



## SMILE Project

Strategies for Marine Litter and Environmental prevention of sea pollution in coastal areas



waste management

packaging

Waste sorting

marine litter

### PROJECT DESCRIPTION

Marine litter is one of the main environmental problems related to the marine strategy that involves many regions of Europe causing significant environmental, economic and cultural impacts. Waste in the sea constitutes a serious threat to the marine ecosystem since some species of high conservation value, attracted by materials and fragments, can ingest them, and this represents a danger also for humans as they enter the food chain. **Most marine litter is generated by human activities on land.** Among these, it is possible to enumerate the incorrect management of domestic urban and industrial waste, as well as tourism and recreational activities. For this reason, marine litter is also an economic problem; on the one hand marine litter on the beach discourage tourism and decrease the attractiveness of the place, on the other, even if litter is collected, it is not sorted generating additional costs for coastal municipalities. The SMILE project was developed based on the awareness that marine litter is, for 80%, of terrestrial origin, and that therefore there is a close link between marine waste and the correct waste management on land. Starting from this assumption, an integrated system for monitoring, reporting and managing waste was developed and tested at the Municipalities in the basin of the Maremola stream (Province of Savona), which provides for a series of actions aimed at curbing the environmental impact of the phenomenon and to raise citizens' awareness of environmentally correct behavior, in accordance with the **protocol on Integrated Coastal Zone Management (ICZM).**



### OBJECTIVES

The main objective of the project was to reduce the marine litter in coastal areas through an integrated approach based both on governance actions and on the development and operation of a waste reporting, detection and collection system at the mouth of the Maremola stream.

### PROJECT PHASES

The project, which involved citizens, local waste management operators and local administrators, consisted of the following monitoring, analysis and management actions aimed at building a process methodology:



- Preliminary analysis and monitoring actions related to advancing the knowledge on marine litter and on a monitoring system providing identification and census procedures of the beached objects and materials. For the monitoring and census activities of beached marine waste, reference was made to the "Methodological indications for the marine waste component" developed by ISPRA in the context of agreement protocols between the Ministry for Environment and the Regions concerning supplementary investigation activities supporting the implementation of the **Marine Strategy Framework Directive**. For this methodologies already tested and validated by other competent subjects were used, when available, adapting them however to the local reality and to the needs of the project. Moreover a monitoring protocol, a photo guide for coastal and shallow water waste recognition, and a waste reporting system have been developed, this latter useful for involving citizens in monitoring the good environmental status of the coast.
- **Pilot action**, including the construction of a "catching mechanism" consisting of two nets, the first (trammel net), placed at the mouth of the river, so as to be able to touch the bottom, the second (gillnets), located off-shore with the aim of capturing surface waste that was not detected by the first net. This action has shown that a large part of marine litter comes from the hinterland transported by the waterways that flow into the sea and, therefore, it is useful to improve the design of the "catching mechanism" in order to make it an efficient tool for collecting waste.
- **Governance actions**. Establishment of a technical committee involving the municipal administrations of the Maremola stream district (Pietra Ligure, Giustenice, Magliolo and Tovo San Giacomo), and waste management service operators. The coordination table had an important role in the definition of a waste management and prevention strategy and the creation of a local model for an efficient collection and disposal system which takes into account the existing best practices including market based actions. Acting at the district level and not at municipality levels, responds to a twofold necessity: that of optimizing the resources that each administration can make available and that of adopting an integrated approach to the waste problem.
- **Awareness raising and participatory actions**, consisted in an intense communication, dissemination and networking activity in order to advance knowledge on marine litter and positively affect incorrect behaviors and habits, as well as disseminate the results of the project at local, national and European level.

## PROJECT RESULTS

The project has helped to define some tools that have proven useful to combat the impact of marine litter. These tools have been provided to the municipal administrations of the area. The experiment carried out showed that the Management Model for reducing waste in the marine-coastal environment must focus essentially on three aspects:

- prevent potential releases from the waste cycle;
- reduce waste generation;
- remove waste from the environment in order to reduce the amount that arrives into the marine environment.

The above objectives can be achieved with the support of proper local scale waste management plans/ programs whose first step must be the estimate of the quantity and quality (typology) of waste from land and sea. The collection and subsequent processing of quantitative and qualitative data on waste allow to know the origin of the burden and thus better address the plan/ program first and then the individual actions to be introduced to reduce marine waste.

