

# IMPULSES FOR SUSTAINABLE BUSINESS DEVELOPMENT THROUGH CROSS-INNOVATIONS

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COPETRI Convention

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# AGENDA

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Welcome

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Sustainability, Cross-Innovations and Innovation Ecosystems

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Sustainable Business Development

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Impulses and Conclusions

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# FRAUNHOFER IMW

## PART OF A STRONG NETWORK



**30,000** employees



**76** institutes and  
research facilities



9 Fraunhofer Groups, among others:

- Energy Technologies and Climate Protection
- Innovation Research
- Resource Technologies and Bioeconomy

9 Lead market Alliances, among others:

- Energy Sector
- Chemical Industry
- Food Industry



# FRAUNHOFER IMW

## PROFILE



2006



Leipzig and Halle (Saale), Deutschland



227 employees from 14 countries

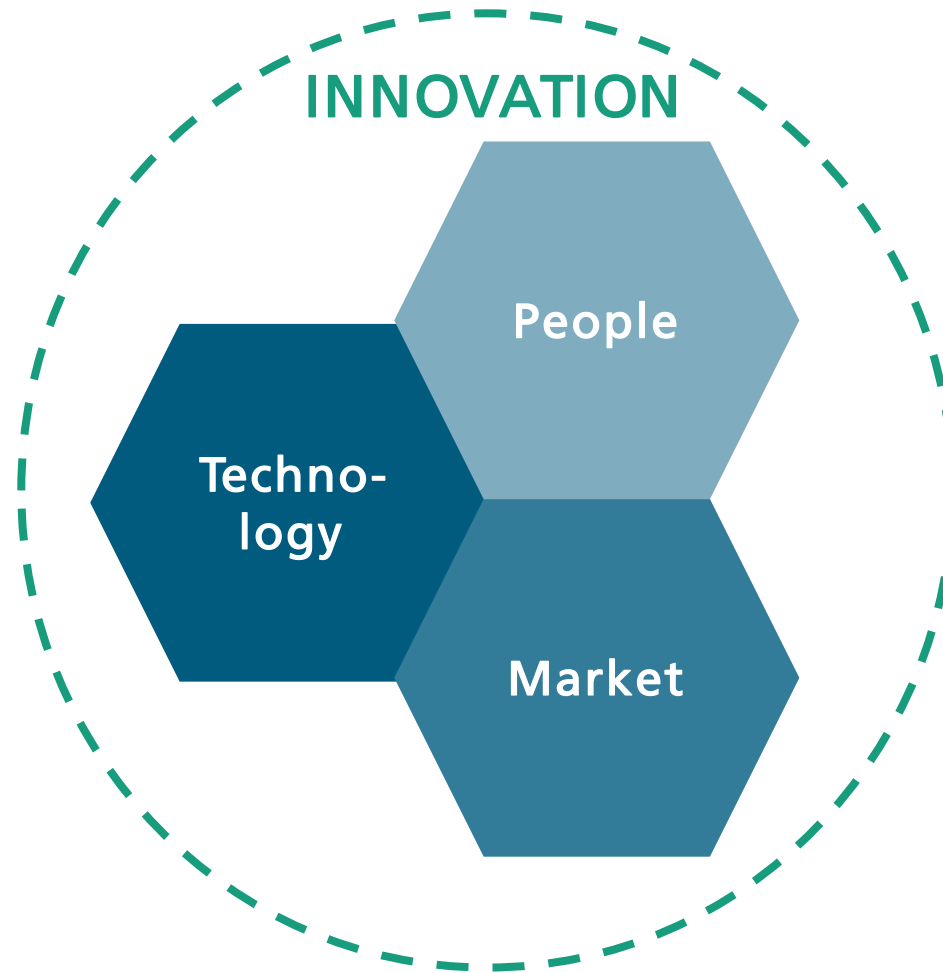


Applied socio- and techno-economic research



75 current research projects for clients from both industry and the public sector

