

# Circular Design and Sustainability Assessment for Developing Innovative Product-Service-Systems

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Division Sustainable Production and Consumption

Wuppertal Institut fuer Klima, Umwelt, Energie gGmbH

**Legal form:** Non-profit limited company

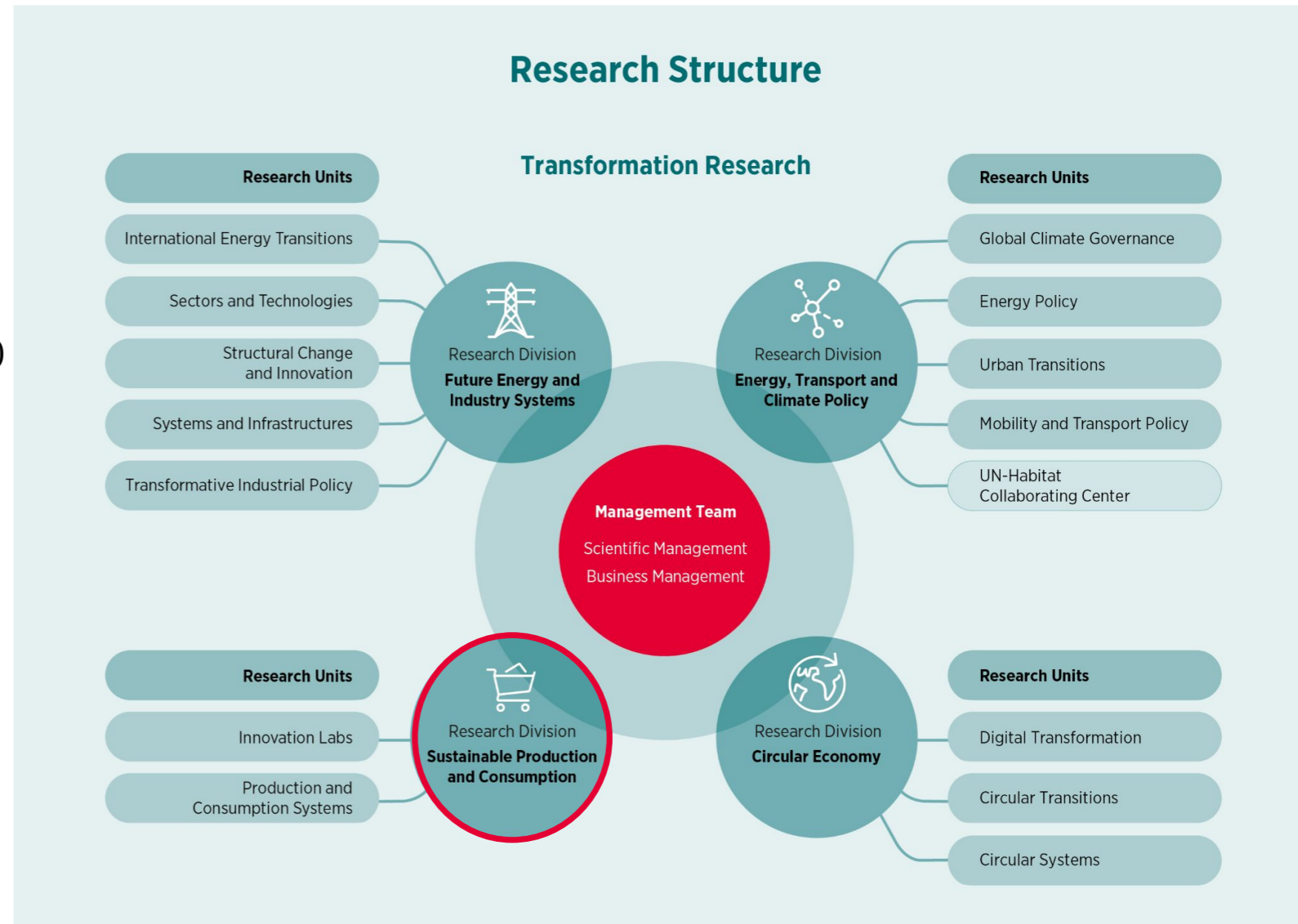
**founded:** 1991

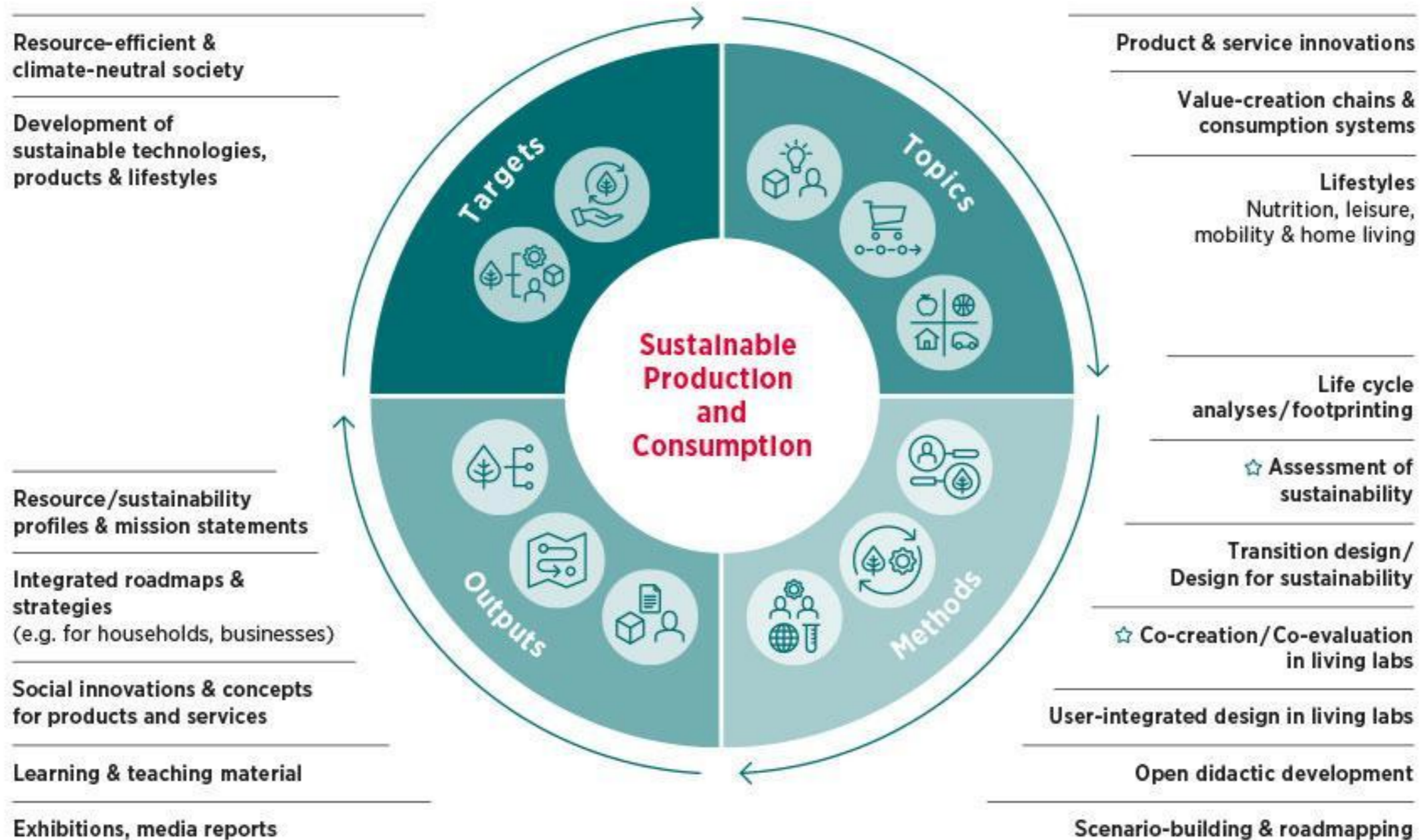
**Owner:** State of North-Rhine Westphalia

