

## The Solution project is structured in three phases.

1. Direct monitoring of macro- and micro-debris (water column, coastal shores) in the Mediterranean sea
2. Monitoring sentinel organisms – detection of content and effects of marine litter (in particular plastic and plastic additives) in bioindicator organisms in Mediterranean sea
3. GIS mapping of presence and biological effects of marine litter in Mediterranean sea



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# PLASTIC BUSTERS

“Plastic Busters” is part of an initiative to support sustainability launched through “Med Solutions”, a section of the UN “Sustainable Development Solutions” Network dedicated to the Mediterranean and coordinated by the University of Siena.

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How to detect presence and effects  
of marine litter in Mediterranean  
marine organisms:  
the solution for an integrated  
monitoring tool

## Rationale

The level of marine litter in the Mediterranean environment and the effects on sentinel organisms need to be reduced to achieve the Good Environmental Status (GES) as planned by the European Marine Strategy Framework Directive (MSFD) by 2020. Currently, this is a severe gap in establishing the presence and effects on marine organisms by monitoring sentinel species and implementing future mitigation actions.

Marine Litter represents a serious concern for the Mediterranean environment. Three billions of litter float or cover the sea bottom in the Mediterranean Sea, the prevalence (70-80%) is plastic waste. The increasing of marine litter is mainly related to waste production in-land: the average amount of municipal solid waste in the EU is 520 kg per person/year and projected to increase to 680 kg per person/year by 2020 (EEA).

The presence and effects of marine litter in marine organisms has been poorly investigated in European areas and represent threats that required a series of mitigation/solutions actions.

In particular, while evidence on macro and microplastic's negative effects on marine organisms is growing, little scientific investigation has gone into the problem in the Mediterranean or elsewhere (GESAMP 2010, UNEP-MAP 2012).

More information was required about plastic and microplastic inputs, spatial and temporal distributions, including transport dynamics, interactions with biota and potential accumulation areas. This could be incorporated into Environmental Quality Standards to inform Mediterranean policy makers.

**The main objective of this Solution Project is to solve this gap, evaluating the presence and effects of marine debris in Mediterranean environment using marine organisms as sentinel species, applying a new integrated monitoring tool.**



## Description

The project will be carried out using an oceanographic vessel (PLASTIC-BUSTERS) which will cover the whole Mediterranean basin.

The PLASTIC-BUSTERS, which will house researchers from various Mediterranean countries, will represent an opportunity for interaction with stakeholders in the main harbors touched.

Over a period of three months following the route showed in the map (sailing from Tuscany and arriving in Venice). The ship will also touch key areas in the Mediterranean basin characterized by different anthropogenic impact.

