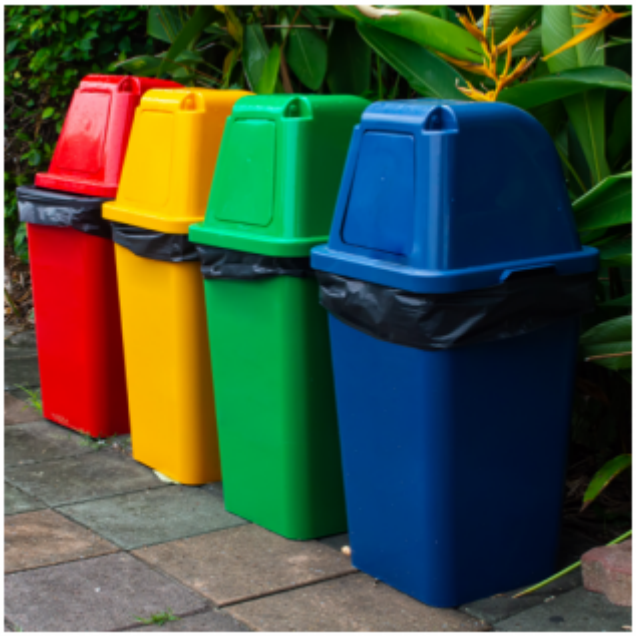
CREWSOD Project

Waste Collection Rewarding System On Demand

waste management | packaging | Waste sorting | WEEE | recovery of waste | organic waste

PROJECT DESCRIPTION



The **CREWSOD** project was born on the heels of the provisions of Directive **2008/98/EC** on waste which promoted two new targets to be reached by 2020: the recycling of 50% of domestic waste and 70% of waste from construction materials. The CREWSOD philosophy is in line with the ”polluter-pays” principle (who produces less waste pays less). In the pilot phase, the project area involved **7 Municipalities** belonging to the Piomba-Fino District Consortium which includes the municipalities of Montefino, Castilenti, Arsita, Bisenti; City of Atri, Castiglione Messer Raimondo, Pineto. Overall, about 8.000 citizens were involved in the project in the municipalities of Montefino, Castilenti, Bisenti and Castiglione Messer Raimondi, 1.500 in the City of Atri, while dissemination actions were mainly concentrated in Pineto involving 25.000 people (including residents and tourists). The CREWSOD project was structured on two main lines of intervention, one focused on **prevention**, the other on **recycling**.

OBJECTIVES

The main project objectives were to:

- support the innovative approach for waste collection services, aimed at raising people’s awareness about the waste prevention through the introduction of a **rewarding mechanism** based on the “polluter-pays” principle. To this end public meetings and school seminars were held focusing on the dissemination of good practices promoting the purchase of products with less packaging and/ or bulk products.
- transfer the control of the waste collection frequency and quantity from the public utility to the user;
- consolidate the concept "who produces less waste pays less" by testing the S-SOD system;
- experiment, through the installation of eco-houses, a model for choosing the waste collection service and the extent of the service to be used;
- demonstrate that sharing costs for waste management is a *best practice* also in terms of prevention.

The territorial context in which the project was implemented presented, at the beginning, the consolidated practice of waste collection with street bins, and the start-up phase of the "door to door" collection of differentiated waste.With the introduction of the "door to door" collection, an important outreach campaign was carried out, connected to the project that promoted citizens’ awareness about waste prevention and the recovery of sorted waste. The key aspect of the intervention was to make citizens aware that, in addition to being waste producers, they are also (and above all) consumers of services related to the treatment / disposal of the waste produced. This awareness has made it clear that citizens' behavior has a direct impact on the environmental, social and economic aspects. As service consumers in a system *on demand*, citizens have understood that they can affect the service costs in the direction of a reduction, becoming a key link in the rewarding mechanism. The environmental problem was therefore addressed by carrying out outreach activities in order to make users more aware of the issue of waste, thereafter concrete actions were carried out aimed at reducing the negative impacts of the waste production: recovery of

differentiated materials; savings in the services that led also to a decrease in CO2 emissions into the atmosphere due to the reduced traffic of vehicles in the traditional service.

