Picture: Regeneration.org

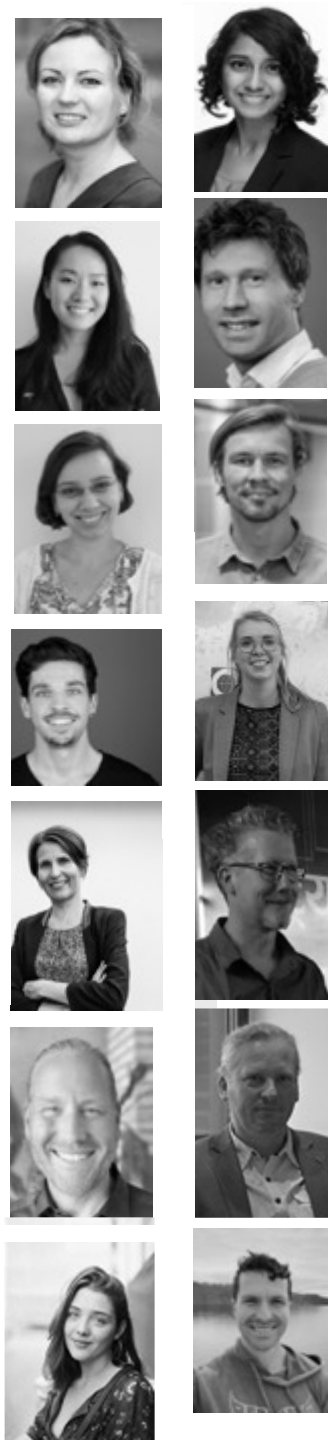
Designing and Implementing Circular Business Models

Japan MVE/CE RG , 18 April 2024

Nancy Bocken, Professor in Sustainable Business, & Circular Economy

- Maastricht Sustainability Institute ,Maastricht University, Netherlands
- Visiting Professor, Lund University Sweden & Aalborg University, Denmark
- Fellow, Cambridge Institute for Sustainability Leadership

Maastricht Sustainability Institute (MSI) Maastricht University circular.eu



Circular X Program

Circular Service Business Models

- Innovating the way business is done
- To resolve societal and environmental issues
- And offer superior customer value
- Focus on resources: slow, close, narrow, regenerate

Program focus

1. Investigate CBMs; their emergence and impacts
2. Investigate CBM experimentation
3. Developing CBM experimentation tools
4. Designing and deploying CBM experimentation labs

- ✓ **Environmental impact reductions up to 90%**
- ✓ **Corporates lag behind with circular models**
- ✓ **And: more evidence on impact is needed**

- Bocken et al. (2018). Pay-per-use business models as a driver for sustainable consumption: evidence from the case of HOMIE. J. Cleaner Production. 198, 498-510.
- Ritala, et al. . (2018). Sustainable business model adoption among S&P 500 firms: A longitudinal content analysis study. J. Cleaner Production, 170, 216-226.
- Tukker, A. (2004). Eight types of product–service system: eight ways to sustainability? Experiences from SusProNet. Business strategy and the environment, 13(4), 246-260.
- www.circularx.eu

