

ReBAU Messe – Bauprodukte als Ressourcen

Vernetzung der Forschung – Interdisziplinäres Zusammenspiel für eine Circular Economy





Circular Economy – The Basis of a Sustainable Future





- Circular Economy is now replacing and operationalizing the previous sustainability strategies
- ► CE is highly topical and promoted by politics. The European Union and Germany's government understands CE as a priority for the next decade
- CE is strongly linked to society because of its impact on the everyday lives of the citizens
- ► CE requires the **collaboration** of ALL different research areas





The Vision

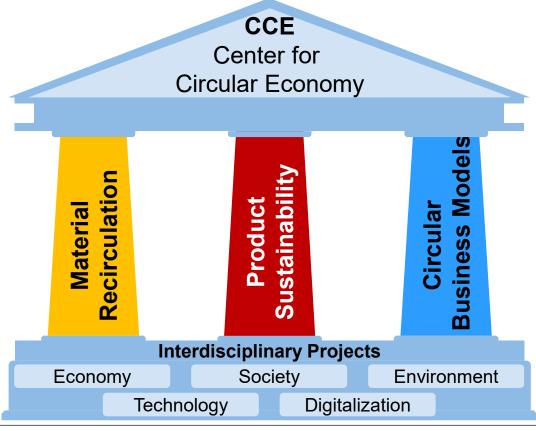


A multidisciplinary and interconnected approach to Circular Economy combining expertise from ALL faculties at RWTH Aachen University

CCE is an <u>enabler for a transformation</u> of research, teaching and finally society, acting as a <u>lighthouse</u> for internal and external partners.



- Value retention
- ► High user acceptance
- Economical return with minimal energy use and emissions by products and materials Design
- ► Research, development and knowledge transfer
- Together with research, industry, politics and the society, the CCE develops innovative solutions for the circular value creation of the future

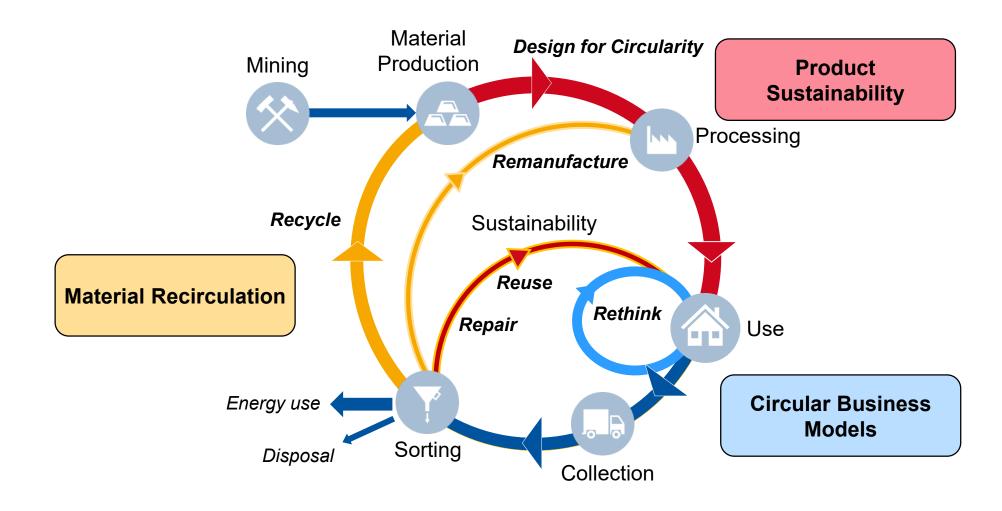






The Aspects Circular Economy









Network & Community – Within the RWTH Aachen





Fakultät 8 Wirtschaftswissenschaften





Fakultät 1 Mathematik, Informatik und Naturwissenschaften













Fakultät 7 Philosophische Fakultät



Fakultät 6 Elektrotechnik und Informationstechnik





Fakultät 5 Georessourcen und Materialtechnik



Energy & Mineral Resources







Fakultät 2 Architektur



Fakultät 3 Bauingenieurwesen



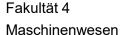






















Network & Community – Stakeholders and Players













- An Education Institute

 Master Program Workshops Seminars Trainings
- An Inter- and Transdisciplinary Research and Innovation Center Circular Economy-Related Projects
- A Network and Mesh
 University City Regional National European International
- An Awareness Demonstrator
 Students Citizens Politicians Stakeholders
- An Unit for Transfer