**Budget (2024):** 22,6 Mio EUR from research grants (UN, EU, ministries, enterprises, NGOs)

**Staff (2023):** 320 employees, 170 scientists

**Projects (2023):** 150 national and international projects





## Thematic interests

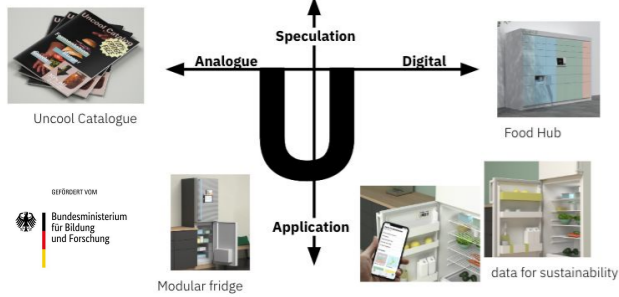
- **Sustainable / Circular Design of Product-Service-Systems // Circular Business Models**
  - **Ecodesign / Circular Design** of electronics, household equipment, vehicles and corresponding intelligent manufacturing processes / modular products and business models, intelligent use of materials
  - **Sustainable metal management:** limits of the circular economy, scarcity and recyclability of CRM-based products
  - **Future product portfolios and corresponding policies**
- **Advancing Prospective Sustainability Assessments**
  - Material and process databases and software for modeling circular design and developing smart-user interfaces
  - Methodological Integration: Theories of change, Life Cycle Analysis, Input-Output Modeling, Text Mining
- **Consumer behavior, sufficiency strategies, and consumer-centered business models**
  - Arts & Sustainability for Reflecting and Communicating Sustainability
  - Establishment of living lab / realworld laboratory networks
- **Innovative Food Systems and Food Environments:**
  - New Production Technologies (Urban Farming) and Optimization of Production (e.g. via AI)
  - Climate-adapted/resilient agriculture
  - Food Environments for Sustainable and Healthy Nutritional Lifestyles

## Potential partners

- **Technology providers/developers and companies, esp, SMEs**, (producers, distributors, recyclers, etc.) open for
  - combining and re-designing product-service-systems
  - cross-sectoral cooperation
  - critical and transparent assessments and scenarios
- **Software developers** (e.g. simulation, digital product passport) **and data platforms**
- **Psychology & Marketing Researcher** with regard to sustainable consumer behaviour