PROJECT PHASES

The operational phases were as follows:

- computerization of the collection systems, both that at home and that through eco-houses;
- construction of 7 eco-houses in the municipalities of the Piomba-Fino area;
- monitoring of users' behavior for a statistically reliable period for both systems, that of collection at home and through computerized houses;
- characterization of the waste conferred in terms of specific weight;
- identification of indirect control methods of the conferred waste (the correlation between weight and volume led to some incorrect identification of the conferred waste);
- identification of cost parameters of the individual behaviors (both for the collection and disposal phases);
- simulation for individual users of the economic value resulting from their behavior and calibration of the cost parameters.

The tested service foresees two types of collection with specific costs: the differentiated door to door **SOD** (service on demand) and the direct delivery of the differentiated waste to equipped points or **S-SOD** eco-houses (self-service on demand). The **eco-house** is a computerized multiple bin for the collection of different types of sorted waste. Once the user is identified via bar code, the windows along the wall, where to introduce the waste, will open. An automated voice illustrates the operating, unlocking and transfer phases. The user goes to the structure, unlocks the window corresponding to the type of waste he/she is conferring and throws the sorted waste in the dedicated section of the bin. The transfer is then associated to the user through the bar code.

The prototype eco-house is composed of the following parts:

- **wooden structure**; the structure includes two doors on the short sides to allow the operator to access the container compartment;
- **computerized windows** for access control by means of a computerized system which enables user identification, window unlocking, waste transfer, and a final check of the window's proper closure; it is also possible to equip the containers with wheeled bins; each window is equipped with a galvanized steel slide to guide the materials to the container;
- **electronic device** for automatic detection of the filling level of each container;
- **weighing device** positioned under the mobile container for weighing the waste;
- **solar panel** for self-sufficient power supply;
- **devices for washing / disinfection**;
- **instruction panels** for users.

The embedded computerized identification system enables the structure to:

- unlock the windows for the waste transfer;
- account for each waste transfer by each user, and for the kind of waste transferred.