 Accelerator Incubator Ideas Startups Spinoffs







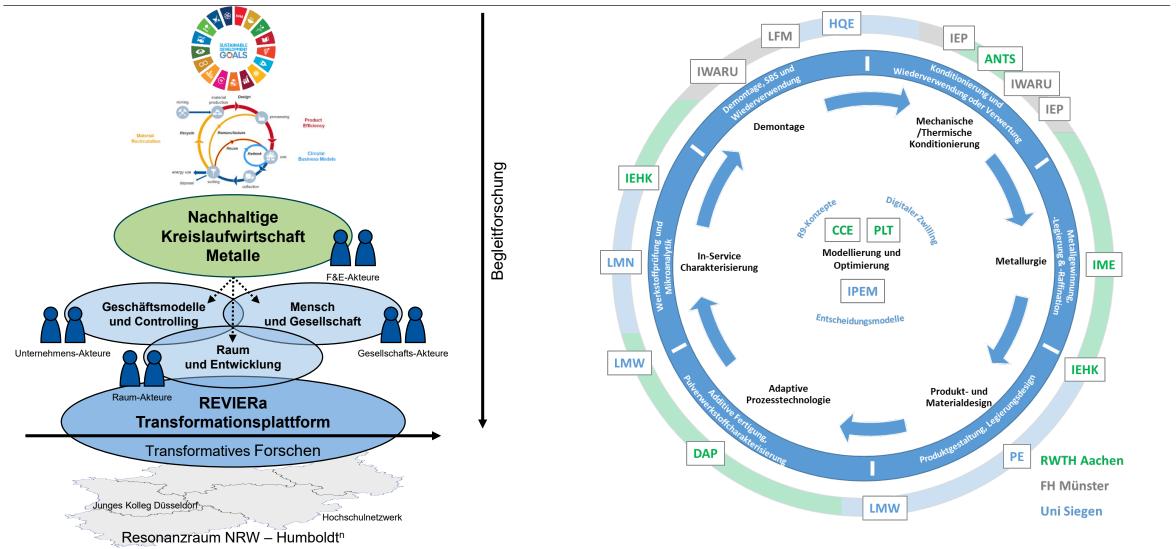
IMPLEMENTATION





Circular E-Cars





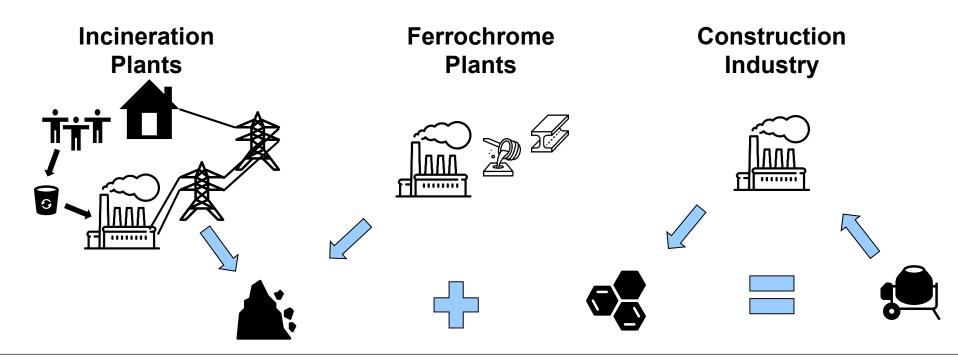




Hubs for Circularity



- ▶ A **lighthouse** for the region, Germany and Europe
- ▶ Industry symbiosis between metallurgy, waste processing and concrete industries
- ► Involvement of energy intensive industries
- ▶ Potential in scaling nationally and internationally

