

A Change in Thinking

Figures and Strategies for Circular Economy in Germany

Germany's plastics associations presented current country data on the material cycle of polymers in mid-October. The survey provides a comprehensive picture of the material flows from production to utilization, including recycled materials for the first time. Controversial discussions between various players along the value chain took place during a symposium that followed.

Against the background of almost daily new headlines about plastic waste, 12.3% was the number of the day at this year's symposium hosted in Berlin, Germany, by Beteiligungs- und Kunststoffverwertungsgesellschaft, BKV GmbH for short. The figure quantifies the proportion of recycle in the total amount of plastics processed in Germany in 2017. More precisely, 1.8 million t out of 14.4 million t of processed plastics consisted of recycled material (Fig. 1). This figure is part of the study "Stoffstrombild Kunststoffe in Deutschland 2017" (Plastic Material Flows in Germany 2017) conducted regularly by Conversio Market & Strategy GmbH on behalf of the German plastics associations.

In addition to detailed plastic production quantities and the application and utilization of plastics, the survey also puts numbers on the production and processing of recyclates for the first time. The market researchers surveyed around 2000

companies in plastics production, processing, and utilization, and consulted official and other statistics. The use of recycled materials at the rate of 12.3% serves as a new reference point for the numerous debates. Some plastics experts had expected a lower value and were therefore positively surprised.

BKV Managing Director Rainer Mantel also presented other figures from the brand new study (Fig. 2). Around 21.8 million t of plastic were produced overall in Germany last year, including 1.9 million t of recycled material. Waste plastic in the same year totaled around 6.2 million t. According to Mantel, the discrepancy between the production volume and waste is explained by the fact that plastic applications have different periods of use and some products have a high export quota. 46.5% of waste plastic went into material recycling, almost 1% into feedstock recycling and 52% into energetic utilization

in 2017. Material recycling reached its highest value to date in 2017 and, at approximately 2.8 million t, is at about 125% of the value from 1994. Symposium participants agreed that material recycling still harbors a lot of potential, but energetic utilization should not be demonized. "Reducing energy utilization is primarily an economic factor," Dr. Michael Scriba, Managing Director of mtm plastics GmbH (Borealis), pointed out. If the collection and sorting effort is not worthwhile or does not pay off, incineration is an important alternative.

Politicians Are Aware of the Issue

A very lively and definitely personal perspective from politics was contributed by Franz Untersteller, Minister for the Environment, Climate Protection, and the Energy Sector of the federal state Baden-Wuerttemberg. He is currently exploring the issue of plastics in the environment intensively due to an extensive inquiry from his party fraction (the Greens) in the state parliament. Untersteller is aware of the problems and opportunities presented by the plastics cycle. "Meanwhile even discounters are increasingly offering loose vegetables without packaging," is one of Untersteller's many examples. "That costs money, and is not only happening due to an ecological conscience but because environmentally aware consumers are a growing segment." Measures intended from the start of the value chain are in the meantime also honored by the consumer at the end.

Top-class line-up at the BKV symposium (from left to right): Matthias Stechhan (Lyondell-Basell), Ralf Brinkmann (Dow), Franz Untersteller (State Minister), Dr. Michael Scriba (mtm), Dr. Rainer Rettig (Covestro), and Rainer Mantel (BKV) (© BKV)



A question for politicians is how to intensify and stimulate the cycle in a sensible manner. In this context, Untersteller criticized the recently passed German packaging law with these words: "The goal was to create a giant, but a little mouse was born." In Untersteller's opinion, an EU plastics tax would be more a source of financing than a measure with a political control function. The direction of regulation needs to be carefully considered. In the industry, the minister acknowledges the impulses for greater product responsibility but demands more intensive ecological product design.

Activities and Fields of Action of Raw Material Producers

New approaches and goals for the raw materials industry were discussed by Ralf Brinkmann, President and Chairman of the Board for Dow Germany. At the polyolefin producer, the environmental problem of disposal or recycling has reached the top management level in