# INNOVATIONS ARE MORE THAN TECHNICAL INVENTIONS



Engineering and technical sciences

Natural sciences

Life sciences

Interdisciplinary,  
holistic approach

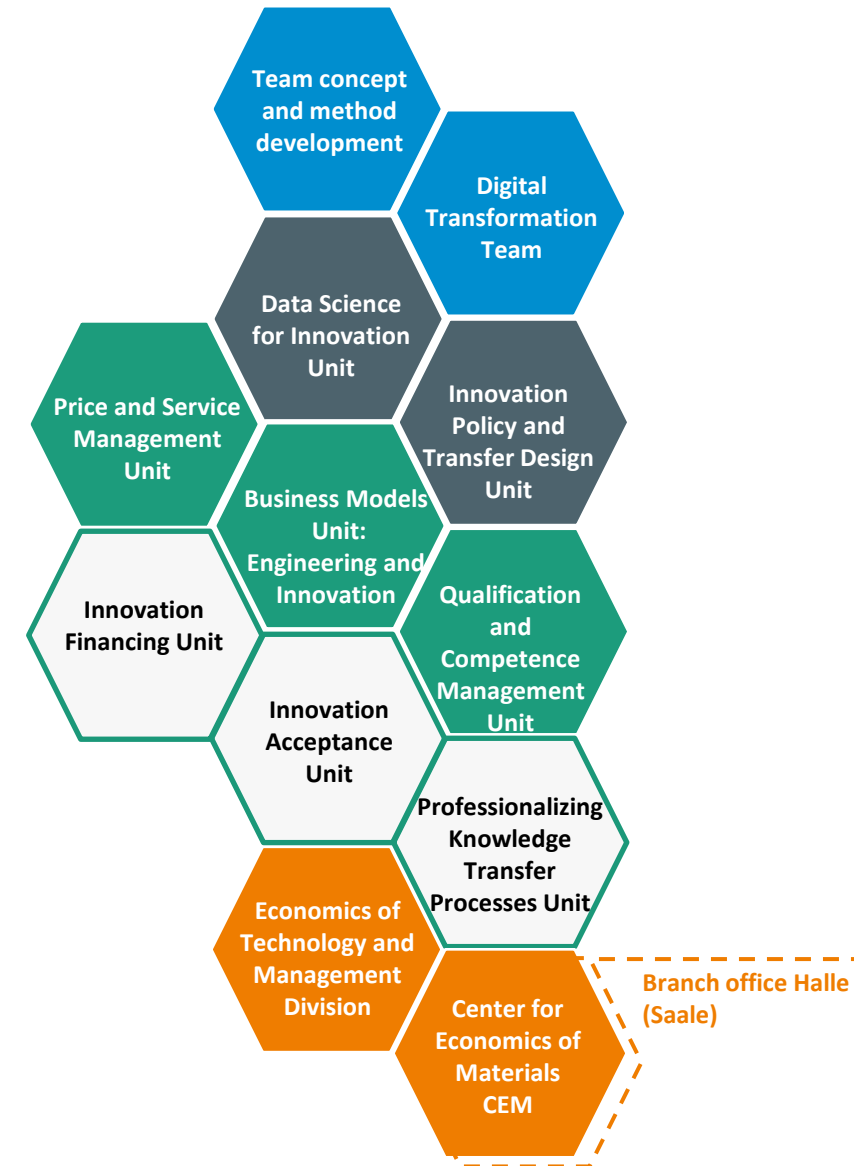
Economics

Social sciences

Political sciences

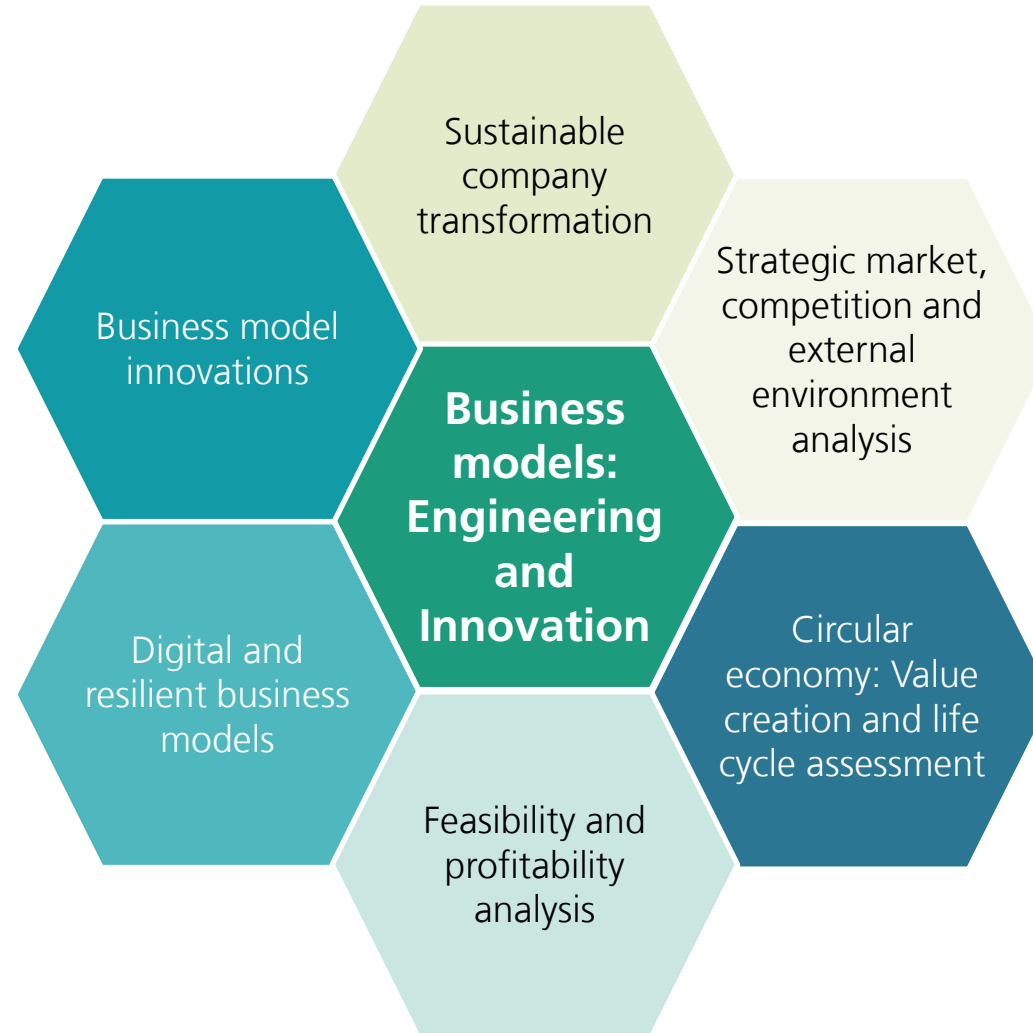
# FRAUNHOFER IMW

## RESEARCH PROFILE



# FRAUNHOFER IMW

## PORTFOLIO BUSINESS MODELS UNIT





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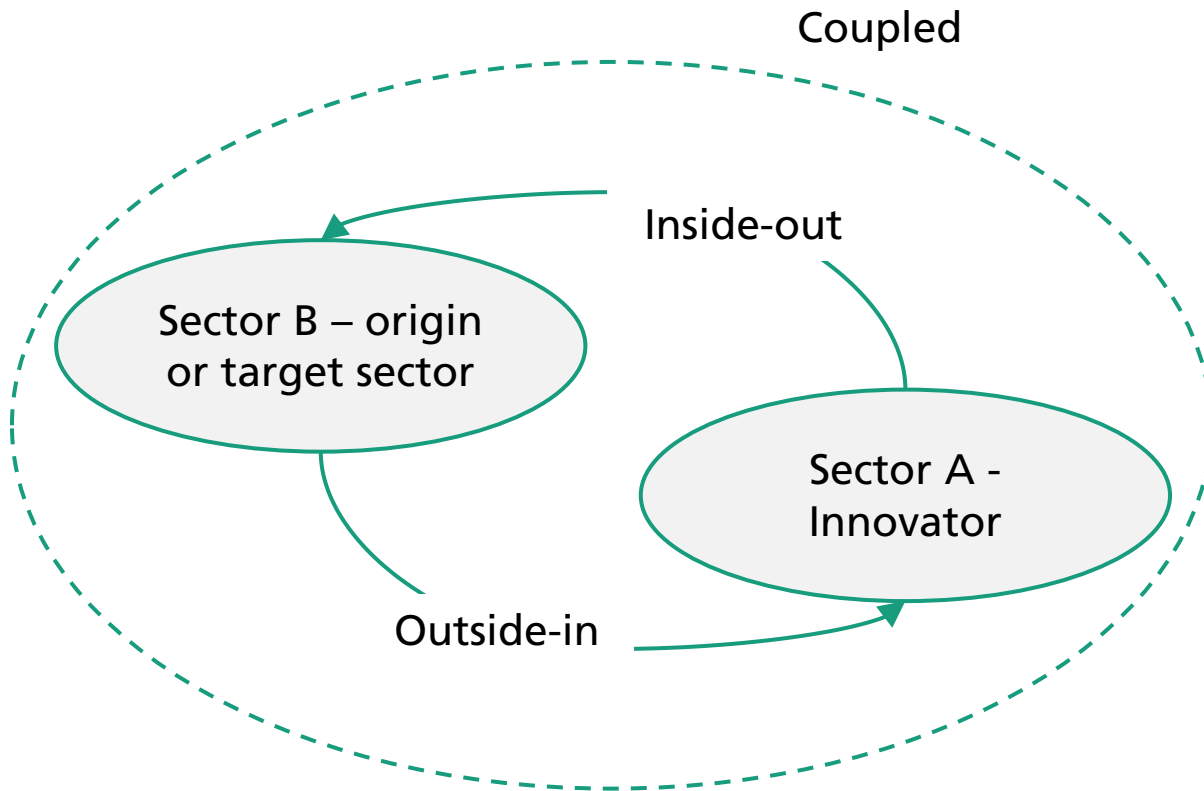
# SUSTAINABILITY, CROSS-INNOVATIONS AND INNOVATION ECOSYSTEMS

## WHAT ARE CROSS-INNOVATIONS?

- Systematic use of the potential of other industries.
- Content: Technologies, patents, specific know-how, capabilities, processes and entire business models, but also cultural, organizational and social innovations.
- Existing technologies, systems, concepts or general principles of an industry are imitated and adjusted in a creative manner and used in a different sector.
- Advantages
  - High degree of innovativeness for the applying company or the adopting sector.
  - Risk reduction through confirmation of general functionality in the transferring (originating) industry → Problems have already been solved there.
  - Holistic view on customer needs: Fulfilment of a need instead of just selling a product or service.
- Challenges
  - Transferrability and need for adaptation, coordination effort, scalability, feasibility, missing experience in the adopting industry, potential patent issues

