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Circular Futures: What Will They Look Like?

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Bauwens, T., Hekkert, M. & Khircherr, J. (2020). "Circular Futures: What Will They Look Like?" *Ecological Economics*, 175.

Introduction I

- The circular economy (CE) is argued by policy-makers, academics and businesses to hold great promise for achieving sustainability
- Yet, there is a dearth of research about what a circular future may look like
- To address this gap, this paper proposes different plausible scenarios for a circular future
- It uses a 2 x 2 scenario matrix method developed through a thought experiment and a focus group with academics, policy-makers and circular entrepreneurs



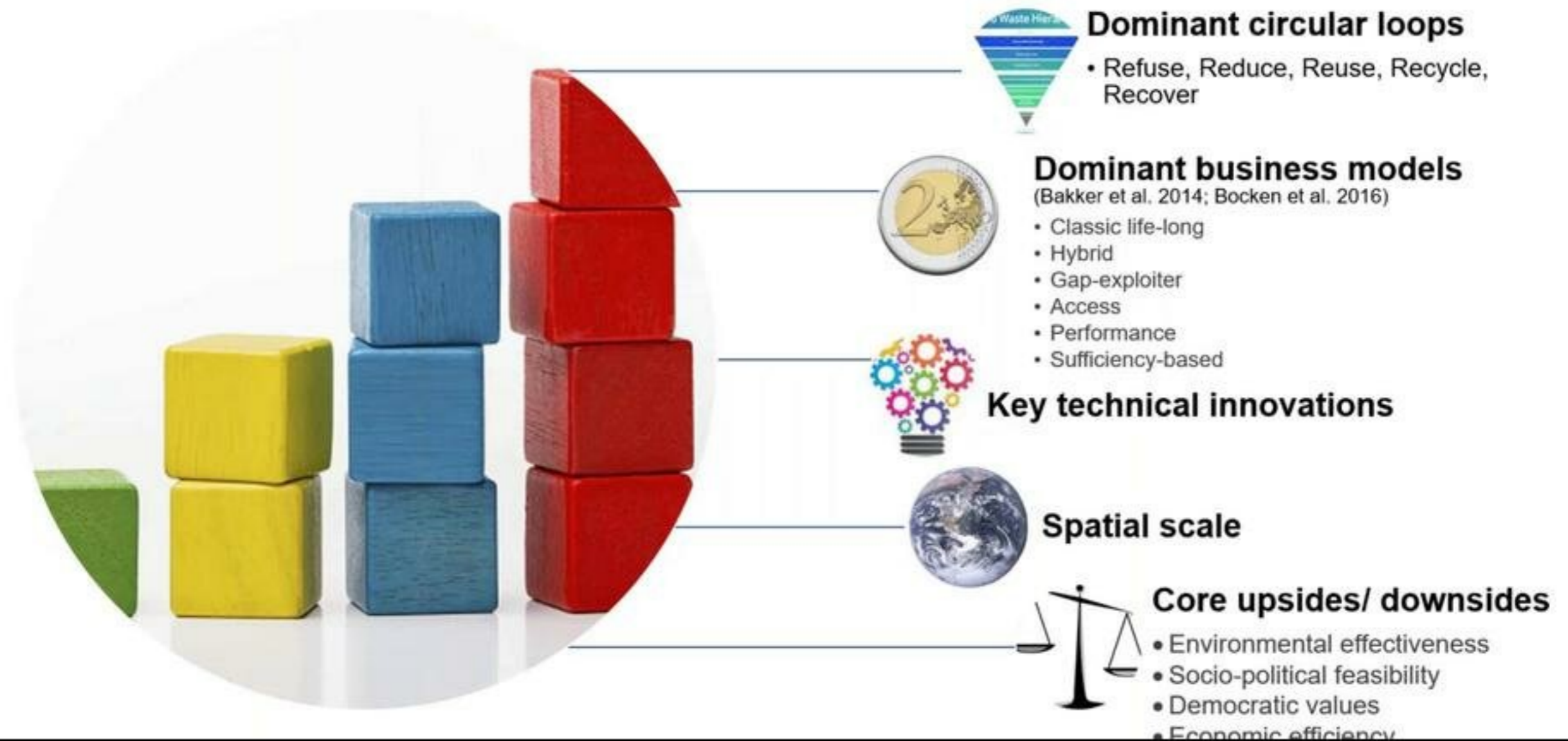
Introduction II

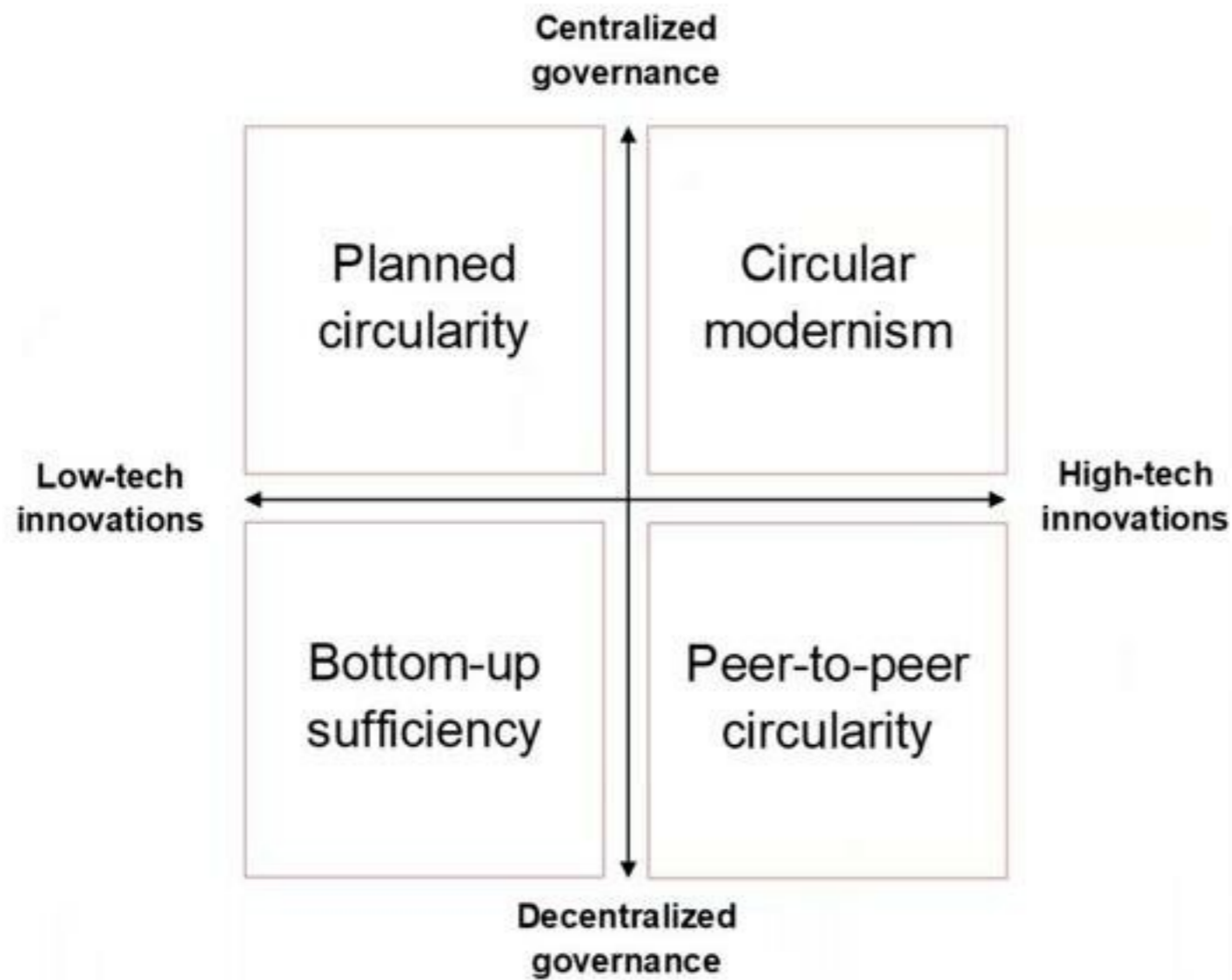
- From this, the paper builds four scenario narratives for the future of a circular economy
- Delineates the core characteristics as well as assessing the upsides and downsides of each scenario
- Objectives
 - Provide some **conceptual clarity** around the notion of circular economy and a sound basis for **quantitatively modelling** the impacts of a CE
 - Provide a **clearer directionality** to policy-makers and businesses
 - Help them both **anticipate** and understand the consequences of a paradigm shift towards a CE and **shape policies and strategies**

