

## FEASIBILITY ASSESSMENT OF THE INNOVATIVE CREASOLV PROCESS FOR POST-CONSUMERS PVC FLOORINGS CIRCULAR VALORIZATION

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### ABSTRACT

Recycling of plastic waste is vital, but only a small fraction of the newly produced plastic materials use recycled components. In addition, a limited quantity of the whole range of materials is being recycled, since the cost to obtain high quality products is extremely high compared with the virgin ones<sup>[1]</sup>. Specifically, the recycling of PVC post-consumer waste from flooring is limited to around 1% while the rest is either incinerated or landfilled, leading to the leach of hazardous compounds into the environment and the lack of exploitation of many high-added value compounds<sup>[2]</sup>. The EU project “Circular Flooring” aims to establish a circular recycling process for post-consumer PVC floor coverings by developing a recycling system that removes legacy plasticizers from PVC flooring using the CreaSolv<sup>®</sup> Process. For assessing the industrial application of a CreaSolv<sup>®</sup> Process recycling plant, the feasibility of the process should be evaluated and ensured. As a result, the objective of the current work was the development of a business model, using the Business Model Canvas (BMC) tool, and a cost model, for a CreaSolv recycling plant that has been designed in the frame of Circular Flooring EU project for post-consumer PVC flooring valorization. The basic business components creating the BMC (Value proposition, Customer segment, Customer relationship, Channels, Key partners, Key activities, Key Resources, Revenue stream, Cost structure) and the model key parameters for implementing the economic feasibility assessment (production size, production line and main general processes, input and output flows, cost of the non-recyclable waste fraction, cost identification, auxiliary cost, other costs) were considered and analysed. According to the results and taking into account the need for treating PVC waste, the innovative CreaSolv technology has the potential to enter the market and act as a solution for the valorization of plastic waste that up to now is unexploited.

**KEYWORDS:** Business and cost model, Circular recycling process, Economic feasibility assessment, Plastic waste treatment

**ACKNOWLEDGEMENT:** The Circular Flooring project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 821366

### REFERENCES

- [1] Probst L, Frideres L, Cambier B, PwC Luxembourg & Solberg S, Lidé S, PwC Sweden (2016). *Sustainable supply of raw materials - Optimal recycling*, European Union.
- [2] Plastics Europe (2017). *Plastics – The Facts 2017*, Brussels.