

CREWSOD Waste Collection Rewarding System On Demand

Roberta Centonze, Angela De Lauretis, Mirco Fulminis, Andrea Valentini

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Email: roberta.centonze@meritpartners.it

CREWSOD is a LIFE+ project (September 2011 – February 2015) aiming at reshaping the waste governance, through the implementation of the so-called *service on demand* and the application of a punctual tariff frame.

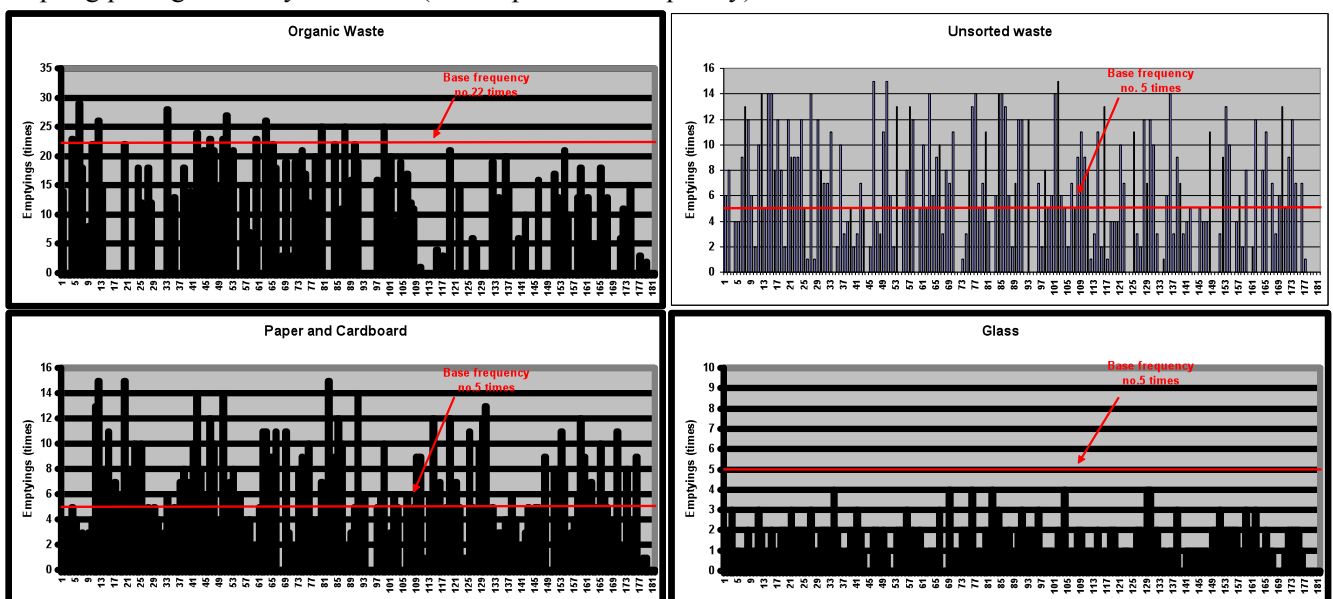
CREWSOD generates a clear perception of user's own burden: each user is a "service-consumer" not just a tax-payer and can decide *how much* waste collection service to use: who produces less quantity of waste, requires a less frequent collection service, and pays less either on terms of service cost to the service manager, or as tax to the Municipality.

To reach this aim, an integrated waste collection system has been activated customised on the single user needs, according to the following frame:

- Doorstep service on demand for the main waste fractions (dry, organic, paper and cardboard, glass, plastic and metals) both conferred by domestic and non domestic users; the system foresees a base frequency included in the base tariff: monthly basis for the dry fractions and weekly basis for the organic fraction.
- Eco houses services called SSOD (Self Service On Demand), automated structure with controlled/personalised access is located, in small urban centers, one per 300-400 users. Users can access the eco house with no time and frequency constraint; the user is identified (via badge or mobile phone) and the material conferred is also recorded in weight and volume.

The project takes place in the territory of the Consorzio Piomba Fino (Teramo, Abruzzo Region, Italy), where about 8.000 inhabitants live and the sorted waste collection is up to 60%. A punctual tariff system is foreseen that combines the waste disposed at the door to door collection (basis and extra ones demanded), plus that conferred at the SSOD eco houses (dry waste and organic fraction). The punctual tariff system is being experimented and has allowed an analysis of the behavioural attitudes of users to better calibrate the service offered.

First of all, the number of necessary disposals has been considered. Figure 1 shows the number of disposals made by each user for: dry waste, organic fraction paper and cardboard, and glass, during 22 weeks. Horizontal lines in the graph represent the number of guaranteed disposals in the punctual tariff determination that includes 22 emptying passages for the organic fraction (1 time per week frequency) and 5 emptying passages for dry materials (1 time per week frequency).