# SUSTAINABILITY, CROSS-INNOVATIONS AND INNOVATION ECOSYSTEMS

## TYPES OF CROSS-INNOVATIONS

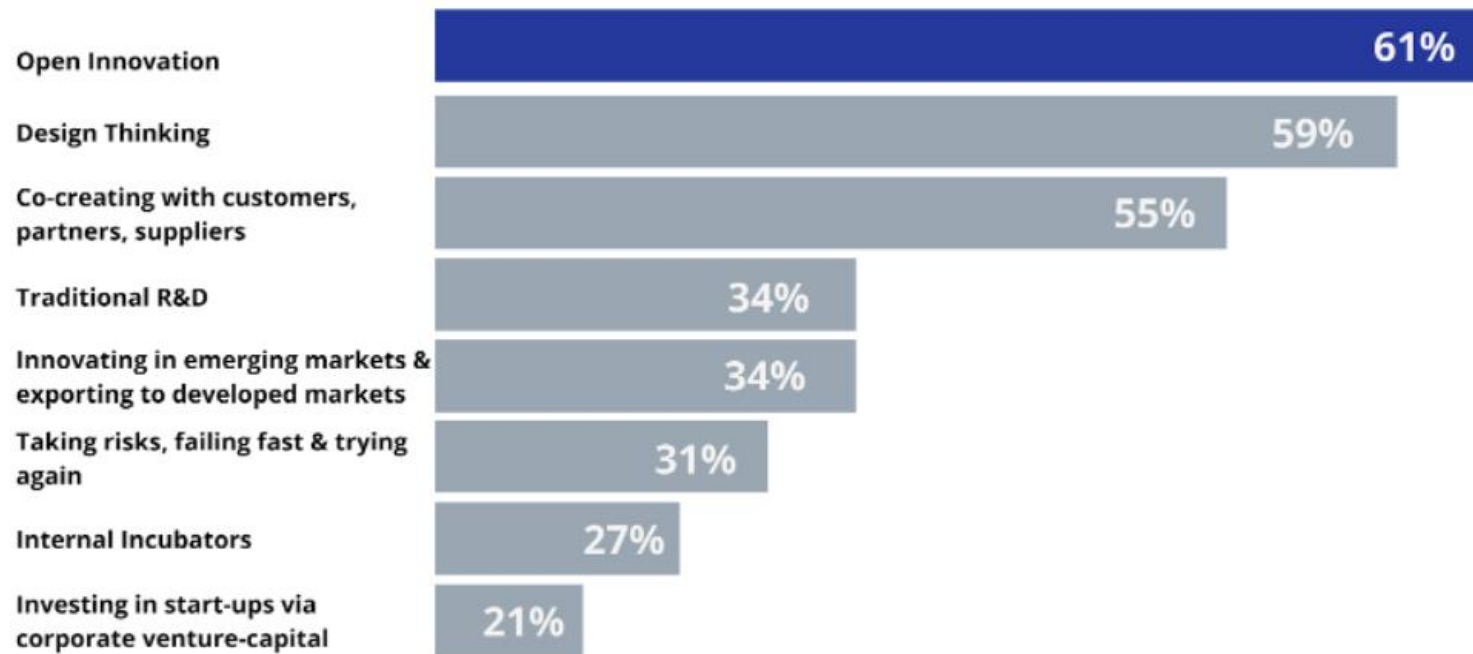


- **Outside-in:** Companies adopt available solutions for their own sector → Use of the TouchSense-Technology in joysticks for the BMW driving assistance system iDrive.
- **Inside-out:** Companies transfer solutions from their own sector to new applications or markets → Use of the GoreTex membrane in medical implants.
- **Coupled:** Joint development from idea to innovation / utilization – Cooperation and exchange instead of transfer or adoption → Google and Novartis join forces on the development of „Smart Contact Lenses“, that can e.g. measure the blood glucose level of the wearer.

# SUSTAINABILITY, CROSS-INNOVATIONS AND INNOVATION ECOSYSTEMS

## RELEVANCE OF CROSS-INNOVATIONS

### More collaborative operating models outpace traditional R&D



Ques: What operating models does your organization currently use to drive innovation?

Percentages denote the number of companies using these innovation models.

Source: PwCs Innovation Benchmark

Base: 1,222

- Open, cross-industry approaches become more important.
- Partners from other industries as well as customers and suppliers are increasingly involved (value chain as innovation ecosystem).

# SUSTAINABILITY, CROSS-INNOVATIONS AND INNOVATION ECOSYSTEMS

## THE ROLE OF THE CREATIVE INDUSTRIES

- Impulses from the Creative Industries
  - influence the transformation towards a knowledge society,
  - facilitate building up new competencies in traditional industries,
  - change organizational structures and innovation cultures,
  - shape marketing as well as product innovations,
  - change value systems of individuals and societies.
- Great willingness to cooperate on both sides.
- Often missing knowledge regarding possible partners for joint projects and initiatives – use of innovation ecosystems.
- Example Fraunhofer WKD network: Interdisciplinary cooperation between science, art and design.

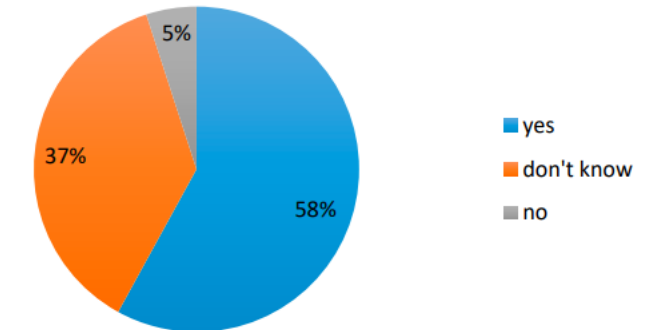


Figure 7. Willingness of the traditional sector to cooperate with the creative sector.

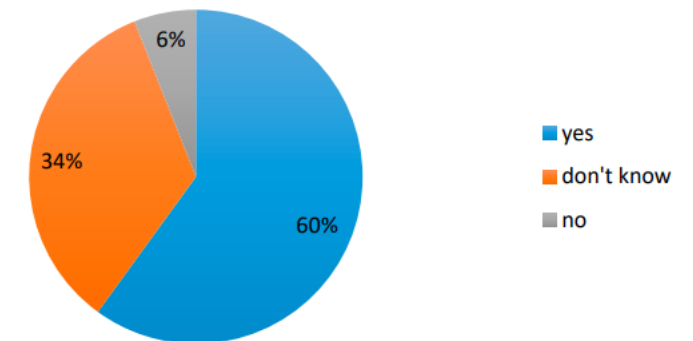


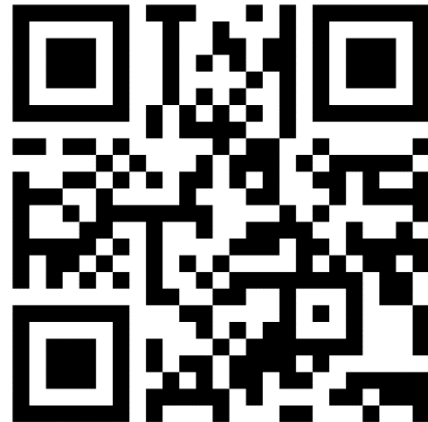
Figure 8. Willingness of the creative sector to cooperate with the traditional sector.



# SUSTAINABILITY, CROSS-INNOVATIONS AND INNOVATION ECOSYSTEMS

## MENTIMETER

Which industries have the greatest potential for Cross-Innovations?

