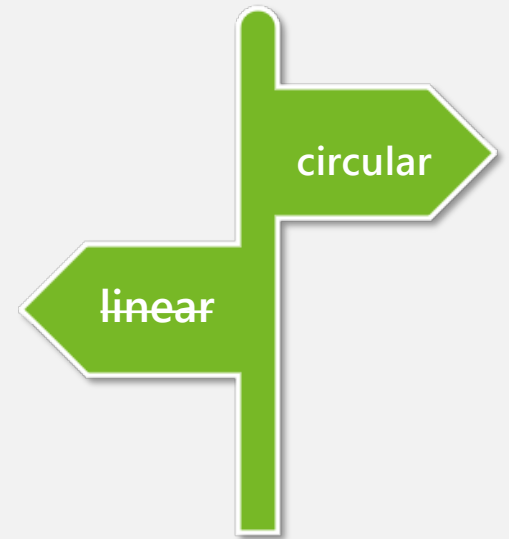


Similarities and differences between energy efficiency and circularity approaches in industrial transition processes targeting manufacturing SME

9-238-22 Hermandi

Carina Hermandi, Julian Mast and Wolfgang Irrek



„AGENTS OF CHANGE“

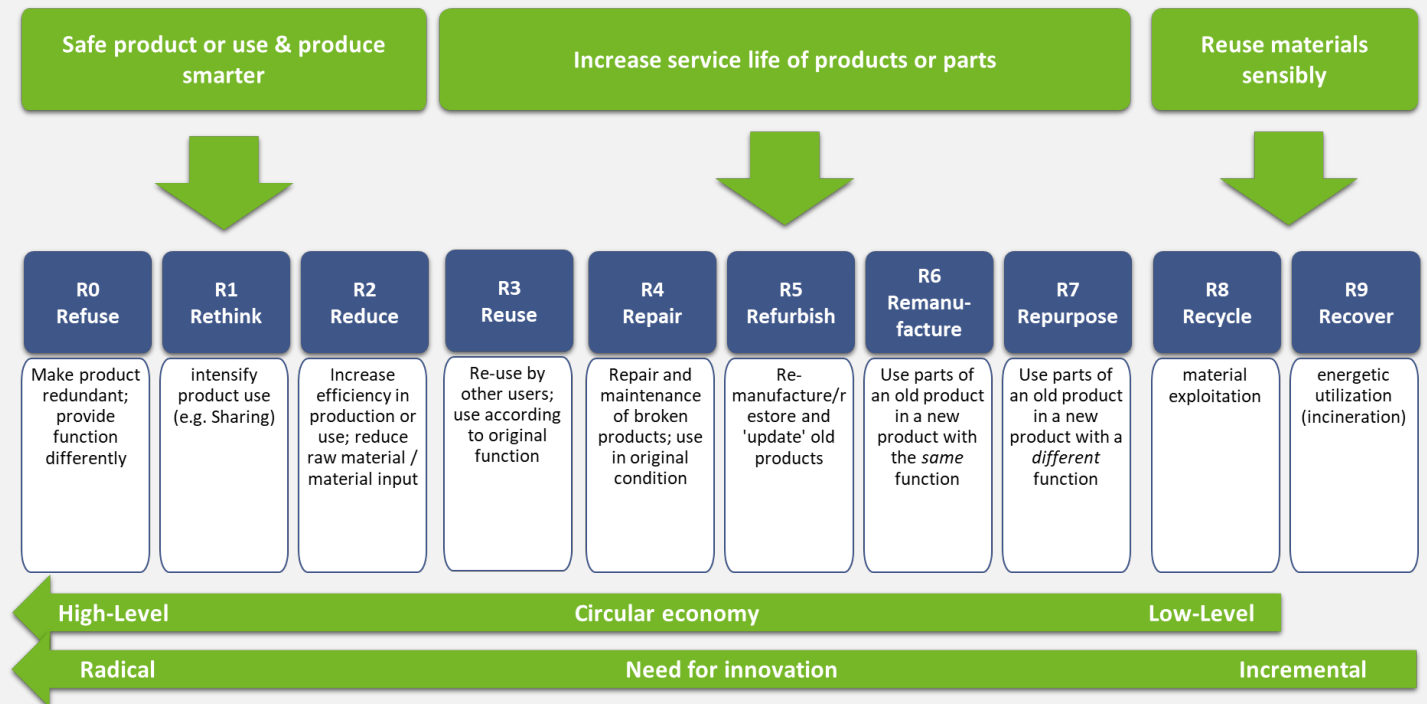


KEY MESSAGES

- CE activities usually contribute to **energy savings** and **GHG emissions reductions**.
- In contrast to energy efficiency, CE often affects the **core business** or even the **entire value chain**.
- SME need **support in implementing CE measures** -> enhancing their willingness and capability to implement CE strategies, without being afraid to experiment and rethink their own business processes and to overcome entry barriers to the topic.
- The **'CE Potential Check' of the Prosperkolleg project** is intended to support SME in independently taking the first steps towards CE in order to develop to **agents of change**.