The graphs show that the needs of users are extremely variable, but, while for the dry waste and for paper and cardboard, the users asking for extra passages beyond the base frequency are the 54% and the 40%; for the organic fraction, only 7% requires an extra service; for glass collection, no extra collection are required at all. Organic fraction low requirement can be explained with the high involvement of users in home composting practices (50% of users).

Such result highlights the wide margin of cost reduction for many users, whom can reduce costs by changing behaviour. Figure 2 shows as money charge, the users' behaviour taking into account the amount of dry refuse and organic fractions accounted for. This value has been multiplied by the tariff for delivering the waste to their final fate.

The graph shows the single behaviours can determine a spanning tariff range from a few € to 120 €/year. The medium cost is 38,60 €/year, at present paid by each user.

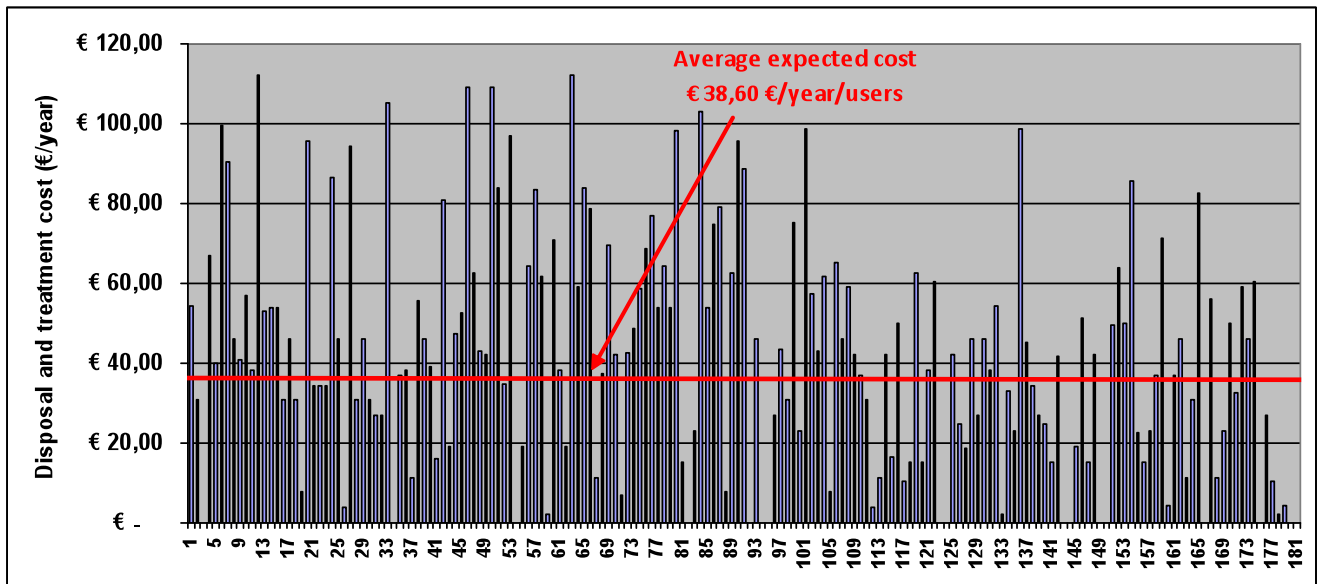


Table 1 describes the waste conferred to the eco houses SSOD, per type of material.

Since the first activation, the eco houses are increasingly utilised, although still of secondary importance with respect to the doorstep collection.

	Paper and cardboard	Plastic and metals	Glass	Organic fraction	Dry waste
Users (%)	29%	24%	13%	26%	28%
Average disposals (n./users year)	8,7	10,1	4,3	6,8	10,4
Average amount per disposal (kg)	1,62	2,21	4,38	4,43	3,11
Average year amount (kg/user year)	14,16	22,21	18,86	30,22	32,28

Table 1 shows that the users using the SSOD are about 1/3 of the total users, and go there rarely (less than once per month). The average amount per disposal is quite high (about 3 kg), the average year amount (kg/user year) varies from 14 kg/user for paper to 32 kg/user for dry waste.

It has to be born in mind that SSOD specifically works for the users desiring to avoid the extra service. Thus, once the punctual tariff system is in place, the value of waste collected in the eco houses are expected to increase.

In conclusion, CREWSOD demonstrate the high potentiality to change users' behaviours, putting in place a rewarding mechanism on the waste service tariff frame. Such potentiality is verified with the first results that show a high variability of attitudes. Thus, even into a territory with high environmental performances, behaviours can be improved. The user has the opportunity to reduce the tariff, both reducing waste, separating them better and compacting them in the bins, and carrying the waste to the SSOD eco houses.

Users and territory advantages are:

- Significant cost reduction for virtuous users,
- no time and frequency constraint conferring the waste to SSOD,
- visual impact reduction, avoiding the kerbside bins,
- direct users' disposals control,
- weight and volume accounting of disposals,
- service flexibility and personalisation.