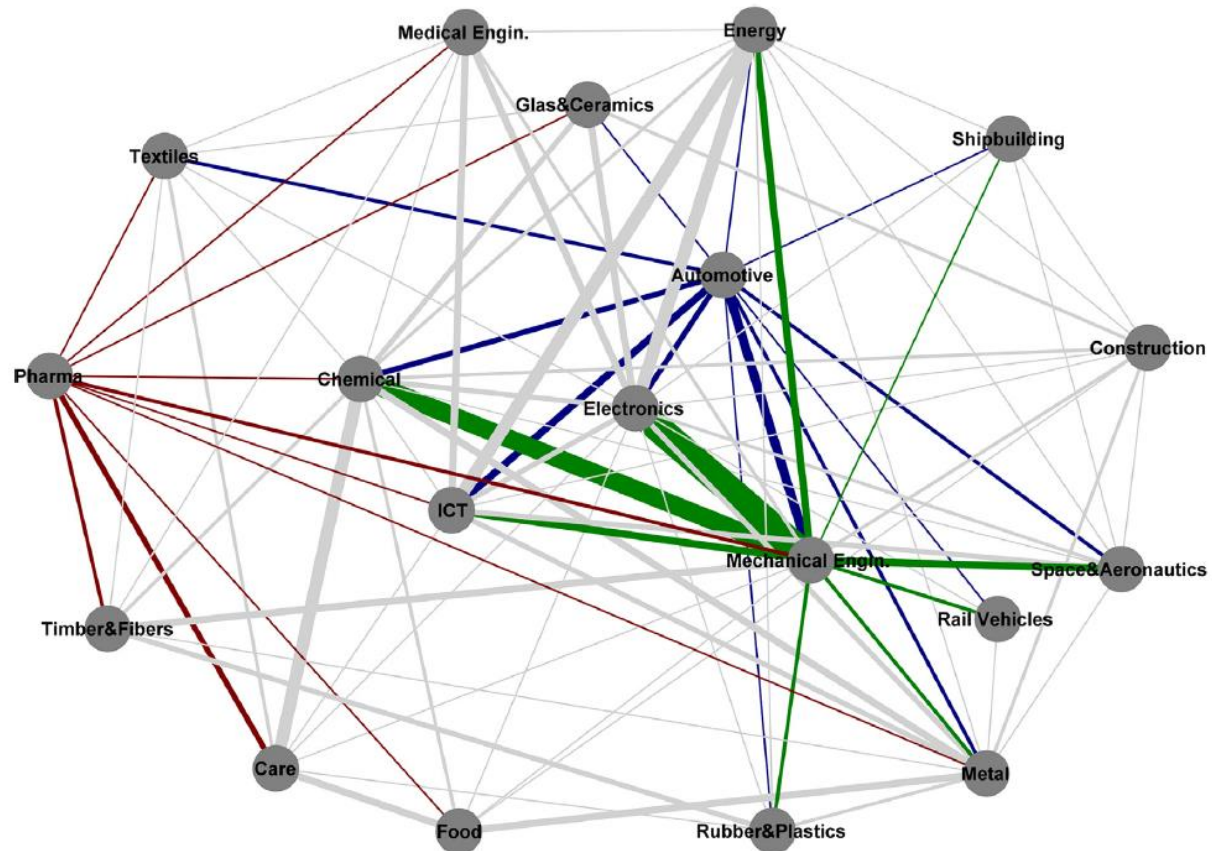


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# SUSTAINABILITY, CROSS-INNOVATIONS AND INNOVATION ECOSYSTEMS

## CROSS-INNOVATIONS BETWEEN INDUSTRIES

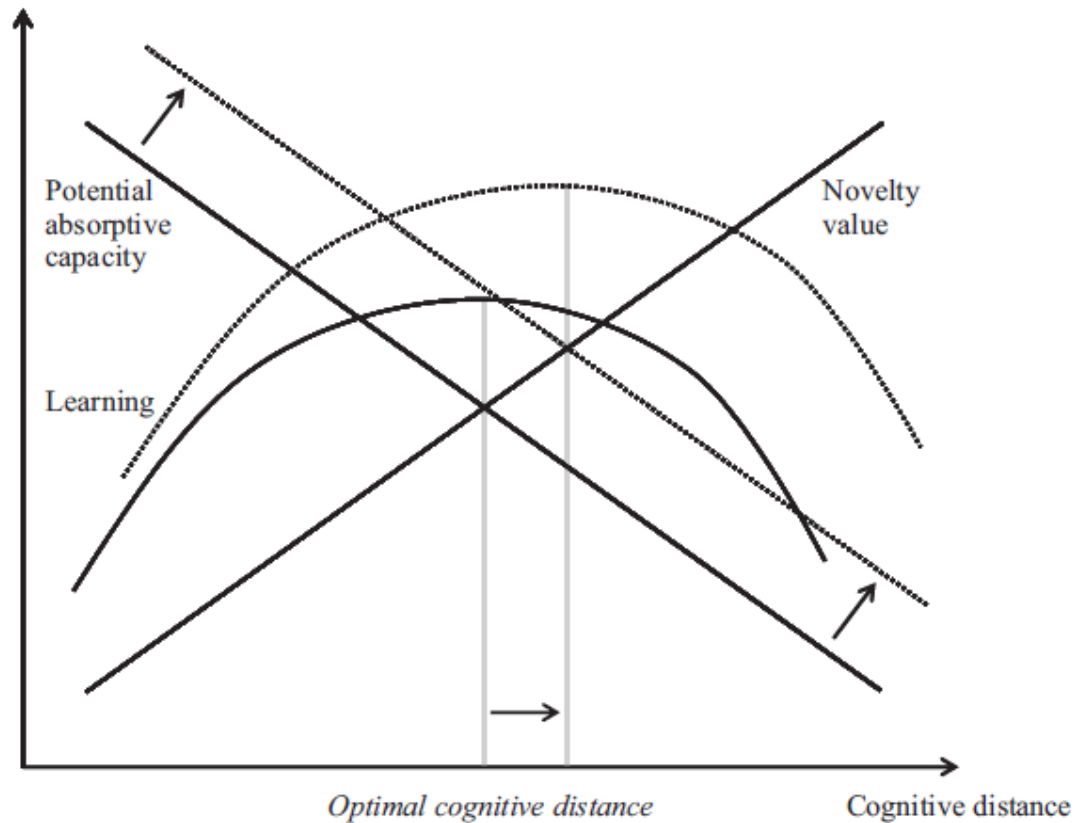


- Empirical study (2014): Most intensive cooperation between Electronics and Mechanical Engineering, followed by Chemical Industry and Mechanical Engineering.

Fig. 1. Cross-industry network graph. Blue ties link automotive with mechanical engineering (green ties) and pharmaceuticals (red ties) through mutual partner industries. Black and white version of Fig. 1 for reproduction in print. Black ties link automotive with mechanical engineering and pharmaceuticals through mutual partner industries. ICT = Information and communication technology. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.).