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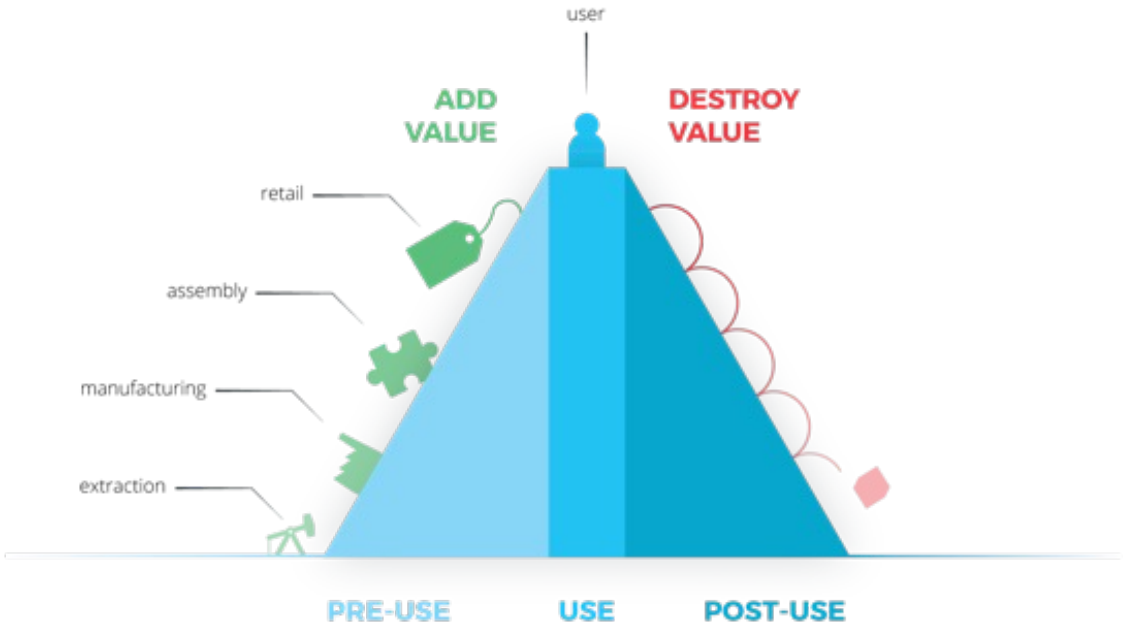
Focus of today

1. The emergence & impact of circular business models
2. Circular business model experimentation
3. Experimentation tools
4. Experimentation labs
5. Future outlook