Dimensions of the axes	Definition
High-tech innovations	Advanced and complex technologies characterized by high R&D intensity and high knowledge transfer costs
Low-tech innovations	Technologies designed to be as simple as possible, characterized by low R&D investment and low knowledge transfer costs
Centralized governance	Concentration of political and economic power and responsibilities into the hand of national governments and large corporations
Decentralized governance	Expansion of local political and economic autonomy through the transfer of powers and responsibilities away from large national political and administrative bodies and large corporations

Definition of the axes

Core characteristics of the scenarios





The four scenarios for circular futures

Circular modernism



Core principles

- Relies on technological innovations
- Centralization of political and economic decision-making
- Transformations focused on the supply side and businesses' production activities
- Main roles of the government
 - Set standards for eco-efficiency and design for recycling and provide directionality to circular innovations
 - Invest massively in R&D in these sectors to spur innovations



Key technological innovations

- High-tech recycling technologies (automated sorting, chemical recycling of plastics)
- Eco-efficient innovations such as bio-based materials
- Artificial intelligence and big data analysis to support more sustainable manufacturing processes



Dominant business models

- Recycle, Recover, Reduce (high-tech)
- No significant changes to conventional business models



Spatial scale: global, since large global consortia and clusters of multiple companies pool their R&D investments to create economies of scale for eco-efficient and recycling innovations

Planned circularity



Core principles

- Circular economy transition piloted by government via strong **coercive measures**
- Government establishes public companies to implement circular policies
- Sets **command-and-control regulations** on production and consumption (e.g. banning hazardous substances and setting hard caps on resource consumption)
- Involves large changes in consumers' behaviors and lifestyles, but not necessarily in the cognitive and emotional aspects of engagement



Key technological innovations

- **Ambiguous** effects on technical innovations
- May stifle innovation, since private businesses lose their autonomy to innovate
- May boost technical innovations, since companies are forced to develop solutions to comply with governmental goals



Dominant business models

- Refuse, Reduce, Reuse, Recycle, Recover
- Refuse is mainly achieved through regulations setting hard caps on resource consumption or banning certain materials
- Reduce, Reuse and Recycle is mainly approached through low-tech innovations



Spatial scale: national, since the scenario mainly unfolds within the jurisdictions of national states

Bottom-up sufficiency



Core principles

- Based on decentralized, small-scale production within local, self-sufficient communities
- Use of less intensive, organic farming methods for agricultural production
- Shorter distances of travel, by foot, bicycles or public transport
- Important behavioral changes (substantial reduction in consumption)



Key technological innovations

- No dominant technological innovation
- Nature of innovations social rather than technological: post-material lifestyle, rejection of packaging waste and shopping bags, for example in package-free shops, etc.



