



PolyUrethane Recycling Towards  
a Smart Circular Economy

# Deliverable

D5.2 Technical report on the methodology for measuring the social innovation of PU recycling and quantification of the social innovation

WP5 – Technical report on the methodology for measuring the social innovation of PU recycling and quantification of the social innovation

## Project Information

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## Publishable Summary

A social analysis of the PReSmart recycling system was carried out, building upon the Social Life Cycle Assessment methodology, with the purpose of identifying i) relevant social aspects for PReSmart and chemical recycling in general, and ii) risks which currently characterize sectors where the technology can be implemented (mainly waste management and chemical sectors). The system analysed fulfils two functions: the management of PU-based end-of-life mattresses and the production of recycled polyols and isocyanates, which can be used for manufacturing a variety of products. The final products manufactured out of the recycled polyols and isocyanates are out of the scope of the analysis.

The relevant social aspects (or topics) are those towards which efforts will be needed to avoid, reduce, or magnify the social effects due to the introduction of the innovative PReSmart recycling technology. Their identification involved different stakeholder groups, covering the PU value chain. Overall, nineteen relevant social aspects were identified as relevant, representing six stakeholder groups (users, local communities, society, value chain actors and small-scale entrepreneurs). Social topics regarding users and consumers, value chain actors and society were among the most important, followed by local communities.

Overall, no social topic can be excluded, but they can be classified according to a five-level scale, from “not important” to “very important”, reflecting the priority of interest and of intervention claimed by the organizations of the sector. Eleven social topics were defined “important” (product quality, health and safety, end-of-life responsibility, transparency, technology development, public commitment to sustainability issues fair competition, eco-industrial partnership, supplier relationships and fair trading, safe and healthy living conditions, promoting social responsibility), six topics were considered “moderately important” (contribution to economic development, community engagement, feedback mechanism, respect of intellectual properties, access to immaterial and material resources, wealth distribution) while two “slightly important” (women’s empowerment, corruption).

Positive social effects are expected for the implementation of the PReSmart technology, mainly in relation to access to immaterial and material resources, contribution to economic development, fair competition, product quality, promoting social responsibility, public commitment to sustainability issues and technology development. When considering the management of EoL mattresses, socio-economic effects are expected mainly in terms of end-of-life responsibility and technology transfer, since the technology application could be expanded to other types of materials. When considering polyols and isocyanates production, the main socio-economic effects are expected in term of access to immaterial and material resources, since materials recycling avoids raw material extraction, and product quality thanks to the creation of high-quality secondary raw material.

The introduction of PReSmart recycling technology could effectively provide a new opportunity of promoting sustainability issues in the PU value chain: transparency and communication will be key to guarantee traceability and safety on the recycled material, thus enhancing interest and trust of the final consumer.