



Sustainability and Circular Economy

Ecological and economic solutions



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Sustainability and Circular Economy

One of the most important challenges of this century is to design our economy sustainable and environmentally sound. This will change our way to produce and trade goods. The success of a company therefore matches increasingly the sustainable handling of our environment. Besides, the production of goods won't be only dependent on the available technologies in the future, but rather on the availability of resources. Against this background we offer an advanced ecological and economic prospect with efficient logistical concepts, solutions and processes. Our services won't end with the design of concepts;

Fraunhofer IML assists you until the successful realization of our project.

Sustainability and Resources

Climate change, resource shortage, increasing energy prices are global topics enterprises have to face. The thus resulting change of political frame conditions and the growing environmental consciousness of society cause resource and energy efficiency to become an economic success factor.

Against this background Fraunhofer IML successfully applies methods, concepts and techniques in industrial practice which allow to dissolve the tense atmosphere between economy and ecology. Additionally, we work on the further closing of material cycles and on ensuring their profitability by an efficient logistics. In the business field »Sustainability and Resources« we provide



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customized solutions for the following key topics:

- Ecological and economic assessment (e.g. life cycle analysis, carbon footprint, cleaner production)
- Material flow management
- Resource management
- Supply chain management for secondary raw materials
- Logistics for renewable energy carriers, e.g. biomass logistics
- Conception of material and product take-back systems
- Re-use and recycling strategies
- REff Tool® for Greenhouse Gas Assessment for Logistics Sites

Circular Economy

The guiding principle of the Circular Economy is to keep raw materials in the economic cycle for as long as possible without waste or emissions. To this end, discarded products or materials must be kept at the highest possible level of added value after their original

use. In order to realise such a circular economic system, adapted digitisation and logistics concepts for the coordination of material and information flows are indispensable - in addition to approaches to recyclable product design and new business models.

With the Fraunhofer Cluster of Excellence »Circular Plastics Economy« and the Textile Logistics Center, we are setting trends especially for the recyclable materials plastics and textiles.

The change from waste management towards resource and recycling management as well as the increasing cost pressure lead to higher demands on the quality and efficiency of business processes and logistics. This equally applies to enterprises of industrial and municipal waste management and for industry and trade with internal waste management tasks.

In our planning and consulting projects we combine logistic expertise with know-how in legislation and our long-term branch competence.

We develop the following key topics for you:

- Planning and optimization of internal and external logistics for the municipal and industrial waste management
- Internal waste management
- Planning of plants and facilities
- Mathematical optimization, e.g. district and tour planning
- Development of specification sheets, system and software selection, development of software prototypes

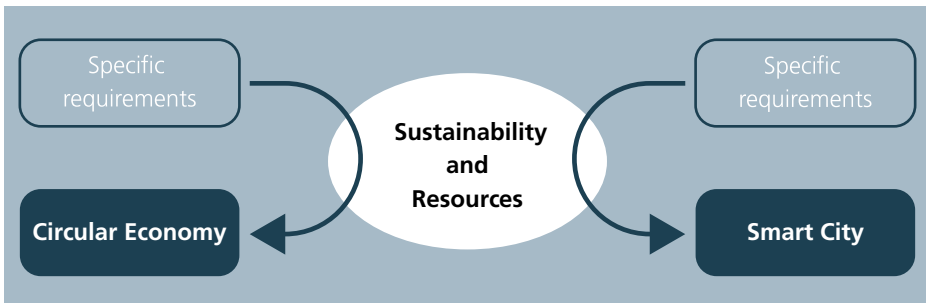
Smart City

Digitalization is an important driver of alternative and innovative mobility of people and goods. For local authorities, this opens up exciting perspectives and development opportunities for technological progress, better living conditions and further growth in existing urban structures. Sustainable infrastructures, sustainable vehicle fleets and digitised processes

enable better operational performance in public spaces, e.g. in the areas of household supply and disposal, urban image and green maintenance, road maintenance or traffic and mobility planning with real-time data.

Engineers, transport scientists and logisticians in the field of logistics, transport and environment at Fraunhofer IML are working on the design of this development process with application-oriented research. New transport and logistics concepts are developed and tested in close cooperation with cities, municipal partners and industrial partners. These include among others:

- Digitalization and sustainability
- Master plans and detailed concepts for passenger and goods mobility, e.g. for micro hubs, bicycle traffic
- Green City Mobility, e.g. charging stations infrastructure, H2 use, Smart Park and Ride, Cargobike Sharing





Contact

Dipl.-Ing. Volker Fennemann
Sustainability and Circular Economy
Phone +49 231 9743-366
Fax +49 231 9743-77366
volker.fennemann@iml.fraunhofer.de

Fraunhofer Institute for Material Flow
and Logistics IML
Joseph-von-Fraunhofer-Straße 2-4
44227 Dortmund
www.iml.fraunhofer.de

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