
EXECUTIVE SUMMARY

REPORT ON THE TEMPORARY IMPLEMENTATION OF A DEPOSIT AND REFUND SCHEME IN CADAQUÉS

RETORNA
FOUNDATION FOR THE PREVENTION OF WASTE AND RESPONSIBLE CONSUMPTION



Amb la col·laboració de:



In Catalonia, nine million beverage containers are sold every day. Of these, only 3.5 millions are separately collected. The rest, 5.5 million, end up in landfills, burnt or littering in the environment. This means not only an important environmental impact but also a squandering of raw materials.

The Deposit and Refund Scheme (DRS) is a tool for the management of beverage packaging waste by associating an economic value to each beverage container in order to encourage consumers to take containers back to the points of sale, thus increasing the effective level of separate collection; moreover it is envisaged in **Act 11/1997, of 24 April on packages and package waste** as the basic instrument of packaging waste management to implement extended producer responsibility and ensure a great level of recovery of used containers.



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RETORNA'S PROPOSAL

Retorna is a non-profit organisation that comprises the recycling industry, environmental NGOs, unions and consumers. As part of its **Zero Waste** objective, Retorna seeks to reduce the generation of waste to a minimum. To this end, it works in the improvement of the current system of packaging collection system by implementing a Deposit and Refund scheme.

The proposal advocated by Retorna consists in making the **Deposit and Refund scheme** complementary to the **SIG** (Integrated Management System). In a first phase it will be aimed at one-way beverage containers. Integrated Management Systems will remain in place to take responsibility for recycling the containers that are not included in the Deposit and Refund scheme (tin cans, the containers of dairy products, liquors, wines, plastic trays..) through conventional separate collection (bins or door-to-door collection).

Deposit and Refund schemes promote reuse; they achieve a high level of recycling and entail important savings for local and regional bodies as they ensure a comprehensive implementation of extended producer responsibility.

CADAQUÉS PILOT TEST

Within this framework, Retorna proposed the City Council of Cadaqués to conduct a pilot test in order to gauge the effect of implementing a packaging waste management system complementary to yellow bins.

The general objectives of the project are:

- To show that a deposit and refund system is feasible
- To analyse the economic impact that a deposit and refund system has on municipal waste management from an economic and environmental point of view.
- To be an example that can be held up to politicians, companies, shopkeepers, institutions and members of the public at large.
- To assess the level of return of refundable containers.

Its specific objectives are:

- To determine the level of return with a deposit of 5 cents.
- To assess its success with both shops and shoppers.
- To measure its impact on the waste collection system and street cleaning.



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Except in the case of isolated and easy-to-manage measures, the results of separate collection in Cadaqués indicate that most containers in the market do not go into the recycling system and end up in the grey bin to be taken to the landfill of Pedret i Marzà.

The project is based on a temporary implementation of a deposit and return scheme for one-way beverage containers in the municipality of Cadaqués between 15 April and 30 June 2013.

The beverage containers that have qualified for the Cadaqués Deposit and Return Scheme have been beverage (water, beer, juices, soft and energetic drinks) plastic and metallic containers with a capacity not exceeding three litres as these are the most widely consumed products. A deposit of 5 cents was applied to all these containers, which ensures a percentage of container return between 70% and 90%¹.

The pilot test was promoted by Retorna and has had the support of a number of companies and organisations from the recycling industry that have provided financial support, machinery, know-how and logistics to ensure that the pilot test was adequately conducted. The contributing companies have been Gremi de Recuperadors de Catalunya, Internaco SA, Rhenus Logistics and Tomra S.A.

The pilot test was supervised by the Agencia de Residuos de Cataluña [Catalonia Waste Agency] which has monitored the conception and design of the test, its implementation and the analysis of results.

DIAGNOSIS

From the characterisations conducted, it has been estimated that **annual** consumption of beverage containers under the deposit and return system in **Cadaqués** is at approximately **some 1,377,000 units**. Average consumption of containers per inhabitant and day would be 1.26 units.

Separate packaging collection subject to a deposit ranged – prior to the pilot test – between 35% and 4.1% with a weighted average value of 11.99%.