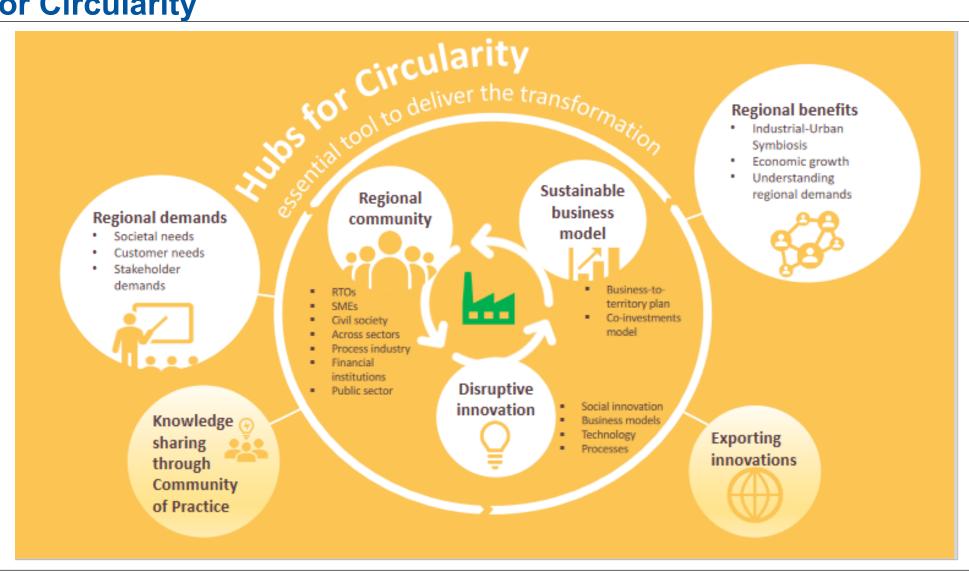






Hubs for Circularity

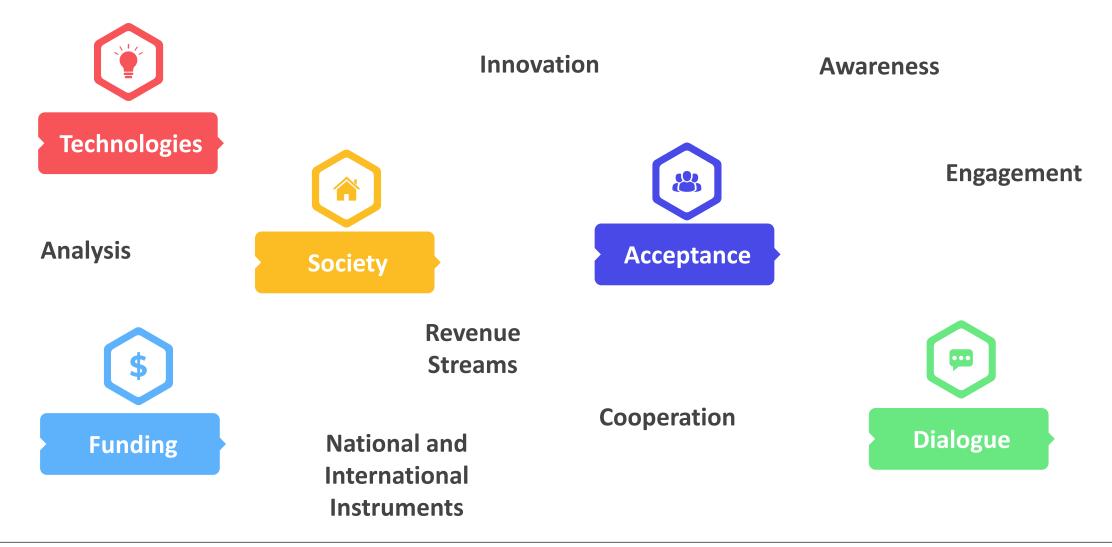








The Circular Economy









Thank you for your attention!