# SUSTAINABILITY, CROSS-INNOVATIONS AND INNOVATION ECOSYSTEMS

## CROSS-INNOVATIONS BETWEEN INDUSTRIES

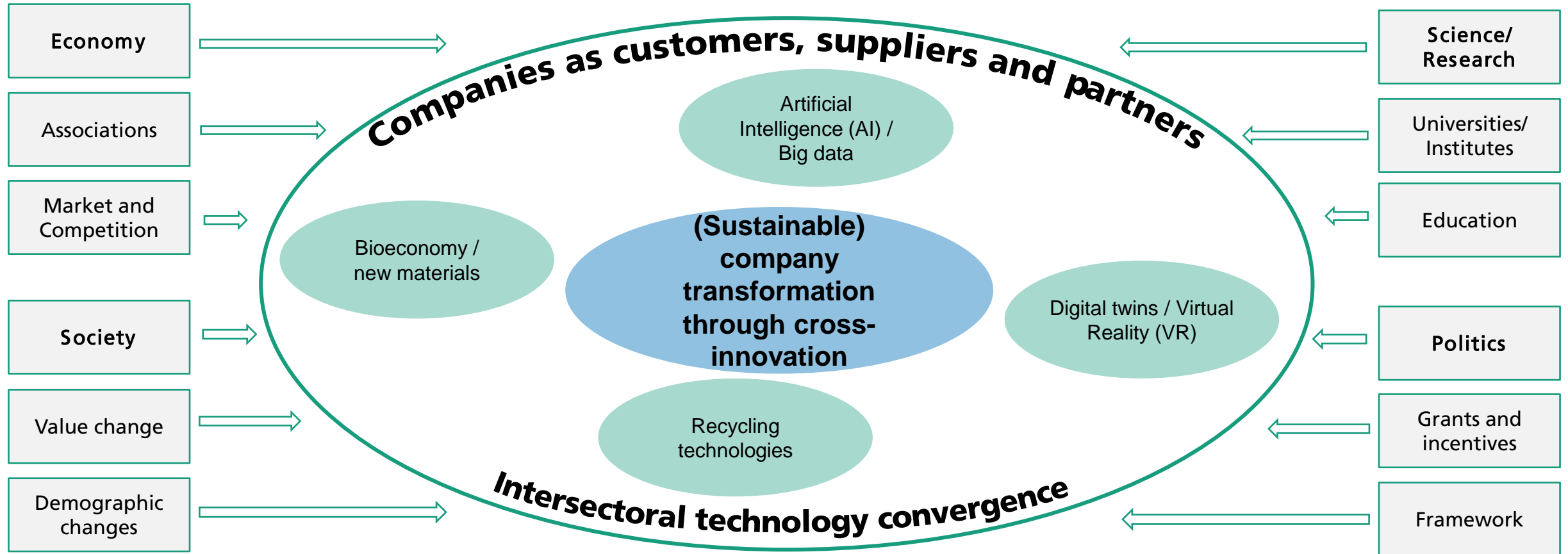


**Fig. 2.** Implications of coordination antecedents on potential absorptive capacity and cognitive distance. Adapted from [Nooteboom \(1999\)](#).

- (Cognitive) distance between industries in comparison to absorptive capacity and novelty value of cross-innovations:
  - Proximity facilitates the transfer.
  - Innovations with high novelty value are more likely in distant industries.
- Dynamics over time are reflected in the learning curve:
  - Absorptive capacity increases with experience from past exchanges and cooperations.
  - Over time, higher distances can be crossed or distances are being reduced.

# SUSTAINABILITY, CROSS-INNOVATIONS AND INNOVATION ECOSYSTEMS

## COVERALL CONTEXT AND CHALLENGES



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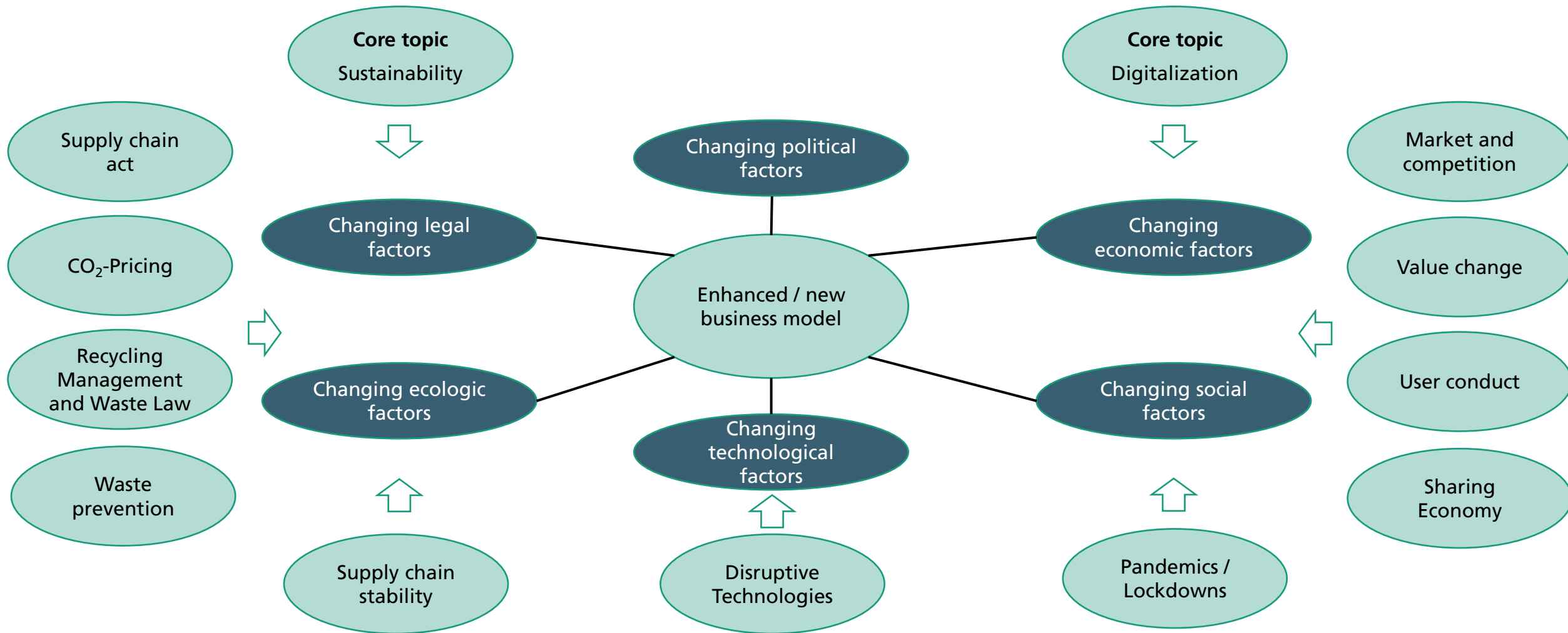
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Impulses and Conclusions



# SUSTAINABLE BUSINESS DEVELOPMENT

## CONTEXTUAL ANALYSIS



# SUSTAINABLE BUSINESS DEVELOPMENT

## MENTIMETER

Which contextual factors have the highest influence on the sustainable transformation of companies?



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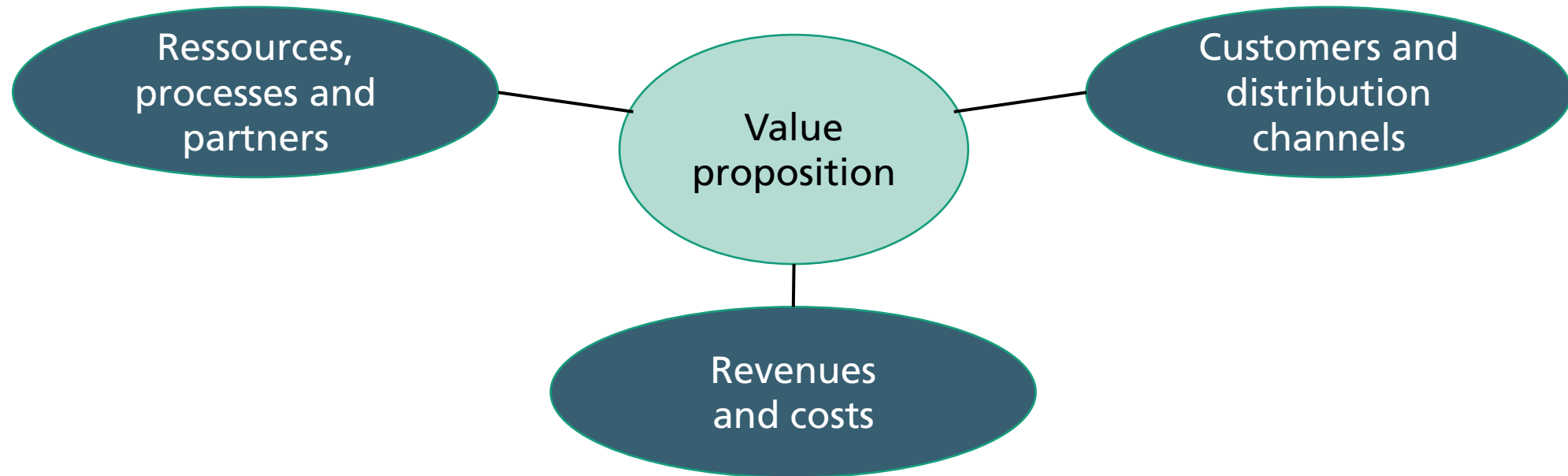
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# SUSTAINABLE BUSINESS DEVELOPMENT

