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A Fraunhofer charter for sovereign value cycles and the circular economy – summary

Creating values – and acting accordingly

Linear economy is not fit for the future

Present-day production methods and consumption patterns are not fit for the future, and we are gradually reaching our planet's limits. In the medium term, their ecological and social effects will push nature and society beyond their capacity. The international community has therefore agreed on ambitious goals (Sustainable Development Goals or SDGs) in the global Agenda 2030. For production and consumption, the targets set out in SDG 12 have already set in motion numerous political and economic initiatives.

From the point of view of companies and citizens, day-to-day experience often leads to a sense of powerlessness in the face of these ambitious goals. Companies and consumers simply do not have the sovereignty to identify more sustainable alternatives along an entire life cycle and to choose those alternatives. Supply chains suffer from a lack of knowledge and transparency about the raw materials and substances used and the environmental and social standards that apply. This is just as true of food plastic packaging, building materials, microchips, aluminum wheel rims or generators in wind turbines: The list can be extended at will. Focusing on the resilience of supply chains is not enough, because the use phase and end-of-life management also affect the impact of value creation.

5 principles of sovereign value cycles

1. Integrating sustainability
2. Implementing value cycles
3. Achieving sovereignty
4. Driving forward systemic innovations
5. Developing expertise

Sovereign value cycles are replacing linear value chains

The future of value creation needs to be more sustainable, more intelligent and more circular than anything we know today. Companies and consumers see these complex tasks as an opportunity and are actively shaping the transformation: Sovereign value cycles are replacing linear value chains and leading to "responsible consumption and production" the core requirement of United Nations SDG 12. The Fraunhofer charter proposes principles and areas of actions to enable the transformation to the circular economy. It is based on three key strategies for future sustainable production methods and consumption patterns:

Consistent implementation of circularity: Everything that is manufactured and used must be suitable for use as a resource for further production or consumption. Ideally, there should be no emissions into the environment. As well as reducing the pressure on natural sources of raw materials, the circular economy also calls for responsibility within society, politics and industry beyond the economic systems and lifestyles we are familiar with today.

Creation of sustainable value: To ensure that a cycle is permanently given precedence over linear value creation, it needs to create sustainable value as it progresses. This new value creation must be measurable using economic, social and ecological measures.

Need for design sovereignty: Sustainable cycles only happen if they are resilient enough to disruptions from inside and outside. In a globalized world, this sovereignty is based on transparency, cooperation and shared values.

The concept of sovereign value cycles puts these strategies into practice.

A common mission

Creating values – acting with values

Tomorrow's value creation must become ***more sustainable***, ***more intelligent*** and ***more circular***.

Companies must be able to actively and confidently shape this development.

Economic values

Ecological values

Social values

Our principles

The term "value" in value cycle refers equally to ecological, social and economic – and therefore sustainable – measures of value. These change in different ways throughout a value cycle. However, their sum must be positive at the end of the use phase. To this end, research and development and the design of value cycles are guided by
five principles.

1. **Integrating sustainability:** By values, we are referring equally to ecological, social and economic measures of value.

2. **Implementing value cycles:** In value cycles, materials and products are managed in cycles. Their cumulative sustainable values increase as they pass through a cycle and start a new cycle.

3. **Achieving sovereignty:** To measure sustainable value throughout the cycle, producers and consumers need reliable, verified, credible and tailored information about supply chains, production conditions and products, as well as about their effects. This information must be shared by all the parties involved in a cycle. This requires new forms of cooperation and digital support.

4. **Driving forward systemic innovations:** Systemic innovations are the basis of sovereign value cycles. They emerge from of strategies that encompass the entire cycle at every stage and are directed equally at ecological, social and economic measures of value.

5. **Developing expertise:** The development of systemic innovations requires networked knowledge and expertise, including in social, ecological, technical, economic and regulatory matters.

Fraunhofer research into sovereign value cycles

The concept of sovereign value cycles requires to expand the understanding of applied research. Applied research addresses products, processes and companies, and is increasingly facing the task of delivering reliable and effective solutions to societal challenges and political missions at a rate never before seen.

Sustainable production, sustainable consumption and the circular economy require new expertise, offerings and cooperation, which Fraunhofer is developing and putting into practice in a value- and mission-oriented manner.

This Fraunhofer charter uses four resource-intensive lead markets to highlight areas of action for systemic, technical and methodological innovations to make sovereign value cycles a reality.

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