1.
The emergence & impact of circular business models

Image: vectorstock.com/royalty-free-vector/green-earth-vector-9915540

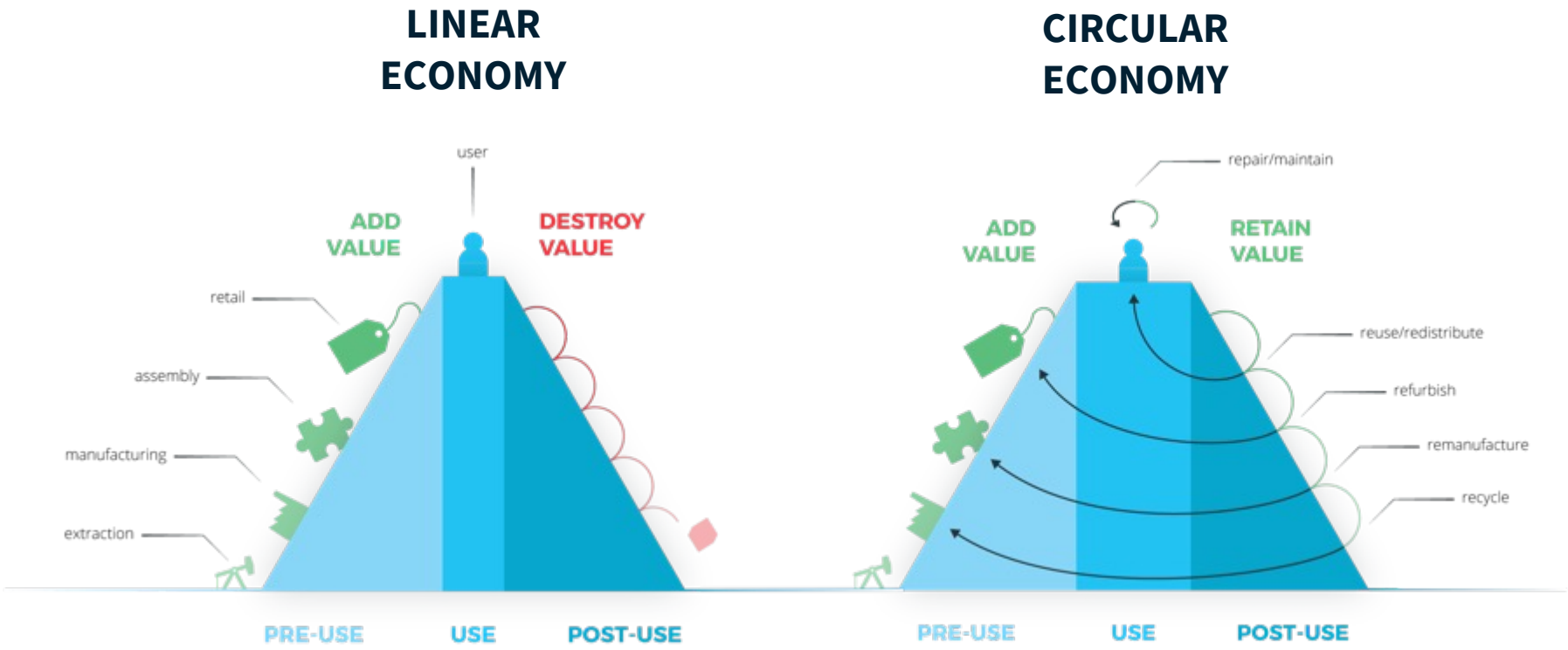
We live in a linear economy



1. **Unsustainable business models** driving fast rates of consumption
2. **Short product lifetimes** leading to high levels of waste
3. **Value destruction** rather than value retention

Achterberg, E., Hinfelaar, J., & Bocken, N. (2016). Master circular business models with the Value Hill.

Circular Economy
from value destruction to value retention

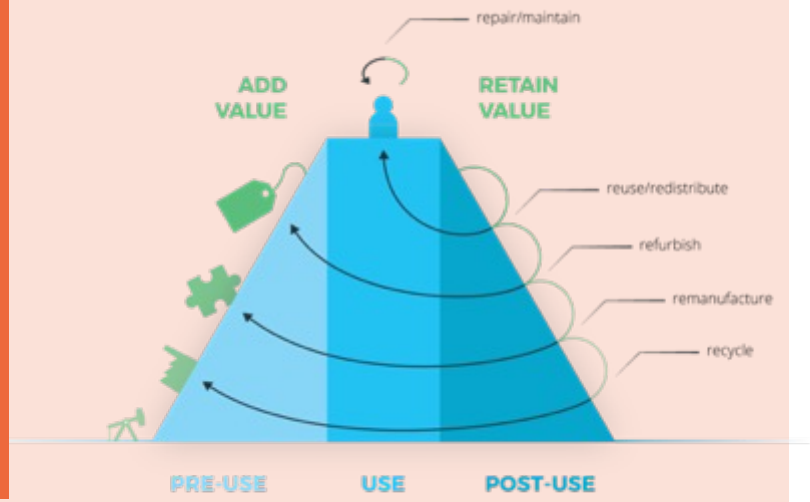


Based on: Achterberg, E., Hinfelaar, J., & Bocken, N. (2016). Master circular business models with the Value Hill.

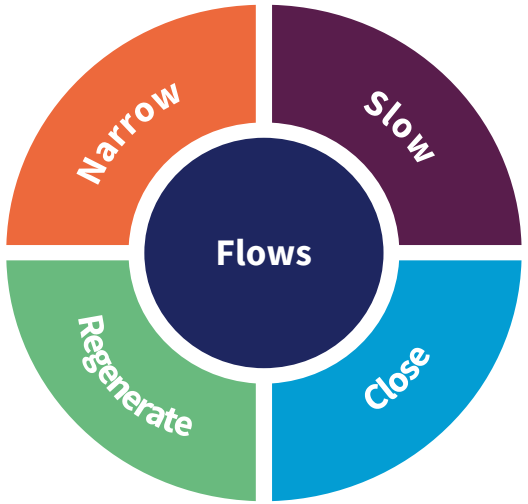
Circular economy

What is it?