## OVERVIEW BUSINESS MODELS

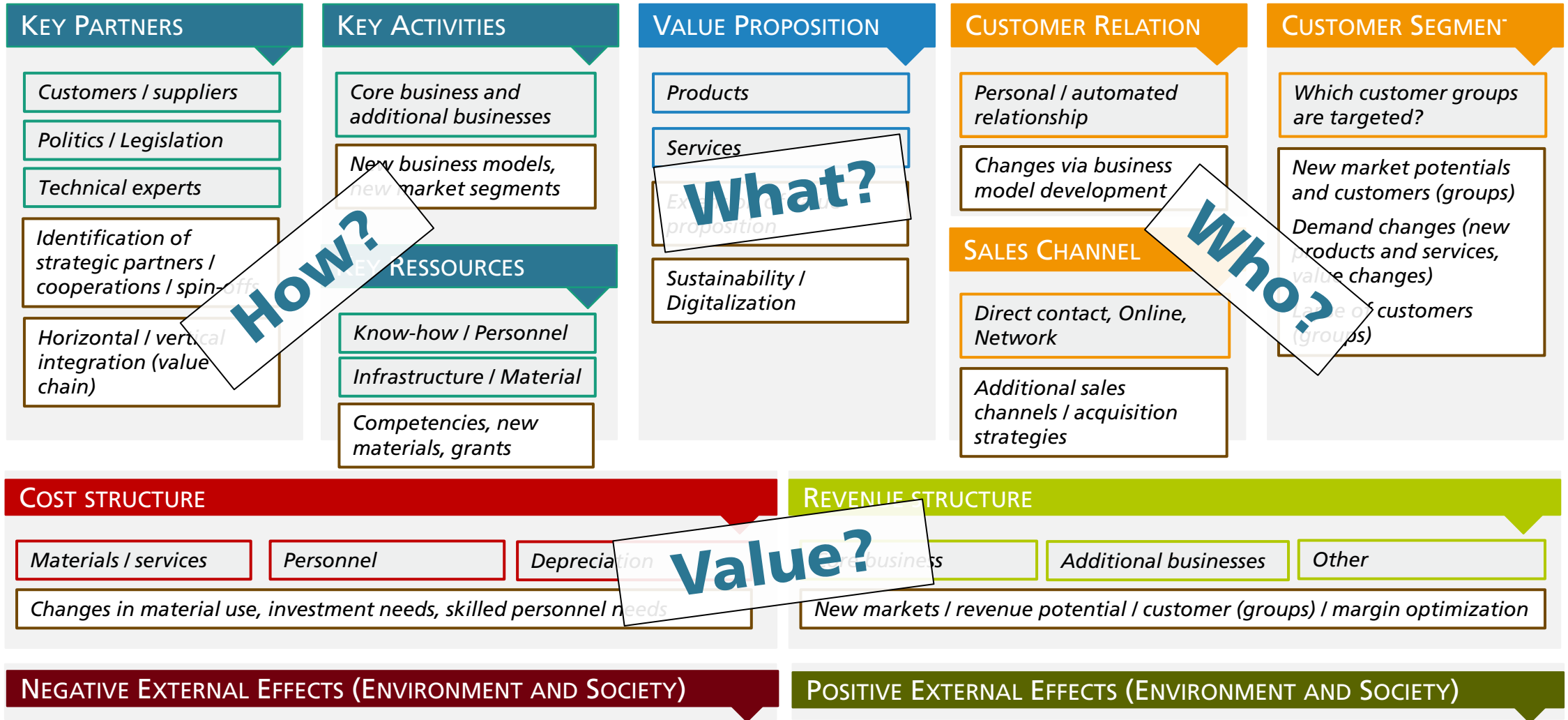
### The business model of a company

- describes with which products and services revenues are generated,
- how value creation takes place,
- which resources, processes and partners are required and which costs occur, and
- which customer group the products and services are being sold to.

