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Digital Aided Material Recycling: Direct Citizen Participation for Local Recycling

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TREO Talk Paper

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Abstract

Global challenges and current crises (climate change, war, resources/energy) have an impact down to the local level in rural regions and lead to significant consequences for citizens. To meet the challenges and crises, transformations are needed at different levels. The aim of the "Transformers" project presented here is to develop innovative and at the same time participatory approaches for a circular economy in the fields of energy, recycling and agriculture. Together with stakeholders from business, administration, environmental organisations and society, sustainable solutions and concepts for transformation in different application fields will be developed. Especially in the field of recycling, the intensive participation of citizens offers the possibility to implement recycling on a small scale in rural areas.

Information technologies can be used to integrate and support citizens as co-creators in the overall process of a new waste management concept. Within the field of digital participation, the focus lies on benefit creation, motivation and transparency. In this respect, citizens would not only be involved in the new solution in a consultative way or through prepared activities such as "collecting and sorting waste". Instead, they act as key enablers and actors of a new business process.

The first step in this research project is to empirically identify suitable material flows in domestic waste that can be economically recycled on a small scale. The technical feasibility must also be examined. The most promising materials are those made of plastics that can be processed into recyclate on site. As part of a direct participation of citizens in the new recycling solution, its added value and design are also subject to research. The aim is to explicitly address a widely diversified civil society by researching in the area of benefit creation and motivational mechanisms: Which benefit is crucial for which group of people and which motivational mechanisms should be chosen? One attractive incentive system that could be considered is a points system. Citizens would receive points for special sorted waste that could be exchanged for vouchers and redeemed in local shops. Furthermore, free or discounted new plastic products from own local production (3D printing) are also conceivable for the participating citizens. In financial terms, the system would be dependent, for example, on the industrial sale of the recyclate produced from the sorted waste. Transparency is in general a crucial aspect for successful participation projects. The subsequent processes and the use/processing of the recycled materials into recyclate needs to be presented transparently in order to avoid possible misuse. Cases, where carefully separated waste is landfilled or energetically recycled abroad, should be prevented.

We expect that direct citizen participation in a local recycling solution as part of the circular economy will lead to multiple benefits. These include improved environmental awareness, higher material recycling rates and lower waste and CO_2 emissions.