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Circular economy of commercial plastic packaging in urban environments

LIFE RECYPACK

GUIDE FOR THE IMPLEMENTATION OF LIFE RECYPACK SYSTEM IN A COMMERCIAL SHOPPING CENTER

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COMMERCIAL SHOPPING CENTER

1. BRIEF DESCRIPTION OF THE ACTION AND MAIN OBJECTIVES

The aim of the activities conducted in action B1 were related to test in a Commercial Shopping Centre (CSC) a separate collection of PE waste to be addressed to recycling facilities without mixing such PE waste with other typologies of waste.

2. STEPS TO PLAN AND GET THE OBJECTIVE OF THE ACTION

The main goals of the action were represented by the following activities:

1. Identification of the CSC most fitting with the LIFE RECYPACK purposes.

2. Informative Campaign

3. Collection, Resources, Transfer of waste to con centration point

4. Documentary control/waste quantification

2.1 IDENTIFICATION OF THE CSC MOST FITTING WITH THE LIFE RECYPACK PURPOSES.

The first sub action aimed at reaching an agreement with a commercial shopping centre (CSC) to test the activities foreseen in the project. Involving a CSC might not be easy due to the following possible issues:

- PE separate collection represent a cost for the CSC in terms of personnel. Such cost is widely related to training activities and PE waste man agement activities;
- Possibility of space problem for stocking the PE waste in a separate container.

To help in involving a CSC to test/conducting the activities we should emphasise the possible benefit in terms of reputation and image for the commercial shopping centre. Indeed, during the last years, more and more consumers are getting sensible about environmental issues. The second benefit might arise from the revenues that the CSC can obtain in selling the pure PE waste to a recycler. Such aspect depends on the contractual agreements already in force but if this could represent the correct leverage for starting the project.

Previous waste collection dynamic at the CSC

2.2 INFORMATIVE CAMPAIGN

The informative campaign has been conducted in 3 steps:

1. 1 to 1 communication and information processes,

2. Involvement workshop

3. Training of the personnel involved in the collection and sorting activities.

The one to one communication and information were conducted with the help of some supporting material. More in detail, for such activity apposite communication material has be studied and realized to present the project. The material was used to involve the shops in the project activities in one to one meeting.

The communication material contains:

1 - General aim of the project.

2 - Specific activity to be tested in the CSC with specification of PE target materials.

Communication and information material developed

Second activity:

1 - Aware the managers of environmental issues connected to plastic waste

2 - Explain the project objectives and

3 - Answer to punctual questions.

During this activity a form was distributed to participant to collect eventual further doubts as follows:

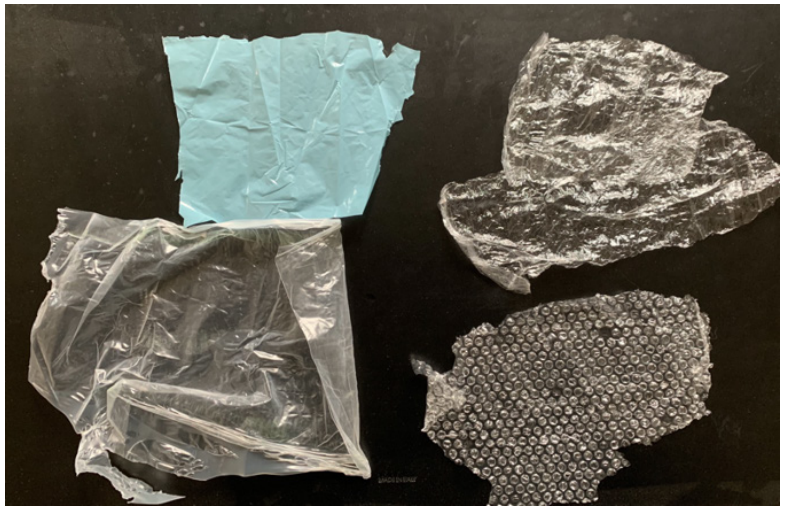
LIFE RECYPACK is a demonstration project that analyses different solutions to the current problems of packaging waste management in polyethylene (PE) and expanded polystyrene (EPS) in urban contexts. Currently, the methods of managing this waste do not favour the creation of a closed collection / recovery cycle.

In particular, in this business the collection of polyethylene (PE) will be tested separately from the other plastics. Enter here any comments, doubts you have

For information on the project, on how to join and for operational information on the type of waste to be conferred.

The third activity consisted in the training of the personnel.

The guideline is an operational document that aims at supporting the stuff in each activity starting from the identification of the material up to the adequate storing of the PE baled.



PE samples used for the one to one training

Polymer	Waste Produced
LDPE	Stretch film
	Bags
	Hoods for Stretch bench
HDPE	Fruit and vegetable boxes
	Studded membranes
	Stretch film

Material targeted inside the CSC

2.3 COLLECTION, RESOURCES, TRANSFER OF WASTE TO CONCENTRATION POINT

The collection was tested during the period ranging from March 2019 until the end June 2019. For the collection of the PE waste, big plastic bags usually containing products received at stores were used. Such procedure allowed the CSC not to use other typologies of containers.

Then, in order to appositely store the PE waste for the pick-up of a recycler a hydraulic press was rented for the whole period. The hydraulic press allowed the CSC to reduce the space required for the storage of the PE waste.

A short training was held to the personnel in charge of the operation of the hydraulic press in order to be compliant with the health and safety regulations.

Finally, a storage point was identified inside the CSC logistic area to store the PE waste for the pick-up of a recycler.

Hydraulic press rented

PE collection bags

2.4 DOCUMENTARY CONTROL/WASTE QUANTIFICATION

During the collection period a waste quantification document was filled in to monitor the PE waste collection day by day and the progress to the target. The waste quantification document was represented by a simple table as the one presented in the following picture . The waste quantification table was hanged on the hydraulic press and a short training was delivered to the person in charge of the operation of the hydraulic press on how to fill-in the document.

PE waste storage point

Date	PE collected (Kg)	Shop	Observation (if any)

Waste quantification table

3. CONCLUSIONS

Our results show that separating PE waste at the origin in CSC result in an overall better quality of the waste collected. Indeed, PE waste presented a high degree of homogeneity with almost no other waste fractions diluted in it. Such achievement is surely related to the efforts made in the teaching and training of the personnel of the CSC.

Such results, as expected, shows that CSC might be a good target to implement a separate PE waste collection; indeed, the high degree of packaging homogeneity, the large dimensions and the ease of separation and cleaning of those are good prerequisite to a proper implementation.

However, also economic sustainability of the operations matters. We discovered that the activities carried out for separating the PE waste form other waste typologies cost about 10%-15% more than the regular waste collection carried out at a CSC.

For such reason, the collection model tested during the LIFE RECYPACK project is not suitable where there is contract in place arranged as such: the recycler provides the containers for plastics and organize the collection with no cost for the CSC in exchange for the material. In order the project to be widely implementable in the Italian context, the recycler must be willing to pay a “premium price” of about 10%-15% to cover additional cost incurred by the CSC. However, a fundamental aspect emerging form interviews with recyclers showed that after the China plastic ban the price of PE slightly decreased and for such reason might be difficult for a CSC to obtain a premium price form a recycler. The situation is also sharpened by the fact that the degree of competition between plastic packaging collection and recycling firms is quite low in Italy.