- For the development of communication, co-operation and networking approaches, for individual support measures, concepts and tools, lessons can **be learned from the long-term experience in the field of energy efficiency**. In both fields it is important to understand the situation of the specific SME and **to address them by personal communication**.

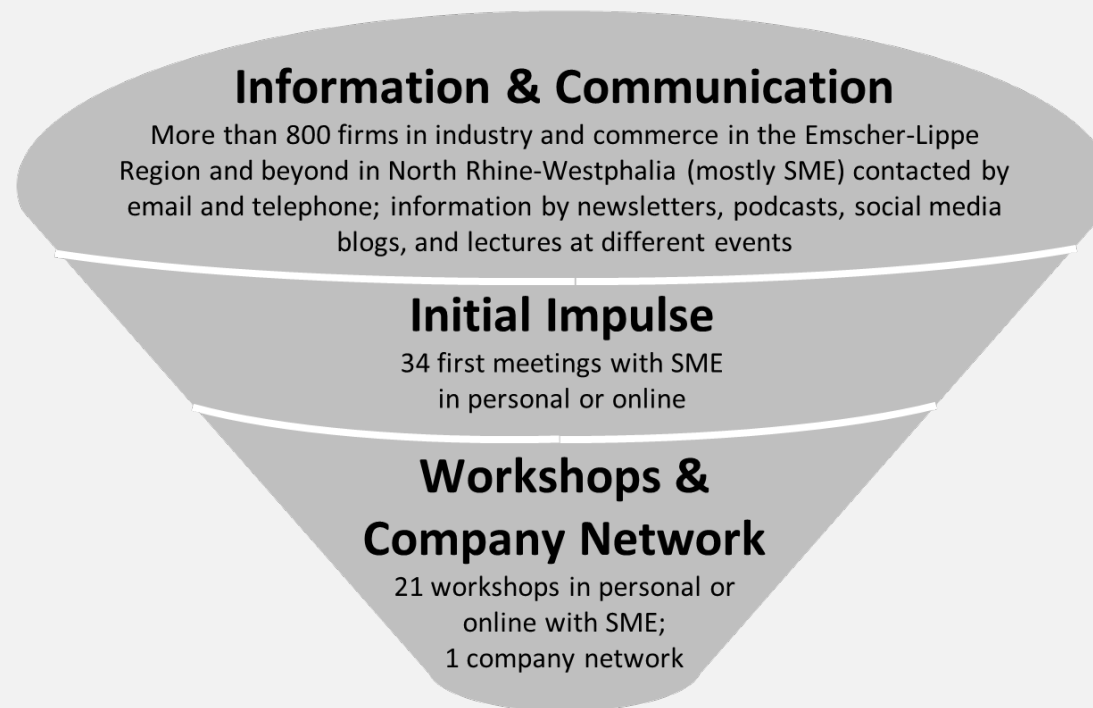
ENERGY EFFICIENCY, RESOURCE EFFICIENCY, CIRCULAR ECONOMY

- CE usually has a positive impact on climate protection and energy saving.
- Efficiency strategies are only part of the CE strategies.
- CE often affects the entire value chain.



Source: R- strategies Prosperkolleg (based on Potting et al. 2017)

ACTION RESEARCH APPROACH WITH MANUFACTURING SME IN THE GERMAN PROSPERKOLLEG PROJECT



Source: Prosperkolleg project communication, co-operation and networking with SME as of May 2022

