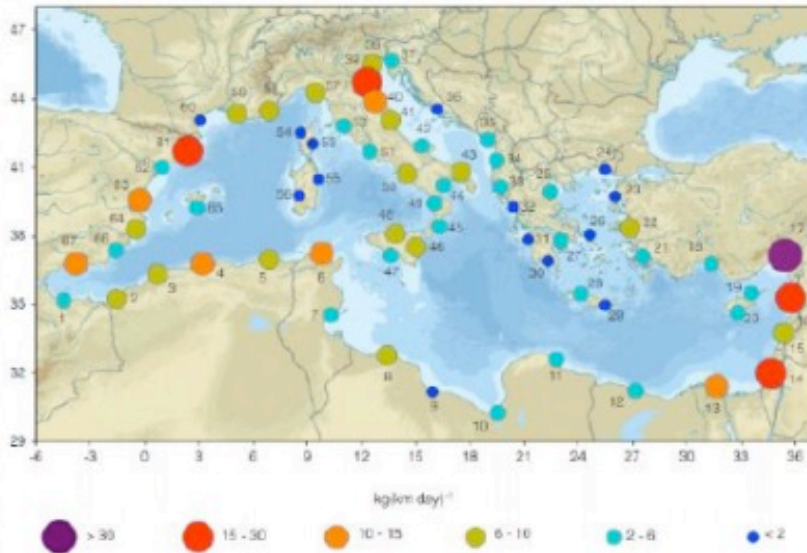
the Med Sea is a "plastic trap"

7% of all global microplastics

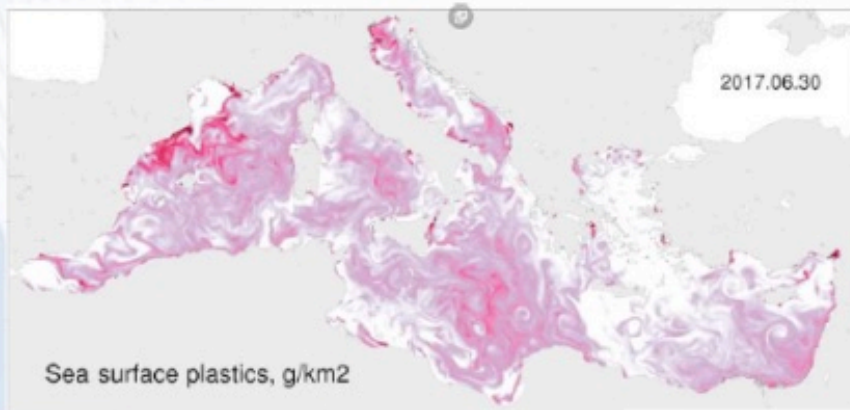


After Gargani 2019

The marine litter occurrence in the MED



Total litter per km² seafloor (MEDITS)