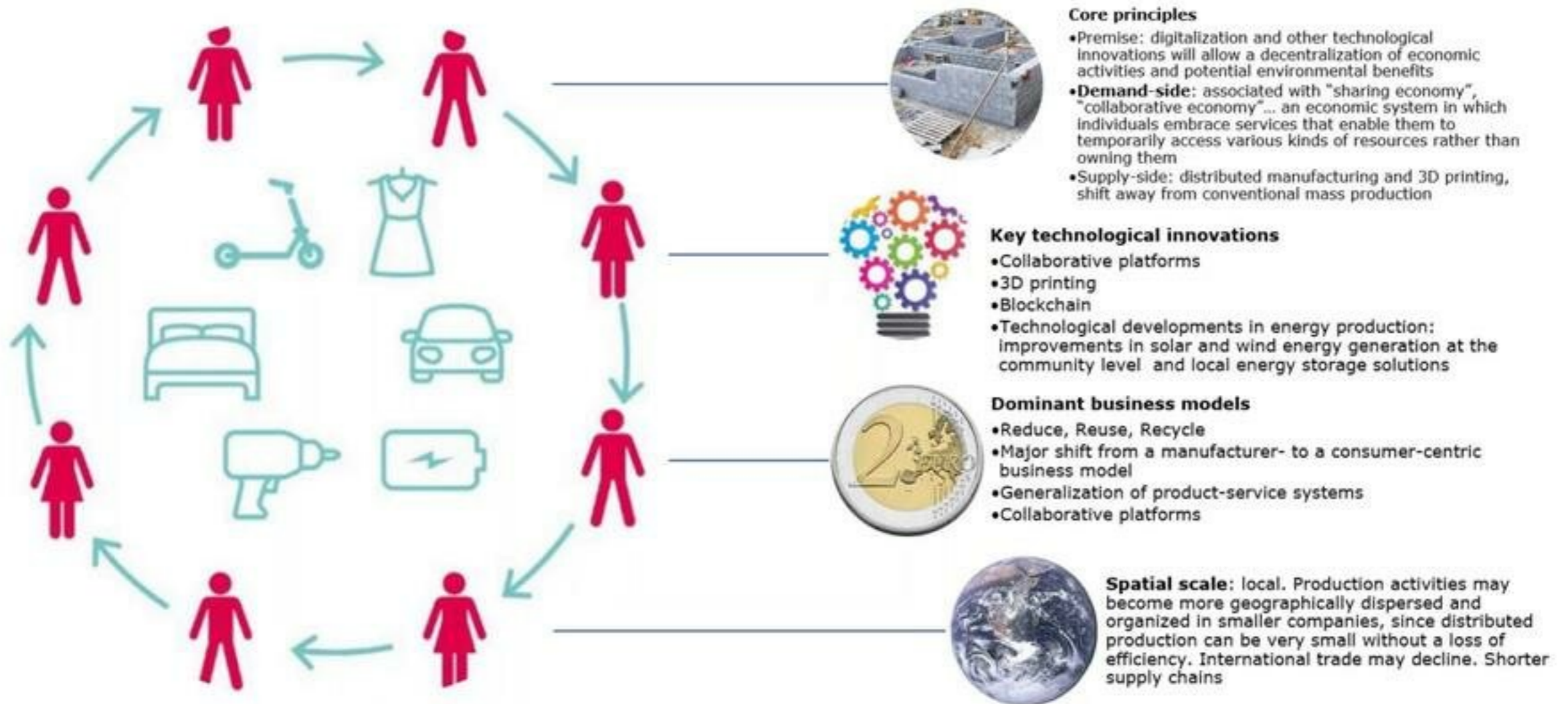
Dominant business models

- Sufficiency-based business models: small companies who develop innovations with the objectives of reducing absolute demand by influencing and mitigating consumption behavior, going beyond eco-efficiency (Bocken and Short, 2016)
- No large company
- Roles played social and solidarity economy organizations
- Emphasis on citizens and local communities' involvement in economic decision-making through a participatory democratic model