COMPARISON CE VS. ENERGY EFFICIENCY IN SME

Benefits and
opportunities

Barriers and
obstacles

Antecedents,
drivers and
moderators

Supporting
measures

Monitoring and
evaluation

Audits and
management
systems

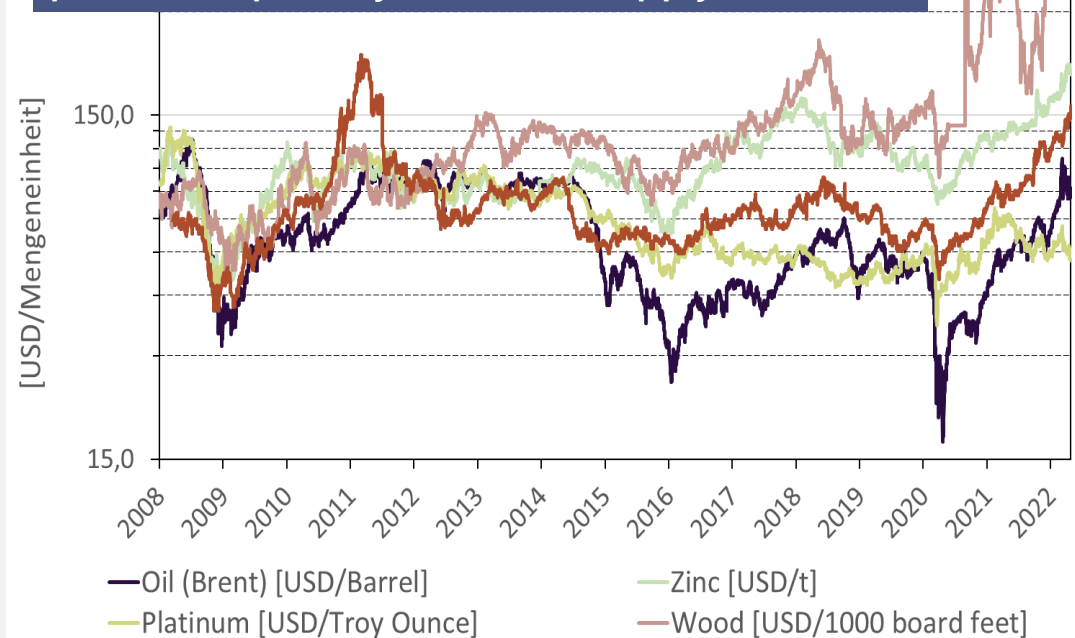
SIMILARITIES CE & ENERGY EFFICIENCY IN SME

Usually GHG emissions reductions



SME's knowledge & experience, backing by top management, contextual factors, personal communication

Lower dependency on volatility of commodity prices and primary resources supply



Source: Irrek based on historical commodity prices from finanzen.net GmbH (2022, April 30)