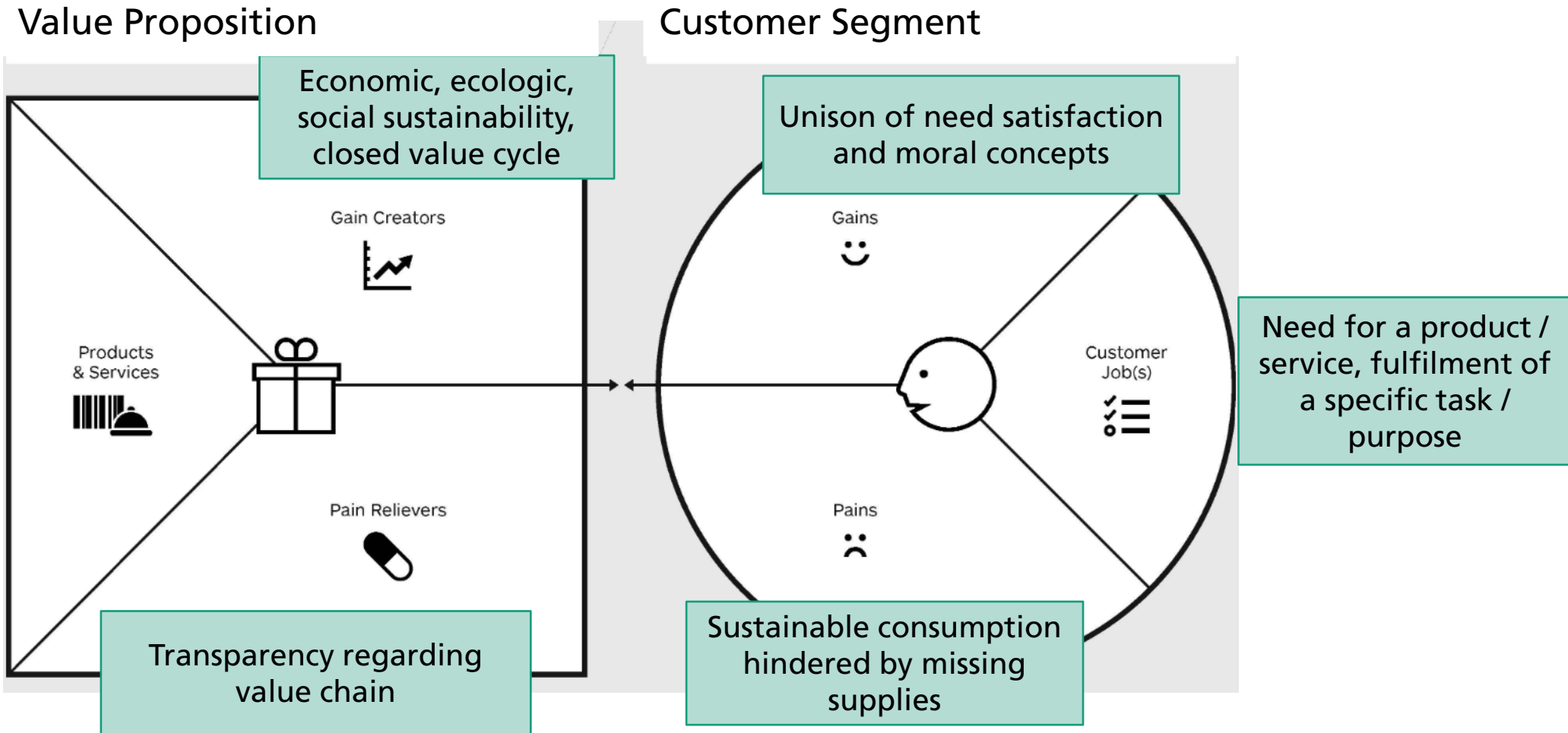


# SUSTAINABLE BUSINESS DEVELOPMENT

## BUSINESS MODEL CANVAS AS STARTING POINT FOR NEW IDEAS



# SUSTAINABLE BUSINESS DEVELOPMENT VALUE PROPOSITION CANVAS



Sustainable transformation of products and services (materials, production conditions, consideration of external effects)



# SUSTAINABLE BUSINESS DEVELOPMENT

## BUSINESS MODEL EXAMPLES

### Sustainability

- “Trash to cash”: R-Strategies (see next slide), e.g. Recycling, Upcycling

### Product as a service

- “Pay per use”: Usage-dependent payment sometimes combined with with basic fee, e.g. Car Sharing

### Cooperation strategies

- „Revenue sharing”: Participation in sales for suppliers, customers and other partners, e.g. App stores
- „User designed”: Customers can become entrepreneurs, e.g. Spreadshirt

### Customer retention

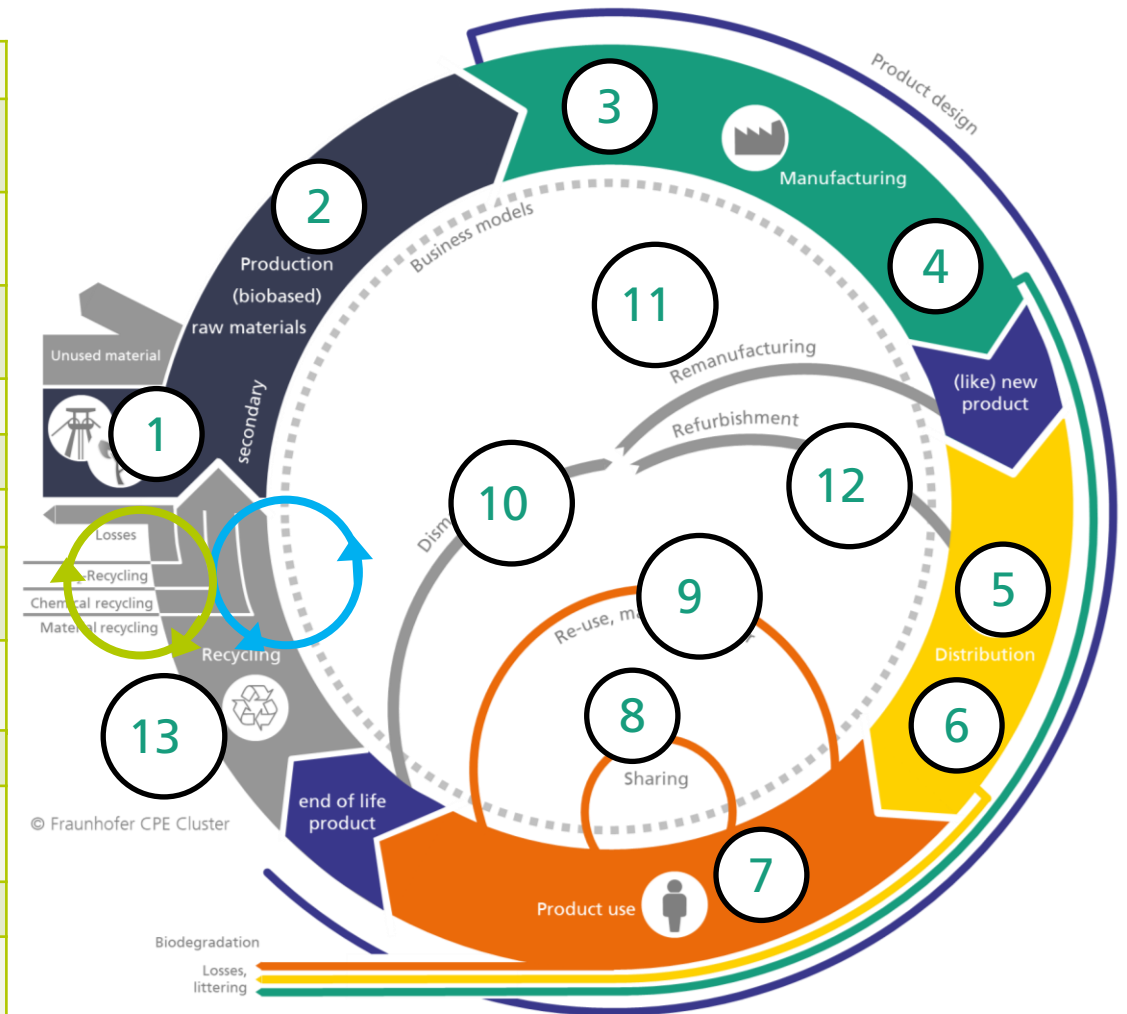
- „Subscription”: Subscribe to product-related services, e.g. HP Printers
- „Lock in”: High change and conversion costs in case of switch to another provider, e.g. Nespresso

### Integration vs. Specialization

- „Integrator”: Integrate up- and downstream activities, e.g. Solarindustrie
- „Make more of it”: Use competencies outside the core business, e.g. consulting by industrial companies

# SUSTAINABLE BUSINESS DEVELOPMENT VALUE CYCLE

1	Companies that extract primary raw materials or process secondary resources
2	Companies that are heavily dependent on primary (and/or) raw materials; Typically: Trading in (recycled) materials
3	Companies that process / refine materials and manufacture intermediate products, e.g. also R&D
4	Companies that manufacture end products (including drafting and design processes)
5	Wholesale, B2B, interface between producers and retailers
6	Retail, B2C, interface between retail and user / consumer
7	Consumer / user
8	Companies that intensify the utilization of products among users; Typically: sharing platforms
9	Companies that repair products and possibly sell them on themselves; Typically: repair and maintenance service / trade in used goods
10	Companies that take back discarded products and disassemble them if necessary
11	Companies that restore products using previously used product components to like-new condition
12	Companies that remanufacture / refurbish already used products
13	Companies that produce secondary raw materials by processing a discarded or used product, component or material with lower quality / properties (downcycling) or higher (upcycling)



# SUSTAINABLE BUSINESS DEVELOPMENT

## MENTIMETER

Which factors have the biggest influence on your business models?