According to data supplied by the City Council, **the collection and transport of the whole of the municipal waste has an annual cost of €1,006,976**, including street cleaning, rubbish bins and bulky refuse or €332/per inhabitant, a very high but plausible amount given the great touristic pressure and the high number of secondary residences in the municipality.



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¹Economia (2012). Evaluating the costs of introducing a Deposit and Refund System in Spain. Retorna

THE ROLE OF RETAIL OUTLETS

Retail outlets (supermarkets and small shops) are the key element in the deposit and refund system as they are in charge of managing both deposits and containers. They collect the amount paid as a deposit at the time of selling the beverage and refund that amount when consumers return the containers. Empty containers are then stored until the system operator collects them.

In order for the DRS to correctly work, it is essential to have the participation of an important number of retail outlets. In the case of Cadaqués, **eight small shops and two supermarkets participated: they account for over 95% of beverage sales for home consumption.**

A description of the duties of each type of retail outlet is given below:

Supermarkets

- Charge the amount corresponding to the deposit, which is registered by the centralised software system by means of a specific code.
- Provide room for the (free-of-charge) installation of the machine. In both cases, the machine has been located at the entrance of the supermarket inside their premises.
- Provide information on the beverages under the refund system sold.
- Refund the deposit (by a discount in the buy).
- Answer any questions consumers may have.

Small shops

- Charge the amount corresponding to the deposit.
- Provide room for the installation of the container collection bag.
- Provide information on the beverages under the refund system sold.
- Refund the deposit in cash.
- Answer any question consumers may have.

Consumers may return beverage containers in any of the retail outlets that participate in the test and depending on the type of retail outlet and the volume of returned containers, containers are collected manually or using a machine.

Generally speaking, supermarkets prefer using a machine as it does not take up staff time and occupies less space. On the contrary, smaller shops – where the volume of sales is lower - do not need to purchase a machine and prefer manual collection.

In this case, both systems have been tested. The two supermarkets have installed a return machine while the rest of the shops have opted for a manual management of containers.

The counting centre has worked perfectly and no technical glitch has occurred. No problem has arisen in connection with smells, leacheates or liquids either.



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RESULTS OF THE TEST

The monitoring of the fluxes of waste from containers under this pilot test is key to determine return results. In the case of Cadaqués, while it is a rather geographically isolated municipality, it is far from being a closed system and throughout the test there have been influxes of containers that do not come from participating outlets and which must be identified as such in order to accurately determine the results of the test.

The assessment of the level of return to the participating outlets has been done on the basis of two indicators:

- Total return of containers: for the duration of the test, the participating retail outlets sold 105,901 beverage containers under the deposit scheme and 81,183 containers were returned: the returned containers account for 76.6% of sales. If we take June as a reference, this percentage increases to 82.03%, and scales up to 91.23% in the final week of June. This means that packaging return increased continuously throughout the period.
- The return of labeled containers: in the final weeks of the test the level of return increased to reach 66.83% of labeled containers at the final week. This growth shows that the levels of return had not reached their peak and would have been higher if the test had lasted longer.

POTENTIAL RESULTS OF THE IMPLEMENTATION OF A DRS IN CADAQUÉS

From the results of the test and the Cadaqués refuse makeup, a calculation has been made of the economic and environmental effects of implementing a DRS.



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REDUCTION IN BIN WEIGHT AND VOLUME OCCUPATION

The Deposit and Refund System reduces volume occupation in bins and, consequently, economic costs and environmental impact can be reduced by readjusting collection frequencies, thus reducing the amount of materials that are sent to landfills.

A projection of the results obtained in Cadaqués yields an estimation of a **reduction in occupation between 18 and 25% in the case of light packaging bins and between 4.7 and 6.6% of volume in the case of the refuse bin.**

CLEANLINESS OF PUBLIC SPACES

Surveys indicate that there was also a perception of greater cleanliness during the pilot test, particularly on the streets but also in other leisure areas of the municipality.

REDUCED COLLECTION AND PROCESSING COSTS

On completion of the test, it has been assessed what economic impact it has had, if any, on the municipality and whether this is positive or negative for the municipal budget. To this end, three indicators have been used: variation in collection costs, variation in processing costs, and variation in the income from SIG.