Circular economy **supports sustainable development** by aiming to **secure the resources** to sustain our current and future generations.



Circular strategies

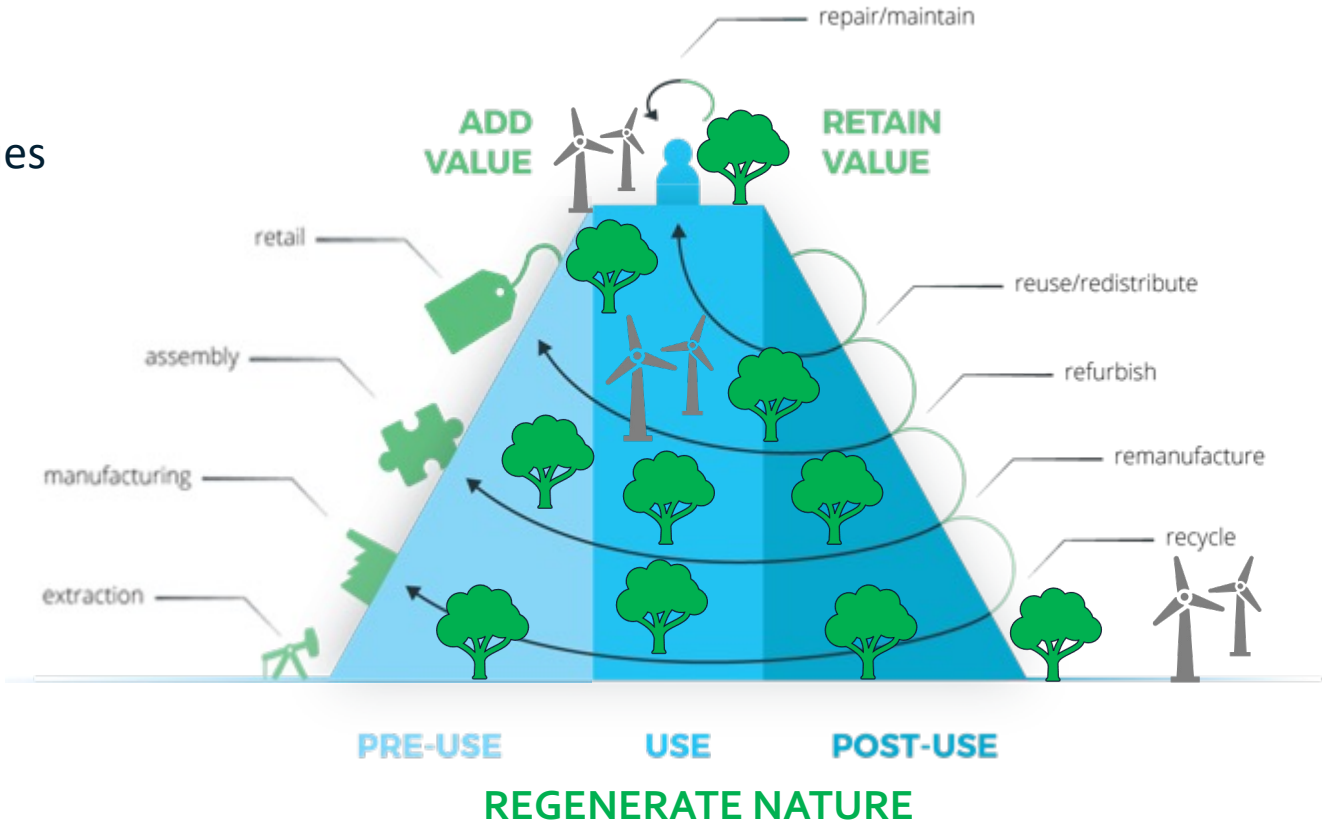


- **Narrow:** Using less resources per product
- **Slow:** Use products longer, consume less
- **Close:** Post-consumer recycling
- **Regenerate:** Improving natural ecosystems

Bocken, N. M. P., Stahel, W., Dobrauz, G., Koumbarakis, A., Obst, M., Matzdorf, P. (2021), Circularity as the new normal. Future fitting Swiss business strategies. WWF Switzerland and PWC.