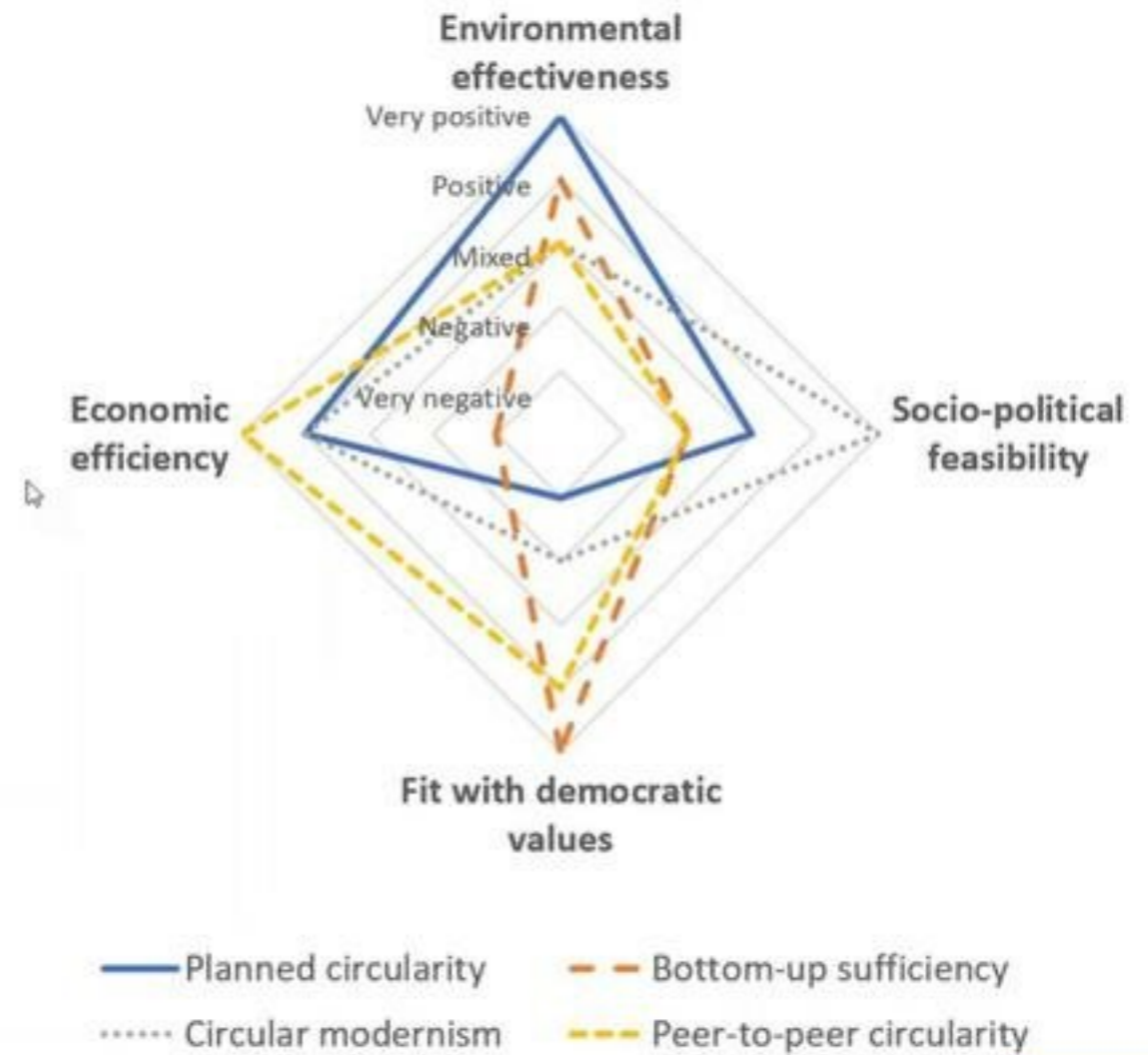


Spatial scale: local, with a simultaneous development of short supply chains. This echoes the degrowth literature, which puts a large emphasis on the relocalization of economic and political activities

