



Report on recycling methodology for packaging sector, possible adaptation and upgrade of the technology

Deliverable 5.1

WP5 - Demo Case C. Creation of an effective after-use plastic economy by means of multisectorial cascaded approaching, adapting sorting technologies and in-line monitoring system

CIRC-PACK - Towards circular economy in the plastic packaging value chain

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PUBLISHABLE SUMMARY

The main objective of this deliverables was to demonstrate different strategies for improving conventional recycling system and to validate a new approach for recycling plastic material coming from different sectors.

It has been demonstrated the real potential of adapting current recycling units for fossil-based products to be used for recycling bio-based products with a minor reduction of efficiency. In this sense, the thermal sensitivity and the water absorption capacity of the bio-based materials are the two main factors affecting to the recycling process. Therefore, these are the two main parameters to be taken into account in order to improve the recyclability of the new materials developed by NOVAMONT in the Task 3.4.

Current recycling line in MI-PLAST is old fashioned and its capacity is mainly used for fossil-based plastics. It can be used for recycling of smaller quantities of bio-based products. In case of recycling bigger quantities, it is MI-PLAST's opinion that new recycling equipment especially designed for recycling of biomaterials, would be much better choice.

In this study has been validated the approach to combine post-consumer and post-industrial plastic waste to generate a stable and trustworthy supply of recycled material for film blowing process. The sources of rLDPE and rLLDPE material coming from different sources: post-consumer and post-industrial waste in Croatia (Croatian scenario) and post-consumer waste in Spain /Spanish scenario).

As each of obtained films has been performed with different waste materials and their origin is unknown, it is not possible to know all the different additives that might be present in each film. Although the results of characterisation are good, the mechanical properties are not comparable between each other since both originated from different sources.

As in each of the countries studied the separation process of the materials is different, the work methodology has been designed to optimize the properties and to use the maximum amount of recycled material. In this sense, this task has obtained very good results, because it has been possible to generate a film with material coming from both scenarios.

Therefore, it is possible to conclude that the work methodology developed for the generation of recycled material has been a success in both cases, since it has been possible to recycle different sources of materials together.