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BACKUP SLIDES

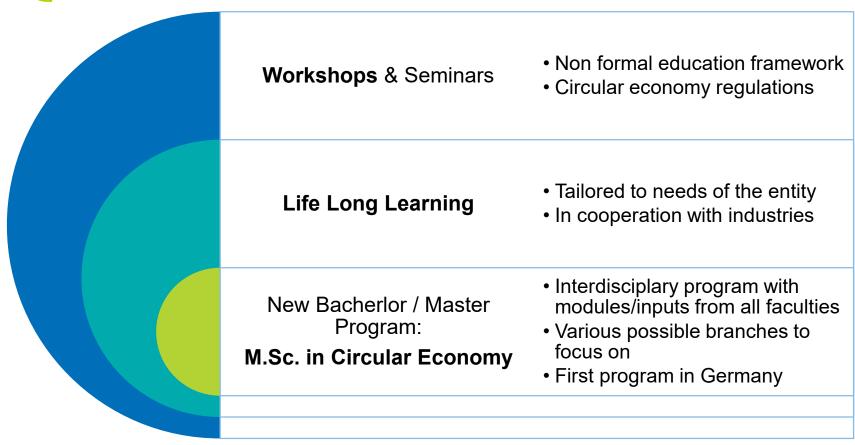








The CCE as an Education Institution











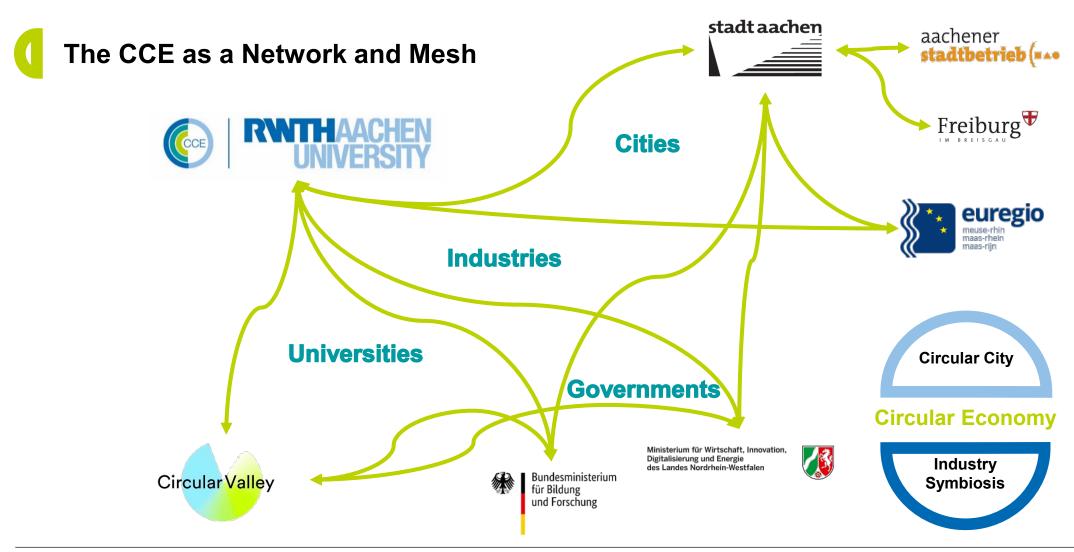
An Inter- and Transdisciplinary Research and Innovation Center

The Marketplace for Circular Perspectives Deals / Contracts Cooperation and Funding / Initiatives Collaboration industry Wall of Aim Projects / Hiring **Exploring Potentials** Idea 2 Results / Accomplishments Idea 5