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# IMPULSES AND CONCLUSIONS

## COLLABORATIVE CROSS-SECTOR BUSINESS MODELS FOR SUSTAINABILITY

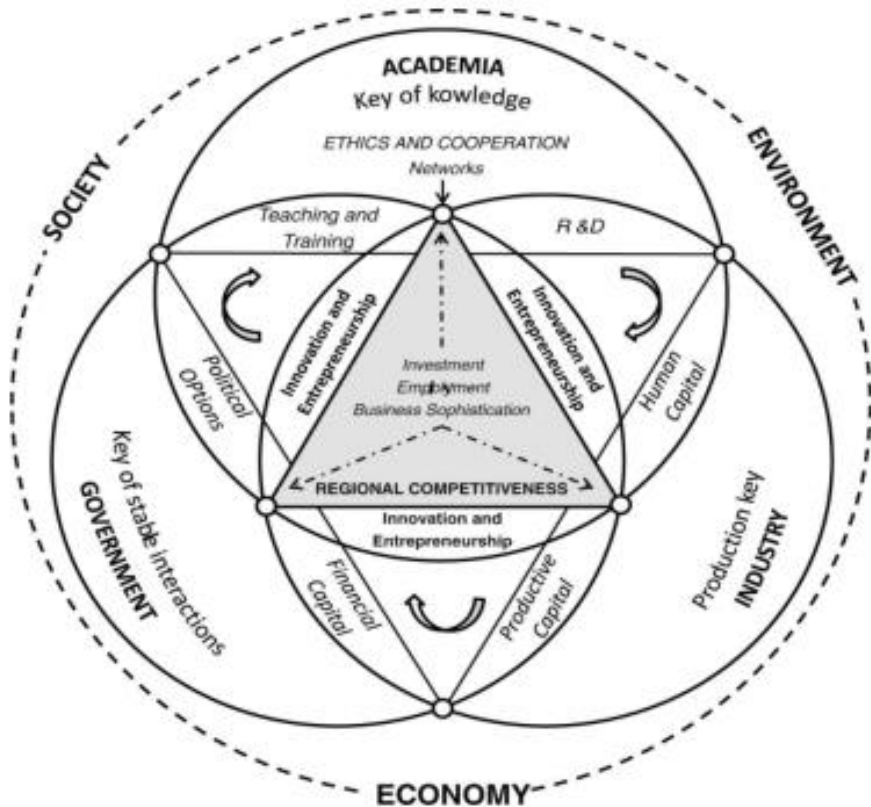


Figure 1. Triple Helix Model for innovation.

- Sustainable business models require collaborative cross-sector interactions of different stakeholders → “sustainability innovations are characterized by a systemic nature and require that multiple organisations act in an orchestrated fashion” (Rohrbeck, Konnertz, and Knab 2013, 4)
- To achieve a „real“, sustainable increase of value creation, social, ecologic and economic aspects must be combined and aligned within the meaning of a common goal.
- Challenge: Results must have an equal value for all stakeholders involved.

# IMPULSES AND CONCLUSIONS

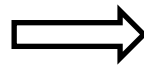
## CROSS-INNOVATIONS FOR A CIRCULAR ECONOMY – DECOMBLADES

- The development of a Circular Economy requires cross-sector collaborations.
- **DecomBlades**: Cross-sector cooperation between wind energy and recycling companies and research institutions to develop sustainable solutions for the commercial recycling of wind power rotor blades.



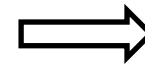
[bit.ly/39Azdbb](https://bit.ly/39Azdbb)

Decommissioned rotor blades, housing and driving collar covers → separation and crushing of glass fibre materials



[bit.ly/3wn6H5A](https://bit.ly/3wn6H5A)

Recycling methods (e.g. treatment of cement, gasification, creation of new compounds, recovery of glass and carbon fibres)



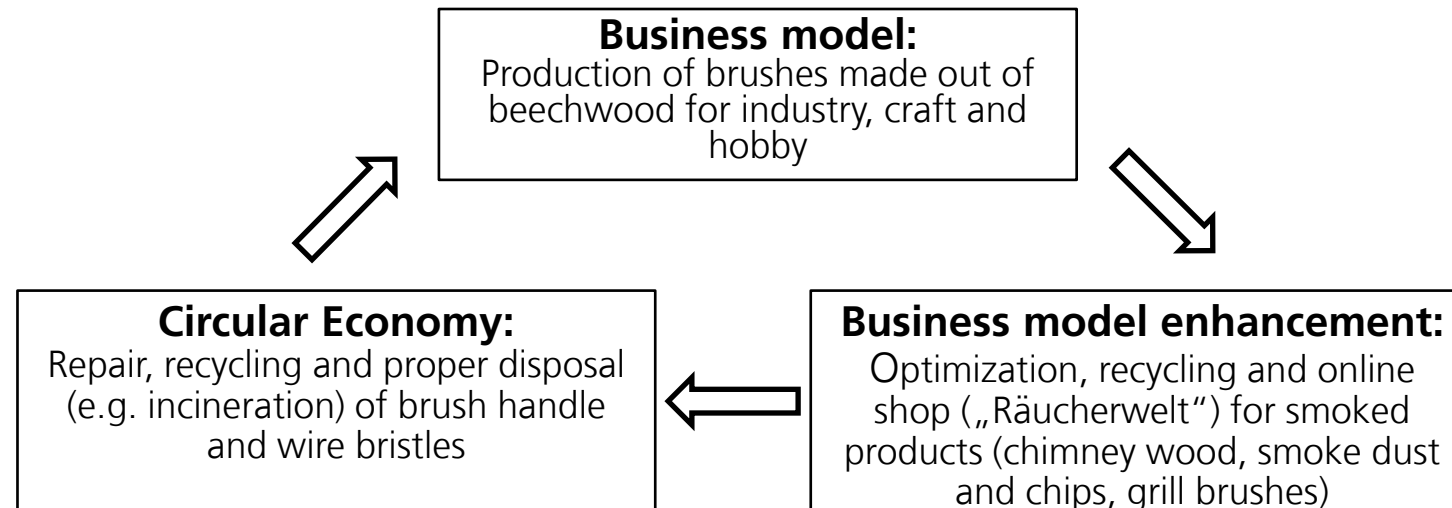
[bit.ly/3Nk4tJY](https://bit.ly/3Nk4tJY)

Sustainable development of the renewable energy sector by applying circular economy methods

# IMPULSES AND CONCLUSIONS

## CROSS-INNOVATIONS FOR A CIRCULAR ECONOMY – TECHNISCHE BÜRSTEN GMBH

- Business model enhancement of SME through Cross-Innovations and Circular Economy.
- **Technische Bürsten GmbH:** Enhancement of the Business model from industrial brushes to brushes with online shop for smoked products to achieve a sustainable company transformation (make use of former waste) and more efficient use of resources.





# IMPULSES AND CONCLUSIONS

## MENTIMETER

In which sectors are you looking for impulses for innovations?



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# IMPULSES AND CONCLUSIONS

## OUTLOOK AND CONTINUATIVE CONSIDERATIONS

### Central questions

- Which positions in the value chain present big challenges to our company?
  - Which contextual factors will influence our business model the most in the future?
  - How are the needs of our customers changing?
  - How can we differentiate ourselves from our competitors?
  - How can we conciliate economic, ecologic and social sustainability goals?
  - Are there solutions for our challenges and ideas in other industries and accordingly how can our business model benefit from cross-innovations? (additional value added, new customer groups, cost reduction, more efficient use of resources)
  - Are there possible cooperation partners in our innovation ecosystem and how can we make a better use of this?
- COPETRI as event for cross-sector networking

## Contact

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<https://www.imw.fraunhofer.de/en/research/corp-development/business-models.html>