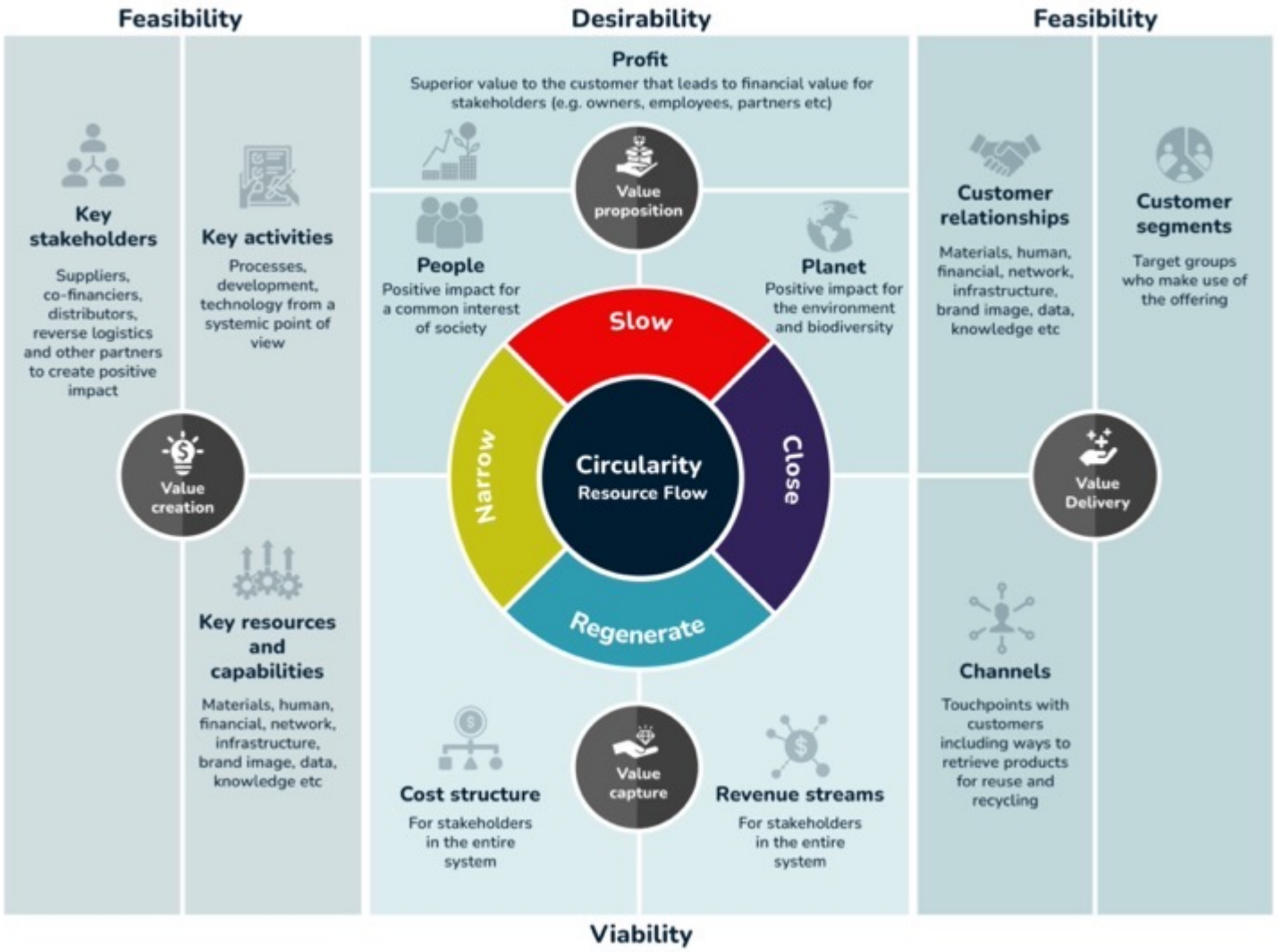
Business cases
for a circular economy

- Resources & climate change: no business on a dead planet!
- Cost savings
- Raw material security
- Hedging against future price shocks & supply issues
- New forms of revenues, diversification
- Source of innovation and collaboration
- Driver of change and transition
- Long term competitiveness
- Business resilience
- Customer interest and new customer attraction
- Compliance & being ahead of legislation
- Meaningful jobs & being an attractive employer
- …



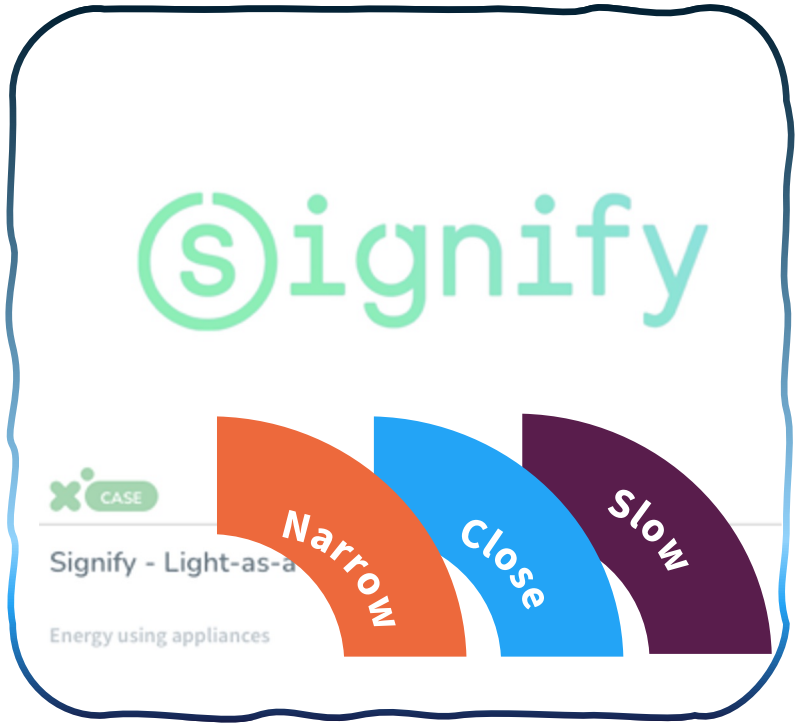
Based on: Achterberg, E., Hinfelaar, J., & Bocken, N. (2016). Master circular business models with the Value Hill.

Circular business models



Based on: Bocken (2024). Circular business model innovation – new avenues and game changers. To be submitted for: Business Model Innovation – game changers and new venues" by Annabeth Aagaard
Based on: Bocken, N. M., Schuit, C. S., & Kraaijenhagen, C. (2018). Experimenting with a circular business model: Lessons from eight cases. Environmental innovation and societal transitions, 28, 79-95.
Osterwalder, A., & Pigneur, Y. (2010). Business model generation: a handbook for visionaries, game changers, and challengers (Vol. 1). John Wiley & Sons.