PROJECT RESULTS

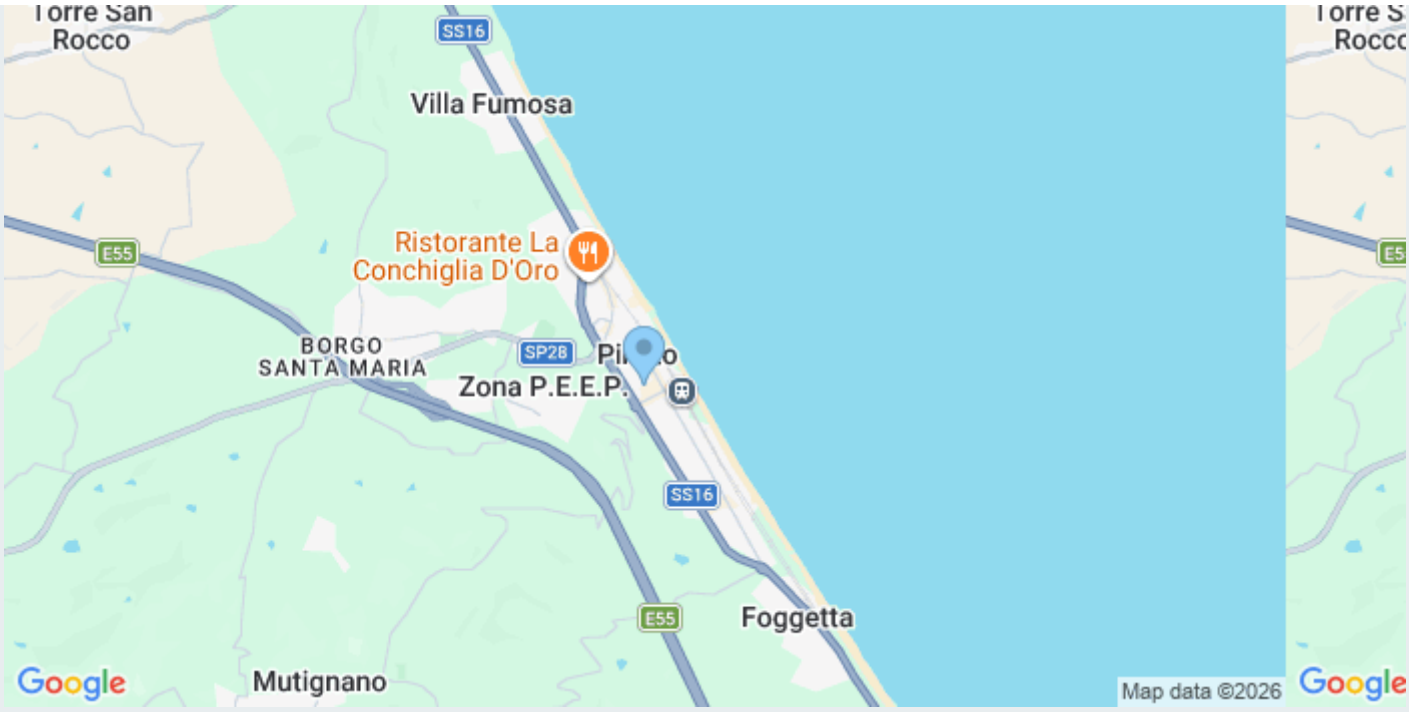
- **The project's methodological approach** resulted efficient to promote the implementation of sustainable waste management strategies through the adoption of virtuous behavior by users, demonstrating that the volume of waste can be reduced by involving the population through the **SOD (service on demand)** and **S-SOD (self-service on demand)** services. Users of each municipality where the pilot services were installed can use the following services:
    - delivering waste through the door-to-door service on predefined days of the week, the cost of which is totally included in the **Waste Tax**;
    - in case of necessity waste can be delivered also on other days:
        - to the nearest or more comfortable eco-house (without any time constraints), for free;
        - can book the load of the waste at home through the booking methods in compliance with the collection calendar with integration of costs according to specific rates
        - booked through the door-to-door service for an other day available accordingly to the calendar, paying the related fee.
- **Increase in the percentage of separate waste collection**: in the initial stages of the project the percentage of separate waste collection in the test area was approximately 5%, during the implementation phase separate waste collection increased gradually until reaching 54, 37%; 9 months before the end of the project (first quarter of 2016) the separate

waste collection reached 61.32%;

- **Decrease in waste generation:** In 2011 the total waste produced in the test area was 2.430.630 kg, in 2015 it was 1.995.708 kg, therefore there was a reduction of about 20%;
- **Analysis of the users' behavior**: the project analyzed integrated collection methods that allow users to obtain economic advantages both on the basis of the behavior in relation to the requested service and on the basis of the differentiation of the waste
- **Estimate of tax reduction by the Municipalities involved in the project:** The monitoring of the Municipalities in the Piomba Fino area highlighted the different users' behaviors, underlining how some of these could reduce their tax by 20-30%. The hypothesized cost parameters, would in any case cover the management costs of the collection services where applied. All the experimentation carried out on the CREWSOD system has in fact led to a punctual pricing system which, however, to date, has not been possible to apply due to the indefiniteness of the relevant legislation.
- **Creation of a database for 3000 (**residential and non-residential) **users,** with management software for the evaluation of the waste deliveries.

Replicability of the project:

- During the demonstration phase, thanks to the dissemination actions carried out, some municipalities in the Province of Teramo have launched European tender notices for the award of urban hygiene management service envisaging rewarding mechanisms with the use of eco-houses.
- After the conclusion of the Crewsod project financing was granted to the associated partner of the Project, the Piomba Fino Consortium, by the Abruzzo Region in the frame of the Development and Cohesion Fund 2007-2013 programming, aimed at the realization of a door-to-door separate waste collection system in the Municipalities of the Vallata del Fino. The Consortium implemented the system with the construction of further eco-houses.



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Acronym
CREWSOD

Number of reference
LIFE10 ENV/IT/000314

Reference Programme
LIFE

Beneficiary Coordinator

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EU contribution
964.077,00

Call Year
2010

Start Year
2011

End Year
2015

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