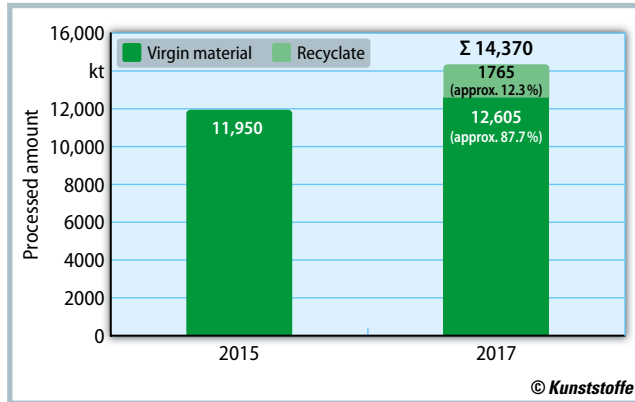
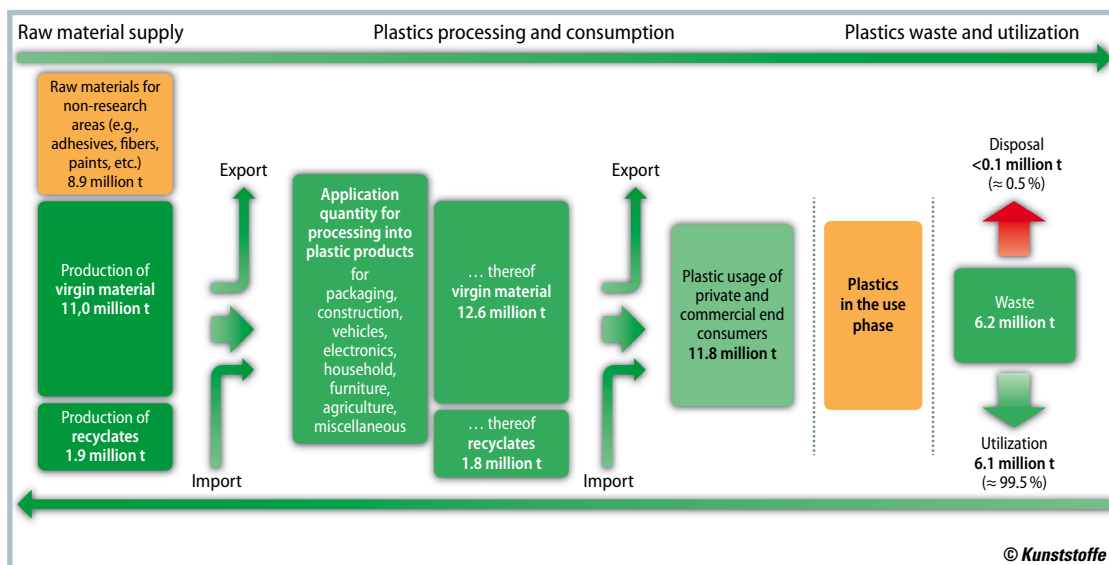


Fig. 1. Processed amount of plastics in 2015 and 2017, currently including recyclates for the first time (source: Conversio)

the meantime. For Brinkmann's company, the three key fields of action are recycling-friendly packaging design, low energy consumption in raw material production, and reduction of material use. One example is the Dow product Innate Precision Packaging Resins, which allows the wall thicknesses of films for flexible packaging to be reduced by up to 30%. Single-substance systems to reduce the variety of materials constitute another development focus.

"Dow will continue expanding the business with recycled materials going forward," says Brinkmann. He announced the investment of millions in collection and sorting. In addition, all packaging made of Dow materials in the EU is to be recyclable by the year 2025. Almost in parallel, his company announced the creation of two new "Recycling Commercial Director" positions with Tim Boven for North and South America and Carsten Larsen for EMEA & APAC. »

Fig. 2. Overview of key results from the new study on plastic material flows in Germany (source: PlasticsEurope)



These two will be driving commercial recycling. According to press releases, the focus in North America and the EMEA region is on new recycling products and technologies, while establishing a recycling infrastructure is in the foreground in Latin America and the APAC states.

Raw Material Recycling

Brinkmann asked for patience regarding new possibilities for raw material recycling: "Time is needed to develop that going forward." He did however promise that "something in this regard will be coming from Dow within the next six months." Rainer Rettig, Senior Vice President Strategic Projects at Covestro AG, reported that the raw material recycling of own materials is the focus of intense activity from their point of view as well. Material recycling is difficult or impossible for elastomers and thermosetting plastics in particular: "Mattress foam materials currently cannot be recycled," says Rettig, there, energy utilization is still playing a very important role. Covestro is working both on ways to recy-

cle soft foam and on the further use of CO₂ as a synthesizing agent.

Raw material recycling has a lot of potential overall but also constitutes a major challenge. According to statements by the chemicals industry, it is working hard on this issue. Both Rettig and Brinkmann pointed out that the European chemicals regulation (REACH) at times makes it very difficult for raw material producers to bring recycled materials to market. Precisely specifying all admixtures and additives in accordance with the directives is very important for product safety, but also a major problem with recycling materials. A national DIN workshop under the slogan "Closing the cycle through standardization" is currently examining meaningful norms in the form of minimum standards so that all contractual partners can rely on the quality of recycled materials, thereby opening up new sales markets for secondary raw materials.

Two symposium contributions also illuminated current university research approaches. Professor Stefan Bringezu from the University of Kassel stated in his outlook on using CO₂ as a raw material that, as a prerequisite, the required energy would have to come from renewable sources in order for the life cycle assessment to work. In his overview of raw material processes, Professor Dieter Stapf of the Karlsruhe Institute for Technology (KIT) made it clear that while further research is required, already investigated methods certainly could constitute competitive alternatives to energy utilization.

Conclusion

In the subsequent discussion between association representatives, politicians, raw material producers, recyclers and other stakeholders in the value chain, the retail and brand manufacturers were unfortunately absent. As direct producers/distributors, they have extensive influence on the amount of secondary raw materials used. Until a few years ago, they expected the use of recycled materials to reduce the price by at least 10%. In conversation with **Kunststoffe**, a participant reported that a change in thinking has apparently occurred here as well, so that price increases between 10 and 15% are being accepted for products with a recycle proportion in the meantime. Thus, the costs for collection, sorting, and processing are being acknowledged. Nevertheless, virgin material remains an unfair competitor, since the costs for utilization and recycling in this case have been externalized so far by passing them on to other partners along the value chain. This unequal treatment could potentially even constitute a meaningful starting point for political incentives.

Just about everyone currently has an opinion about recycling management, or at least something to say. The many facets between the various partners, political incentives, and organizational as well as technical challenges make the topic a perennial issue. Rainer Rettig summed it up: "The industry has to learn how to handle the complexity of life." ■

Franziska Gründel, editor

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