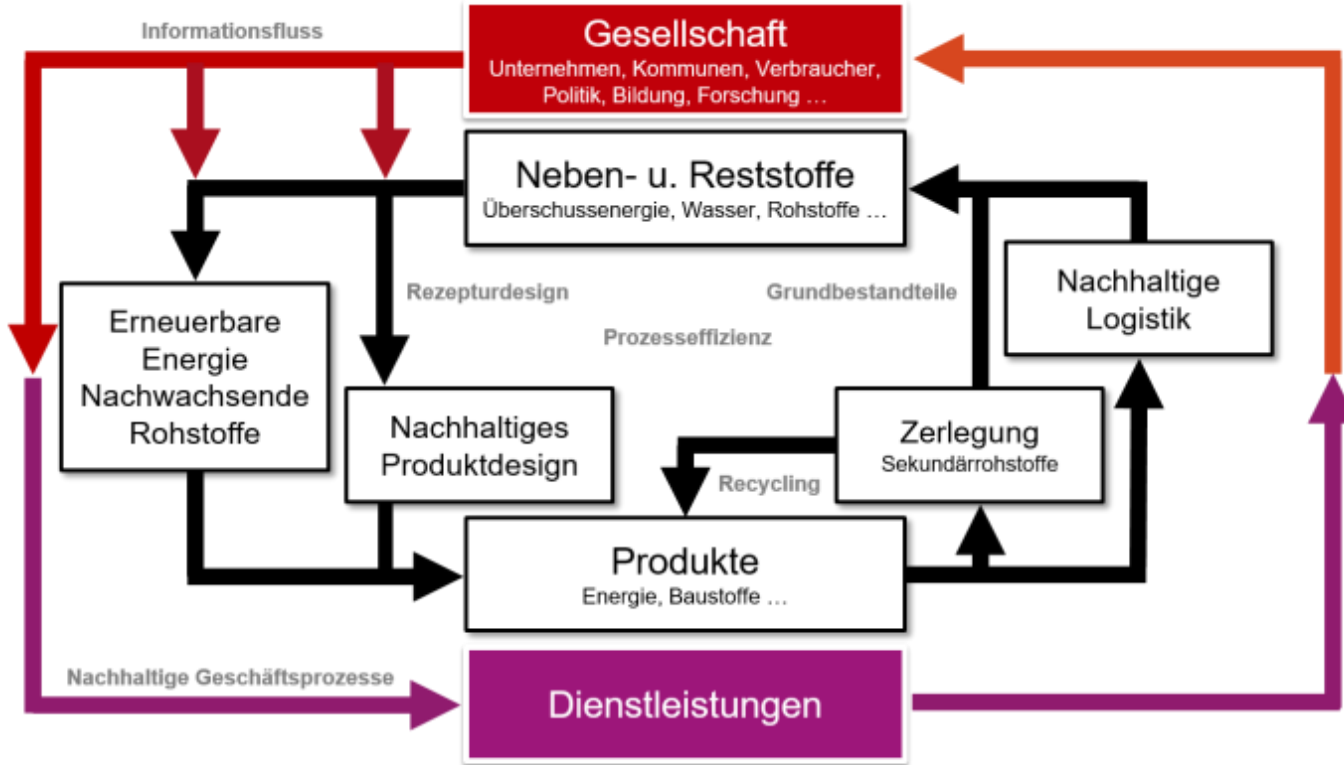
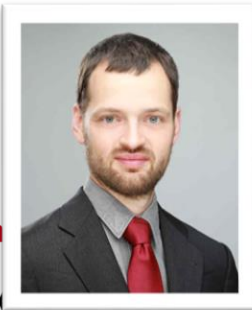
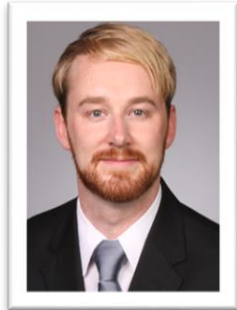
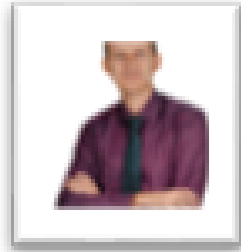


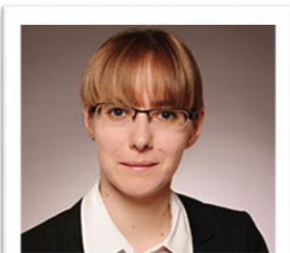


*Circular Transformation Lab TH Köln as an innovation infrastructure for energy transitions*