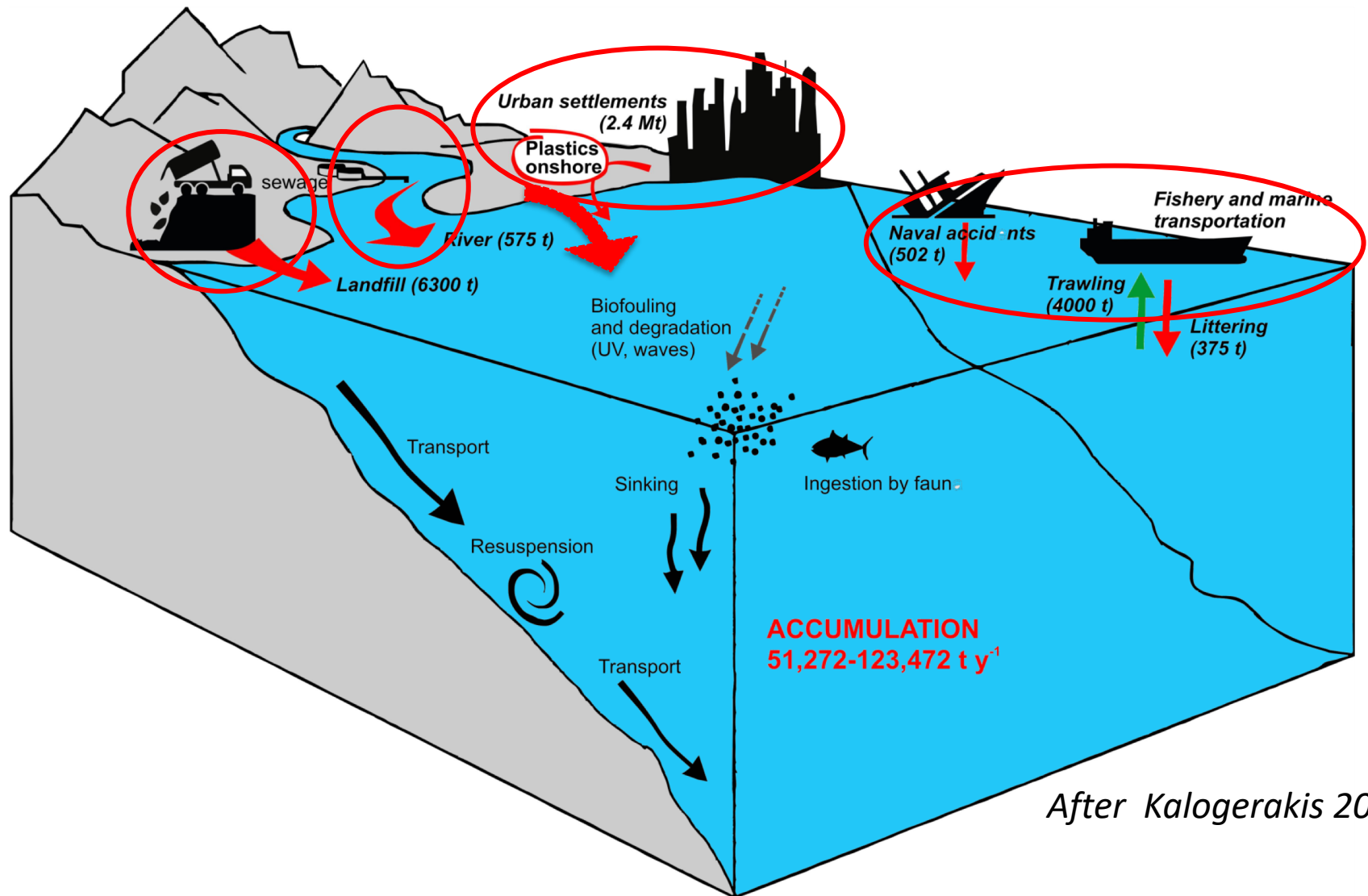
Floating plastics (modelled, *Liubartseva et al., 2018*)



% Sea turtles with ingested litter (INDICIT)

After Gargani 2019

The marine litter sources



After Kalogerakis 2016

Plastic marine litter: actions required (a)

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)

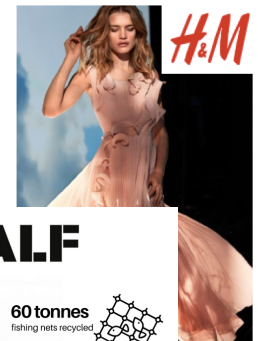
d) development of treatments/strategies for valorizing the collected materials to produce energy, new products or chemical building blocks.

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)

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

- 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

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.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

- ✓ *Baseline, standards and guidance for monitoring methods;*
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- ✓ *Lakes and Rivers monitoring for presence of micro/nano plastics and their effects;*
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- ✓ *Data modelling to produce maps of concentration of macro and micro litter;*
- ✓ *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
- **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

- 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/stopmicrofibre-1169/>
 - 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

2. Preventing/ Recycling / Circular thinking

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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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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
- 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/
- 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

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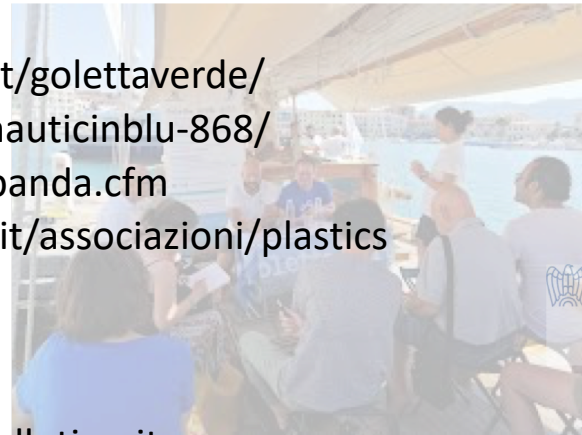
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4. Education/Training/Communication

- ✓ 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.federchimica.it/associazioni/plastics-europe-italia>
- <https://www.microplasticpollution.it>
- Conisma
- www.mercatocircolare.it



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PLASTICSEUROPE ITAL
Associazione Italiana dei produttori di materie pla



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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

- 1) Monitoring and Assessment
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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.fondazione cariplo.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)
- <https://www.climate-kic.org/areas-of-focus/sustainable-production-systems/our-initiatives/ecircular/>
 - <http://www.claim-h2020project.eu>
 - <https://www.interreg-med.eu/>
 - <https://indicit-europa.eu/>

Thank You!