The analyzed environmental data of the project showed that the values achieved in terms of reducing marine litter exceeded the results set in the design phase:

- **15,5% increase of the sorted waste collection within the basin;**
- **67% increase in the quantity of correctly collected waste;**
- **25% decrease per year of the waste collected by trap nets;**
- **30,5% decrease of waste on the beach and 41% in shallow waters.**

The measures to be taken to combat the impact of marine litter must also foresee training/ information for the public and the different users of the coastal marine environment capable of raising awareness and inducing to correctly treat waste. The outreach and dissemination actions covered the entire area and benefited from the collaboration of the Municipalities that hosted the meetings and promoted the initiative. 4 meetings were organized, during which the coordinators of the Maremola working group presented the management and governance experience gained during the project. In addition, summer camps were organized for children who actively contributed to the dissemination of the project by participating in the outreach activities.



## The operational management tools developed to support public administrations in their commitment were:

- Drafting of the [“Protocol for the implementation of marine waste monitoring activities”](#). This protocol guided users during the numerous monitoring campaigns on the beach and in shallow waters, providing information on the method to be adopted for delimiting the analysis perimeter, and cataloging the waste found also thanks to the help of a photo-guide created by the project.
- Realization of a **photo-guide** to facilitate the visual recognition of waste found both on the beaches and in shallow waters and to catalog them. To each waste category (artificial polymers, smoke and tobacco, food, fishing articles, sanitary ware, rubber, clothing - textiles, paper and cardboard, worked wood and derivatives, metals, glass, ceramic and WEEE) a reference code from the European Waste Catalog (EWC) has been attributed, useful for classifying them and delivering them for disposal.
- Drafting of a **monitoring card** developed on the basis of the monitoring protocol and photo-guide, which provides an example on which to base the analysis of other coastal areas.
- Publication of an [efficiency report](#) on the trap network system.
- Elaboration of the [Environmental Management System of the Maremola basin](#) based on the ISO 14001 regulation with the aim of evaluating the activities on the territory which potentially generate waste dispersion in the coastal marine environment, and developing a marine litter oriented environmental improvement program which includes an initial environmental analysis focusing on waste, an impact analysis, and an environmental improvement program with identification of the required time schedule, managerial figures and resources.
- Elaboration of the [Example of special conditions for the assignment of the municipal solid waste management service aimed at preventing marine litter](#). The document makes reference to some minimum environmental criteria (mandatory pursuant to Legislative Decree 50/2016) and has the aim to support administrations eager to adopt waste management practices observing also the marine waste prevention and management principles. Since the Urban Solid Waste management practices vary from one context to another, three Special Tender Specification examples have been designed corresponding to three commitment levels (basic, medium and advanced) in order to allow administrations to identify the most suitable document for their basic content.
- Drafting of an [Analysis of stakeholders' perception of the marine litter related ecosystem services](#). The SMILE project envisaged a recognition activity with the main local stakeholders aimed at studying the perception of the marine litter topic by all those who frequent the coast at the Municipality of Pietra Ligure.
- Drafting of the **Methodology for the operational management model of marine litter prevention** addressed to coastal Municipalities and containing also an evaluation of the performance indicators, related to the improvement objectives, as well as the result indicators measuring the effectiveness of the implemented model. The document also envisages the review of the operational management model, aimed at verifying its effectiveness. The review is based on the elements emerged in the previous phase and on the analysis of the management problems encountered in the implementation of the entire Model, finally, based on the results of the analysis (including analysis of significance) decisions are taken concerning the Management Model's revision.
- Realization of an **Overview of good practices and market tools** that brings together the best experiences implemented at national, international and European level in the management and prevention of marine litter, whose purpose is to support local decision makers.
- Creation of a **reporting system on abandoned waste**, via the **Trasphic APP** or telephone. The App provides for the notification of waste and indication of its type through a picture taken and sent by the user; the GPS coordinates of the place are automatically recorded to facilitate the waste's removal by the assigned operators. The notifications are displayed on a [geo-referenced map](#) of the pilot area within the project's site. These notifications are associated with the items of the SMILE photo guide, classifying them according to the material. The APP allows to report on waste ashore with the same method used for the marine litter, therefore it can be used also in other contexts.
- Production of a **video tutorial** in Italian language presenting the best practices of marine litter collection and disposal.



**Acronym**

SMILE

**Number of reference**

LIFE12 ENV/IT/000289

**Reference Programme**

[LIFE](#)

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Regione Liguria

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**Start Year**

2013

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2016

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**Region**

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**Description**

LIGURIA