# Exemplary Projects in the field of sustainable design and sustainability assessment

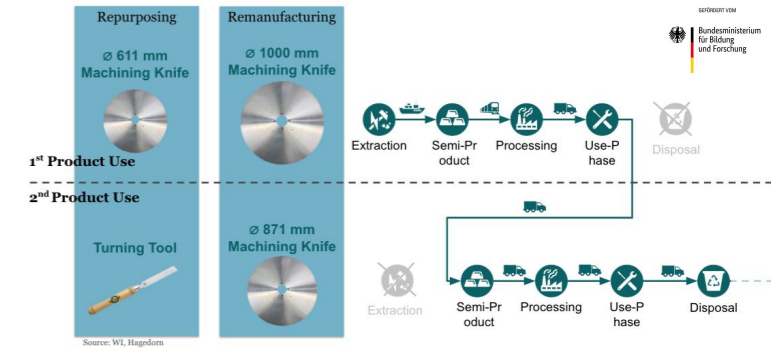


## Industry / B2C product-service-systems

**Circle of Tools (BMBF):** Re-manufacturing of Worn Circular industrial Knives

**RESILIENT (BMWK):** Additive Manufacturing for lightweight design (aluminium)

**GreEnerTech (BMWK):** Design & Assessment of a circular switchgear / LCA / SET



## Households & Lifestyles / B2C product-service-systems

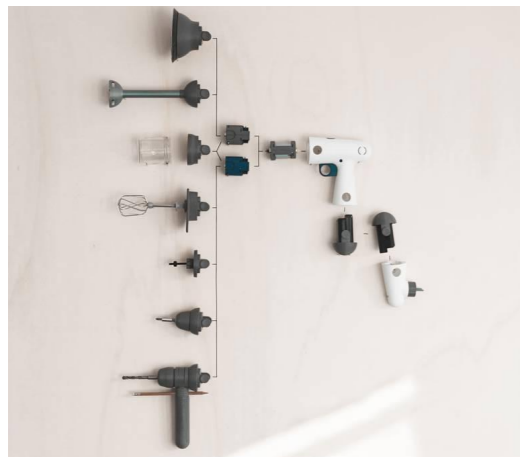
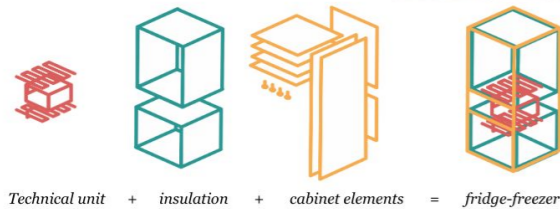
**Circular by Design (BMBF):** Design & Assessment of a circular fridge / LCA / MRIO

**Remix Circular Economy (BMBF):** Designing reuse and refurbishment options for waste hand blenders

**VINSON (student project):** Design & LCA of a modular torque-based household tool

**FulFill (Horizon 2020):** Assessing decarbonisation options by lifestyle changes via theories of change, e.g. on health effects

**SuperSustain (DFG/Belmont):** The Role of Supermarkets as Key Players in Systems of SCP and sustainable nutrition



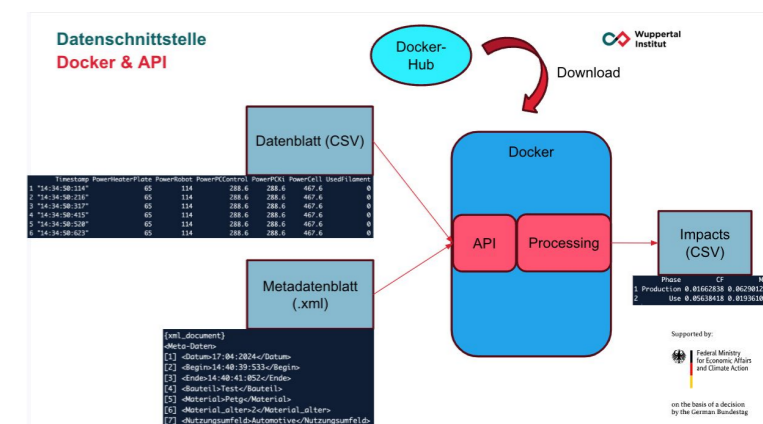
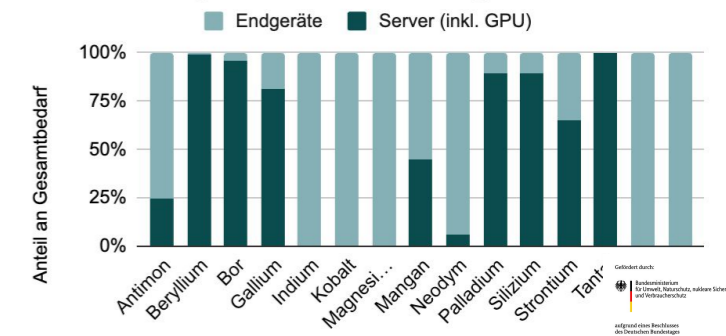
## Material flows (esp. digitalization) and strategies for metal management

**MetallKIDD (BMUV):** Design of a Circular Metal Management via Metal Strategy and Support by Artificial Intelligence for a Digital Germany

**DownMet / OptiMet (UBA):** Optimization potentials of alloy-specific recycling and downcycling effects

**CEDaCI (Interreg NWE):** Circular Economy for the Data Industry - Social lifecycle assessment module for an online tool

Plot 3a: Verteilung des Metallbedarfs aus Endgeräte und Server



# Connect, research, and design with us...

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