

## **The Role of Chemistry in a Circular Economy**

- Decoupling growth from resource consumption -

T. Schaffranek

BASF SE, Ludwigshafen

### Abstract

The circular economy (CE) concept aims to decouple economic growth from the use of finite resources. This will require more durable and more resource efficient products and an increase in reuse, repair and recycling including new business models. BASF is already applying the circular economy concept in a number of ways by pursuing two complementary approaches: With 'Keep it smart', the company constantly looks for techniques to decrease material use but keep function and durability at their optimum. With 'Close the loops' we look at solutions for customers along the value chain to re-enter waste back into product lifecycles.

Plastics do have proven benefits during their use phase, however, and in particular plastic waste in the context of marine littering, is a major global challenge. To tackle this, we are taking a fresh look at chemical recycling where fossil feedstock for chemical production can be replaced with recycled material broken down from plastic waste e.g. in a pyrolysis process. Co-feeding both recycled and fossil feedstock into the same network of chemical production plants offers a pragmatic way to offer customers virgin-grade chemicals on the expected quality level. Through a mass balance approach the proportion of recycled raw materials is then allocated to the selected product.

The processes along the value chain are highly interconnected, and the circular economy concept encourages businesses to think not only about their individual production steps, but also to consider the supply and value chains involved in their product development. Therefore, the participation in multi-stakeholder partnerships like the Global Alliance to End Plastic Waste or the CE100 program of the Ellen MacArthur Foundation is an important element to further advance and realize circular economy solutions.

The transition from a linear to a more circular economy could bring significant changes to business models and value drivers across many industries. The degree and speed of "circularity" will depend on the pace of technological development, regulatory incentives, new business models, the availability of transition investments as well as the willingness of consumers to change behavior.