Peer-to-peer circularity

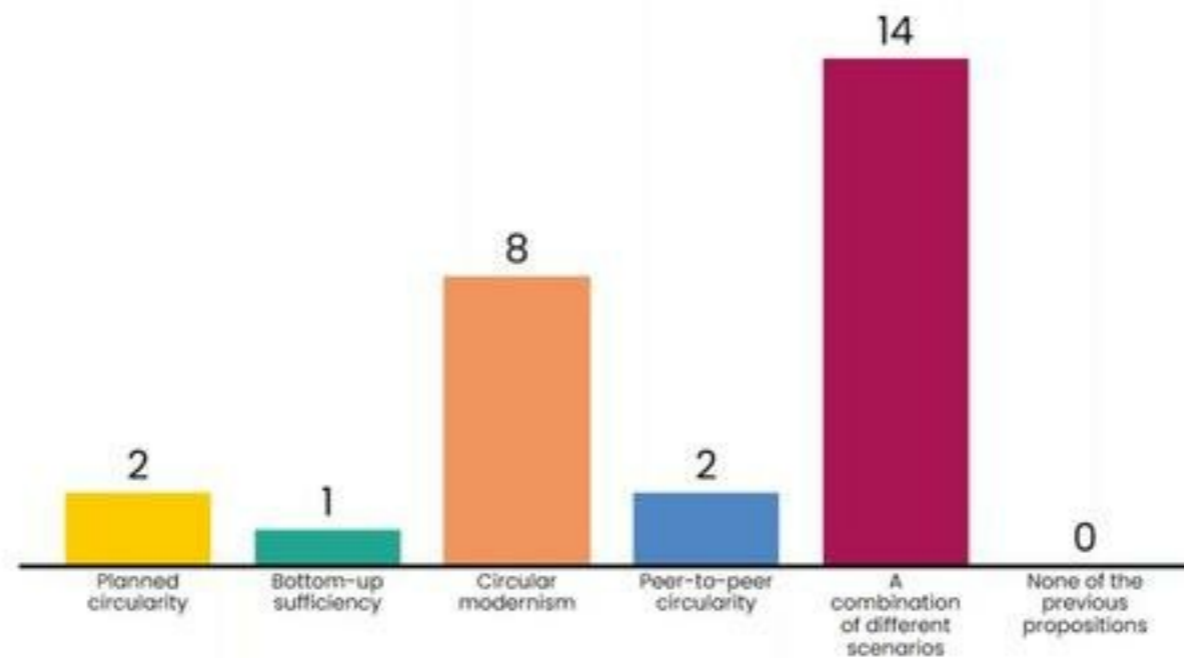


Core upsides and downsides of scenarios



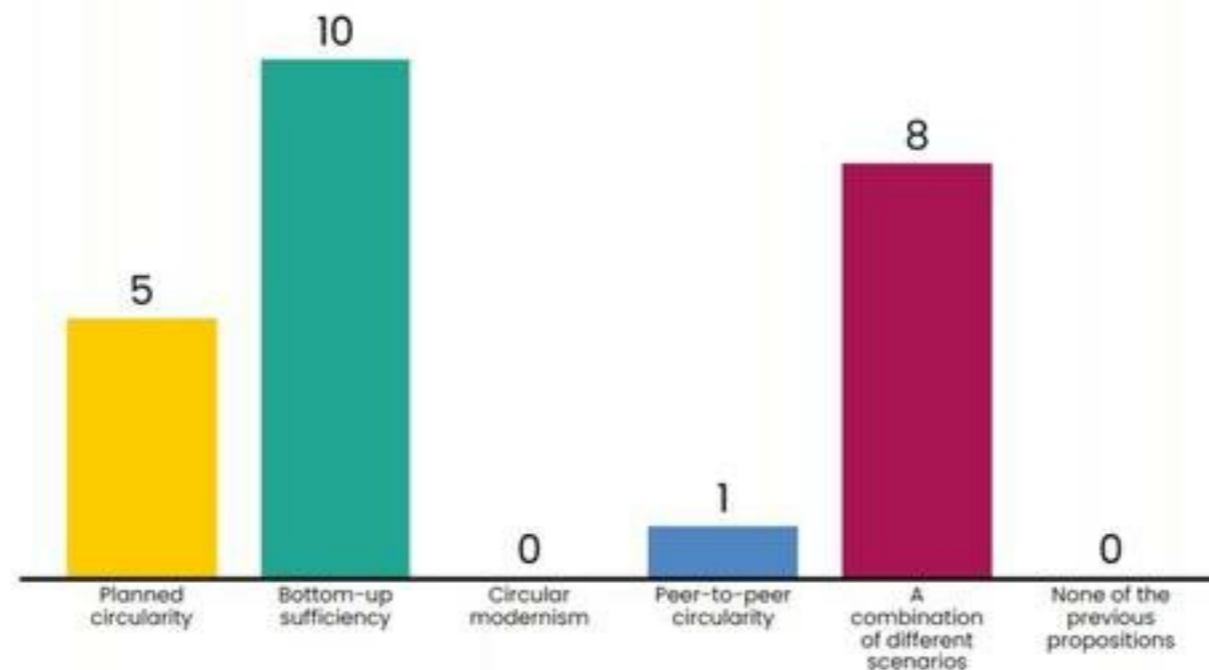
Go to www.menti.com and use the code **28 63 89 3**

Which scenario do you deem to be most likely?



Go to www.menti.com and use the code **28 63 89 3**

Which of the scenarios would you prefer to see happening?



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Preferability of scenarios

- A preferable scenario was a combination of scenarios rather than one scenario in its pure form
- Product reuse and sharing practices as well as decentralized production in peer-to-peer circularity offer promising ideals, especially if accompanied by a shift away from current consumerist culture to avoid any “circular economy rebounds”
- From a governance perspective, a preferable scenario would be a multi-level framework combining broad societal goals set and enforced at higher levels, with autonomy for local actors to translate these goals into actions adapted to local settings

Probability of scenarios

- Some of our scenarios are more probable than others, given the phenomenon of path dependency at play in complex socio-technical systems
- Circular modernism as the most likely scenario, as it fits current discourses of the dominant proponents of the CE
- Our scenarios are not fully mutually exclusive: combinations or hybridized forms of different scenarios may be more likely to happen (e.g. China)
- Likelihood of these scenarios also varies with space
- Likelihood of scenarios may also vary with the occurrence of specific events

Avenues for further research

- **Empirically ground and nuance** these scenarios with insights from key stakeholders in different industries and in different geographical locations
- **Quantitatively modelling** these impacts
- Analyze the **systemic changes** required for the advent of the scenarios
 - Concept of “**circular disruption**”
 - Co-edition of an upcoming **special issue** in *Business Strategy and the Environment*



Thank you !



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Show Tabs
Show Ribbon tabs only. Click a tab to show the commands.

Show Tabs and Commands
Show Ribbon tabs and commands all the time.

13 Which of the scenarios would you prefer to see happening?

14 Probability of scenarios

15 Preferability of scenarios

16 Avenues for further research

17 Thank you !

Thank you !

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12 Which scenario do you think is the most likely?

13 Which of the scenarios would you prefer to see happening?

14 Probability of scenarios

15 Preferability of scenarios

16 Avenues for further research

17 Thank you!

Thank you !

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