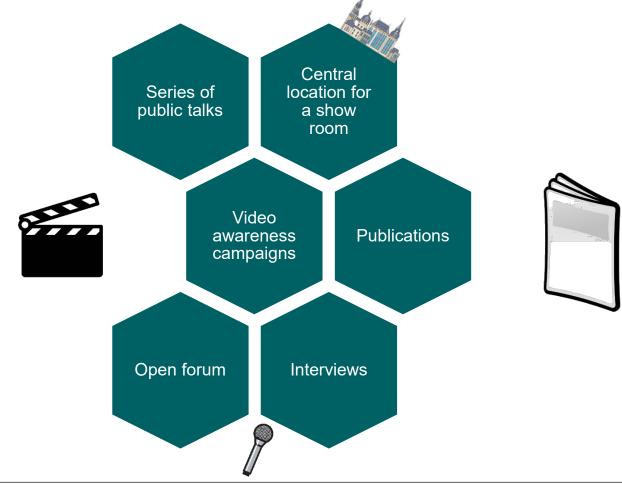


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The CCE as an Awareness Demonstrator







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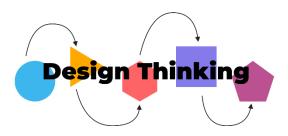


The CCE as a Transfer Unit

Two Programs:

- 1. "Know" your City
- 2. "Circle with"

Concepting Commitment **Validation** Scaling **Establishing**







- Access to **Stakeholders** (experts, institutes, cities, industries, citizens, etc. via the network)
- Shared working **space**
- Access to **tools**, labs, etc.
- Rich topics and implementation possibilities through the network and suggested use cases (hospital of the future, circular city, usw.)



- Ideation
- Validation
- Outlining



Startup

- Development
- •Launch
- •Release



Post-Startup

- Scaling
- Expansion
- Mergers
- Aquisitions





Thematic Pillars of the CCE

Material Recirculation

High value recycling to decrease primary production and emissions

- Increase collection rates
- Design for repair and disassembly
- Design for material circulation
- Reduce downgrading of materials
- Intensify urban mining and near zero waste concepts

Product Sustainability

Reduced energy and materials production, design for circularity, social acceptance

- Reduce production waste
- Remanufacturing
- Avoid over-specification
- Reduce material mix
- Develop new design principles
- Substitute critical materials

Circular Business Models

Increased product usability (higher lifetime, sharing, producty service models)

- Sharing economy
- Products as a service
- Improved maintenance
- Long-lasting materials
- Industrial symbiosis
- Overcoming externalities





Integration into the RWTH's Center structure The CCE fits RWTH's current EXU targets

Center for Circular Economy

Research Oriented Teaching

Establish new integrated Master's programme with focus on Circular Economy research fields

- ► General modules for building common knowledge base
- Specialization modules according to research fields
- ► Integration of teaching and research through involvement in projects
- ► Integration of Entrepreneurship modules to promote CE-oriented startups
- ► International focus

Interdisciplinary Research

Research focus built on various widespread interdisciplinary pillars

- ► Engineering meets Economy & Society & Environment
- ► Strong synergy between research pillars to cover the full value chain
- ► Identification of fundamental research needs
- Linking institutions in a unique Center structure
- ► A unique collaboration motivated by the 9 faculties at the university driven by strong interest and potential expansion

Translation

- Research and implementation via "use cases" (Hospital of the Future, DKR^2)
- ▶ Developing EU-wide partnerships (e.g. for H2030 Call "Hubs for Circularity")
- ► New CE-dedicated professorships
- ► RWTH Portfolio Intelligence and external lobbying
- ► Submission SFB proposal

Infrastructure

- ▶ World-class laboratory and equipment infrastructure across faculties eases integration
- ▶ Open Lab building for an urban research symbiosis will allow direct contact between society, industry and research
- ▶ Application for a 91b building to develop the Center into a cluster and accelerator on Campus West





CCE Roadmap