DIFFERENCES CE VS. ENERGY EFFICIENCY IN SME

Benefit-cost ratio & investment risks



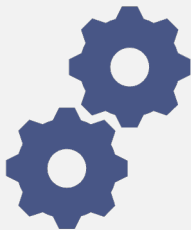
Regulative pressure & financial support



Supporting tools and networks



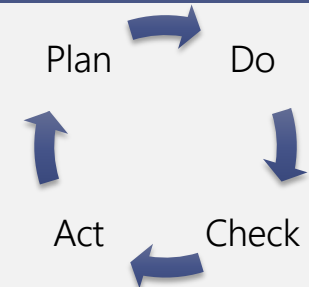
Relation to core business



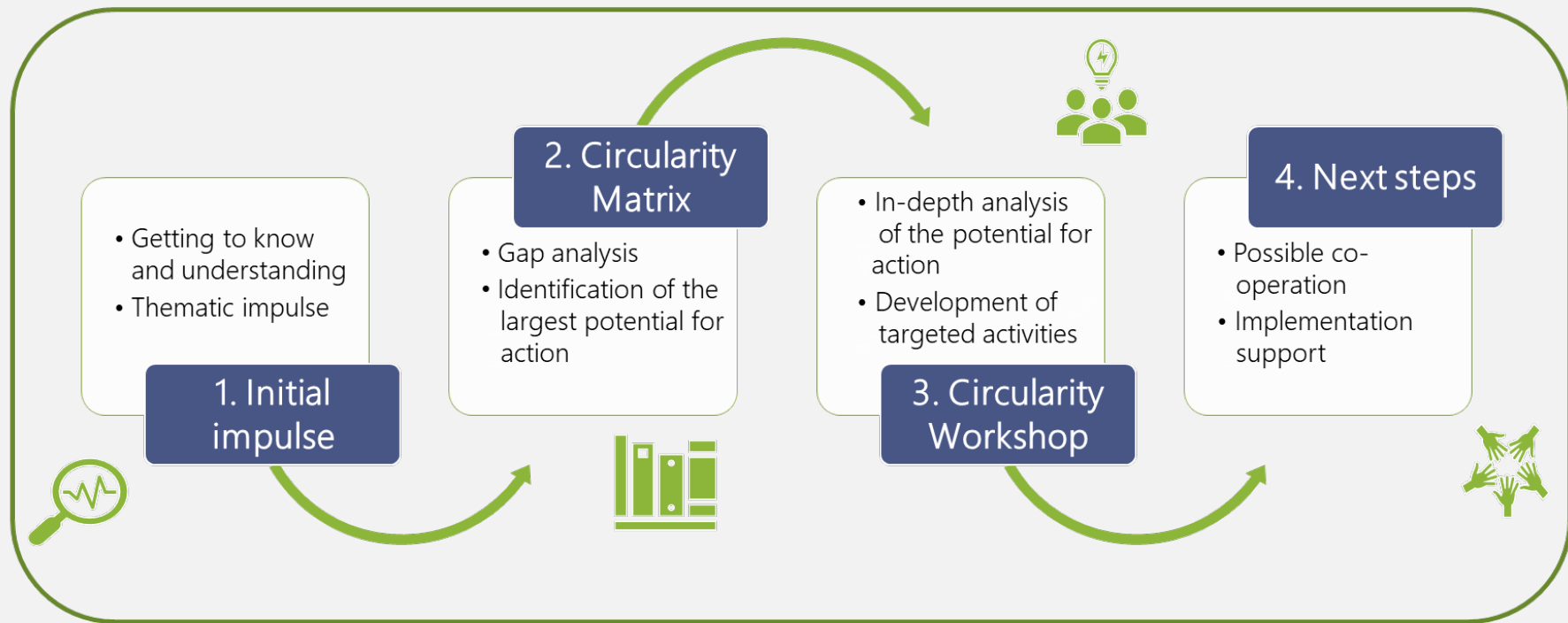
Experience – maturity level



Indicators, M&V, standards, audits & management systems



PROSPERKOLLEG CONCEPT FOR MANUFACTURING SME



Source: Prosperkolleg, CE Potential Check Prosperkolleg 2022

RESULTS OF FIRST IMPLEMENTATION : RATTAY METALLSCHLAUCH-UND KOMPENSATORENTECHNIK GROUP GMBH

Analysis:

- High loss of material and value in flanges and fittings
- Best possible conservation of stainless steel as a valuable material

Potential:

- Extended product utilisation: return system covering 50% to 60% of the products for one pilot customer
- Refurbishment of fittings (flanges) instead of downcycling
- Savings of 4.6 t stainless steel per year, thereby reducing 20.83 t CO_{2-eq} from 1,200 corrugated stainless steel hoses per year

Planned action:

- Development of a take-back system for corrugated stainless steel hoses.
- The approach cannot be taken alone and concerns the value chain.



Source: Rattay, <https://www.rattay.de/de/rattay.html>.

CONCLUSION AND OUTLOOK

- CE activities usually contribute to **energy savings** and **GHG emissions reductions**.
- In contrast to energy efficiency, CE often affects the **core business** or even the **entire value chain**.
- SME need **support in implementing CE measures** -> enhancing their willingness and capability to implement CE strategies, without being afraid to experiment and rethink their own business processes and to overcome entry barriers to the topic.
- The '**CE Potential Check**' of the **Prosperkolleg project** is intended to support SME in independently taking the first steps towards CE in order to develop to **agents of change**.
- For the development of communication, co-operation and networking approaches, for individual support measures, concepts and tools, lessons can **be learned from the long-term experience in the field of energy efficiency**. In both fields it is important to understand the situation of the specific SME and **to address them by personal communication**.

➡ Planned **quantitative survey** on mentality, motivation, challenges of SME and the connection between general innovation orientation and the implementation status of circular value creation strategies.

THANK YOU FOR YOUR ATTENTION!

Project Partners



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DISCUSSION

1. Energy savings by implementation of CE strategies: Does this topic need to be put more on the agenda?
2. Can SME be agents of change? Or are they just dependent on the big companies (OEM), i.e. that rather the OEM should be addressed, not the SME? Does our approach supporting SME on their transition to a CE makes sense?
3. Integration of material and energy aspects: Do you do research in both areas? What conclusions have you drawn with regard to the comparison between CE and energy efficiency?

YOUR SPEAKERS



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