As to the reduction on collection costs from an implementation of a DRS in the municipality, this would entail a very important cost reduction ranging between €24,242.05 and €35,372.07 per year, which represents between 6.5-9.5% of the annual cost of light packaging and refuse collection.

As to the decrease in income resulting from a reduction in compensation by Ecoembes (between €1,240.02 and €1,766.46 per year), this would be compensated by the reduction in collection expenses. **Net saving would be between €23,000.74 and €33,605.81.**



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Maintenance costs would also be reduced to a cost of between €1,742 and €2,420 per year as 1.91% of the weight of the dumping (6.62% in volume) would not go to the landfill. This saving has been calculated on the basis of the current dumping fee, but considering that it is expected to increase with time, the saving will be greater.

Finally, it would have been interesting to quantify in economic terms the proportional part of street cleaning attributable to the packaging under the study but such assessment is unfeasible as this flow is incorporated to general refuse. In any case, it would be fair to consider that the implementation of a DRS would have a positive impact.

CITIZEN RESPONSE

To assess the impact of the pilot test surveys have been conducted, one prior to the test and the other on completion of the test. In the final survey, it has been asked whether there had been any change in cleanliness to a number of spaces and 61% of respondents said that the streets of the village had been cleaner during the pilot test.

As to the level of approval of a DRS, after the test, **el 85% of the population agrees with the implementation of a Deposit and Refund system.**

RETAIL OUTLET RESPONSE

After the test, concerns regarding the loss of space have almost disappeared and the same could be said of fears of an increased workload. Fears of a decrease in sales have also been reduced while their image as a responsible business has been enhanced. As to a potential decrease in sales, the prevailing position is that it would not have a negative effect and that it would not affect the number of customers either. It should be underscored that all shopkeepers and retail outlet managers are in favor of implementing the system in Catalonia.

As to the performance of the test, no problems have been detected in either manual or automatic return. **Retail outlets have adapted well to the new system in their shops** (charging and returning the deposit). The individual interviews conducted indicate a general overall positive assessment in 100% of retail outlets.



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INCREASE IN SEPARATE COLLECTION

DRS has resulted in a fivefold increase in separate collection of packaging and has improved the cleanliness of Cadaqués; separated collection in the municipality has gone from a **level of 12% to a level of 66.58%** as a consequence of the incorporation of the deposit and refund scheme.

Charging a deposit on containers decreases the chances that these containers end up in a bin. Indeed, the test has shown that only 1 in every 10 beverage containers found in a bin or selectively collected were subject to a deposit under the scheme.

INCREASE IN THE QUALITY OF THE MATERIALS RECOVERED

Comparing the materials separated at a packaging selection plant and those obtained from the processing of the reject fraction, the bales of material recovered through the Deposit and Refund system (DRS) in Cadaqués have the highest standards of quality in the recycling sector.

This quality means that they reach **selling prices between 20% and 40%** higher – depending on the materials – than in the case of SIG.

SUMMARY TABLE OF THE RESULTS OF THE TEST

ECONOMIC

Variable	Indicators	
Light packaging collection cost	Collection frequency	😊😊😊
Refuse collection cost	Collection frequency	😊
Street cleaning costs	Increased cleaning productivity	😞
Processing costs	Reduced dumping and fee costs	😊😊
Income from tax rebate	Increased income from tax rebate	😞
Income from SIG	Amount of income from SIG	😞
Rubbish bin emptying costs	Rubbish bin emptying frequency. Commitment	😊😊
Quality of the selected material	Amount paid by recovery operators	😊😊😊



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ENVIRONMENTAL:

Variable	Indicator	
Level of filling of the light packaging bin	Reduction of collection frequencies	😊😊😊
Level of filling of the refuse bin	Reduction of collection frequencies	😊
Reduced need of final treatment	Reduction of dumped tonnes	😊
Reduced package littering	Perception by surveyed population	😊😊😊
Increase in separate collection	Percentage of separated collection	😊😊😊

SOCIALS:

Variable	Indicator	
People's positive response to DRS	Local people in favour of implementing a DRS	😊😊😊
Retail outlet's positive response to the DRS	Retail outlets in favour of implementing a DRS	😊😊😊



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