# The Team: Circular Transformation Lab



Technologie    Ökologie    Ökonomie    Soziologie    Recht



# Living Lab

- **BIPVT solar roof tile**
- 2 test roofs with measurement equipment:
  - Roof 1 (roof tiles):
    - 96 (1,334 kWp) with standard junction box
    - 96 (1,334 kWp) with MPP-Tracking
    - 12 in series actively ventilated
    - 4 rows only with passive cooling
    - Air-water heat pump (0,7 kW)
  - Roof 2 (reference):
    - 5 x PV-moduls (1,575 Wp, Glas-Glas)
    - Same Air-water heat pump (0,7 kW)

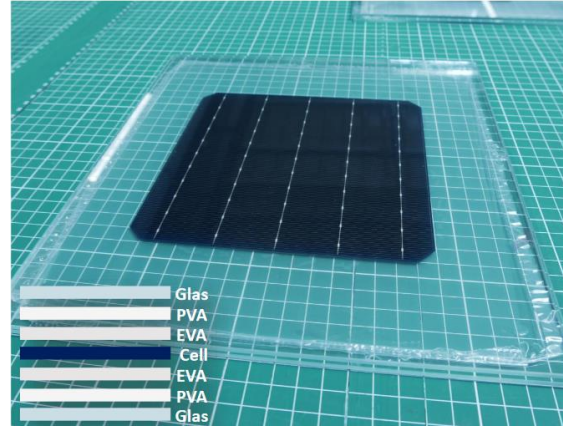


# Green solar modules (2023~2026), 3 Mio € funding from BMWK and industry

Circular Economy



CE Strategy	
Smarter product use and manufacture. Parts of these strategies contribute to Design for Circularity	R0 – Refuse
	R1 – Rethink
	R2 – Reduce
Extend lifespan of product and its parts	R3 – Reuse
	R4 – Repair
	R5 – Refurbish
	R6 – Remanufacture
Useful application of materials	R7 – Repurpose
	R8 – Recycle
	R9 – Recover



Development of „circular solar modules“

New module design allowing re-use of glass



432 h

834 h

Evaluation of alternative encapsulation materials from natural resources

# Selected Horizon Europe Calls & Desired Partners

HORIZON-CL6-2026-01-CIRCBIO-03

- Advanced recovery of critical raw materials from WEEE:
  - *(Deadline: 17 September 2027)*
  - Improve recovery of critical materials (e.g. rare earths, Ga, In) from electronic waste through advanced sorting and refining processes.

HORIZON-CL5-2027-07-D3-17

- Industrial scale-up and circularity pathway for integrated PV (IPV) technologies:
- *(Deadline: 01 December 2027)*
  - Demonstration and recycling of novel “integrated PV” products at scale, addressing the lack of pilot infrastructure for diverse IPV solutions.



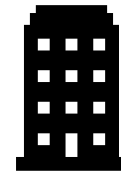
## Academic & Research Partners

- Applied research institutes and universities
- Social science and design researchers



## Public Sector / Government

- Cities and regional authorities
- Public utilities energy planners, and infrastructure managers



## Industry & SMEs

- Energy system SMEs (PV, storage)
- Construction, installation and retrofitting specialists
- Digital solution providers and modelling/digital twin

## ➤ **Our experience:**

- Consortium leader and WP leader for multiple EU Projects
  - EIC Pathfinder Open
  - Horizon Europe
  - EFRE
  - Horizon 2020

## ➤ **Current and Past EU projects**

- 2026-2028 Bergische Rohstoffschmiede (EFRE.NRW), Budget: 12,400,000 €
- 2021-2022 Pilot Pilot Bergische Rohstoffschmiede (EFRE.NRW), Budget: 3,960,000 €
- 2017-2020 :metabolon IIb - Innovative Processes for a Circular Economy (EFRE.NRW), Budget: 3,640,000 €
- 2013-2018 ENERWATER Standard method and online tool for assessing and improving the energy efficiency of waste water treatment plants, Budget: 1,700,000 €
- 2013-2017 ATBEST Advanced Technologies for Biogas Efficiency Sustainability and Transport (Marie Curie People ITN), Budget: 3,800,000€
- 2009-2015 :metabolon I und IIa - From Waste to Resource (EFRE) Budget: 25,000,000€
- 2011-2015 RENEW REsource Innovation Network for European Waste (Interreg IVb) Budget: 4,859,329€