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Enhancing the quality of paper for recycling

Recycling paper saves water and energy, and it reduces waste. Recovered paper is a major resource in central Europe, but different countries collect with different effectiveness. ECOPAPERLOOP looks into paper and packaging: It encourages a more efficient transnational approach – by developing assessment methods and better product designs, by encouraging innovation and by increasing awareness.

The ECOPAPERLOOP project wants to improve paper recycling: Paper is not always recycled where it has been collected. So to allow more efficient collection processes on one hand, and to achieve better raw material on the other hand, all actors need to cooperate more intensely. What does a communal authority know about the further processing of the paper collected? Part of the work of the ECOPAPERLOOP project involves obtaining data about collection systems in various regions. This information is combined with feedback from paper mills about the utilisation of paper for recycling in the mills, their satisfaction with the qual-

ity – and their suggestions on how to improve the situation. All this will be incorporated in recommendations, which are tested in a model region and communicated to the partners in the paper value chain in the respective regions. Most of all ECOPAPERLOOP is about raising awareness – helping all the partners in the paper chain understand how they can contribute to enhancing the quality of paper for recycling.

The problem of non-paper components and adhesives

Every kind of packaging looks different. But can they all be

The science-based assessment of the recyclability of paper-based packaging that ECOPAPERLOOP develops can be adopted by the ERPC, a wide set of stakeholders on the EU level, and serve as a reference for EU legislation and standards such as EU ecolabels.

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recycled alike? What makes a paper product sustainable? Are there ways to package goods that are better for recycling than others? Identifying suggestions for the perfect ecodesign of packaging is another goal of ECOPAPERLOOP. Adhesives play an important role: Certain kinds of glue applications can virtually disappear in the beginning of the recycling process, only to reappear in the final stage to cause problems. Ideally after the paper or cardboard product is dissolved in water, the adhesives used form cohesive pieces that can be screened off while the diluted fibre soup passes through a screen. But some adhesives dissolve as well, accompanying the fibres on their way to the paper machine. Here the recycled fibers are dried to form new paper or cardboard – and with the water evaporating, the adhesive returns, forming sticky particles that sit on the paper screen, occupying the place where recycled fibres should be, and leading to defects in the final product. For packaging, ECOPAPERLOOP partner PMV in Darmstadt has developed a new recyclability evaluation method and currently jointly practices this method with the partners. Labs in all partner countries dissolve packaging samples, extract the adhesives, visualize them on blackened filter paper and evaluate them by optical image analysis. With the data collected from many samples, a scorecard will be developed that helps to assess the recyclability of packaging products.

A life cycle analysis to spur ecodesign

Another way to look deeper into the sustainability of a product is to compare scenarios by performing a life cycle analysis (LCA). Paper researchers from COBRO in Poland and Innovhub-SSI in Italy work together to look into the environmental impact of possible product ecodesign improvements, especially with respect to the recycling process.

71.7
Percentage of paper and cardboard that was recycled in Europe in 2012

3.5
Average number of times each paper fibre has been recycled in Europe in 2012

160
Packaging products tested by the ECOPAPERLOOP project for their recyclability

Photo: © Axel Fischer



Project: ECOPAPERLOOP
ERDF funding: € 1 781 259
Duration: 2012 – 2014
Website: www.ecopaperloop.eu