Circular X business model cases



www.circularx.eu/en/cases

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Study on emergence of CBMs in USA (under review)

- RQ: How do circular business models emerge in the U.S. context?
- Why investigate the USA?
  - Among the largest economies and polluters
  - Among highest levels of consumption & waste
  - Lack of institutional support
  - BUT: Evidence of circular cases in practice

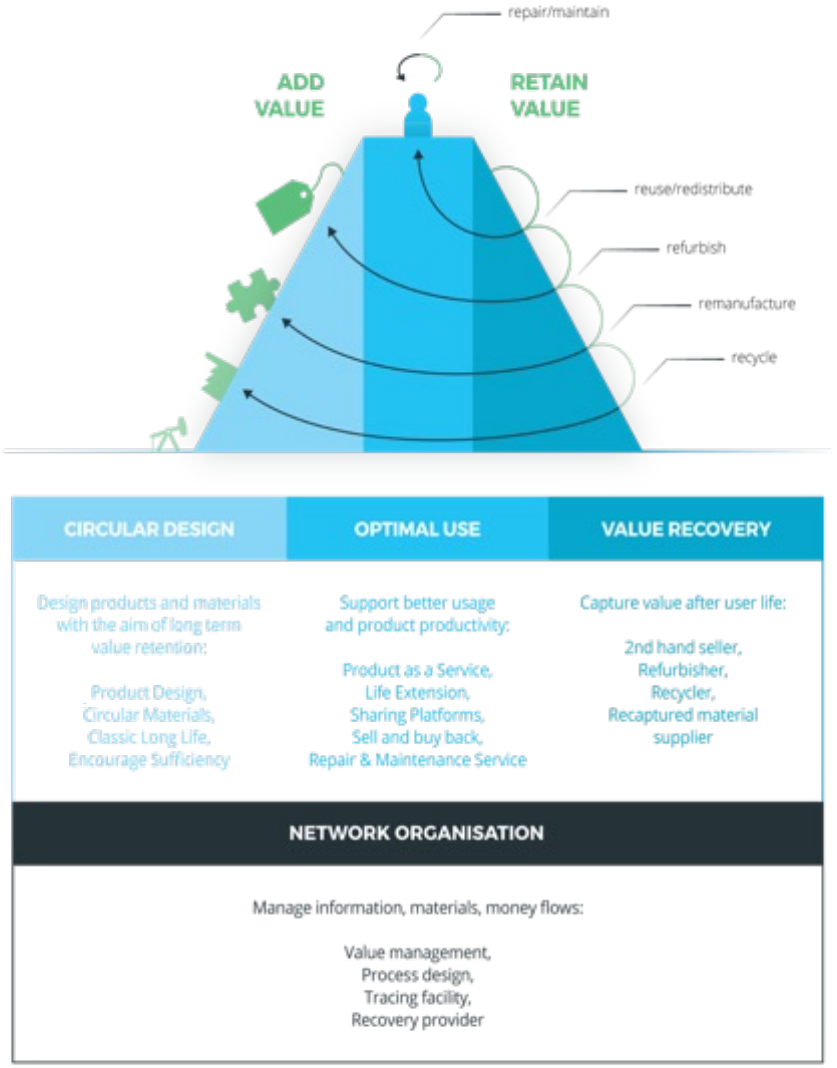
- The study
  - → Interviews with 16 different companies in the USA
  - → What circular business models?
  - → Institutional work: norms & values, cultural-cognitive, legislative
  - → Ecologies of business models: co-evolving of business models

(under review)

Circular business models in the USA: An institutionalization framework

USA cases

Value hill type	Circular business model type	Companies
Circular design (uphill)	Premium pricing and durability	Vitsœ Chanel
Optimal use (top-hill)	Product service system (PSS), e.g., rental, product as a service	ZZ Driggs Fernish Philips
Value recovery (downhill)	Buy- or Take-back & resale	IKEA Philips Davies Office
Value recovery (downhill)	Buy- or Take-back & remanufacturing, parts harvesting, or recycling	Caterpillar Canon Dyson Philips Toyota Sunnking Davies Office Loop Staples
Network organization (cross-hill)	Facilitator and assessor	SAP Earthster



Bocken, N., Coffay, M. (under review) Circular business models in the USA: An institutionalization framework.

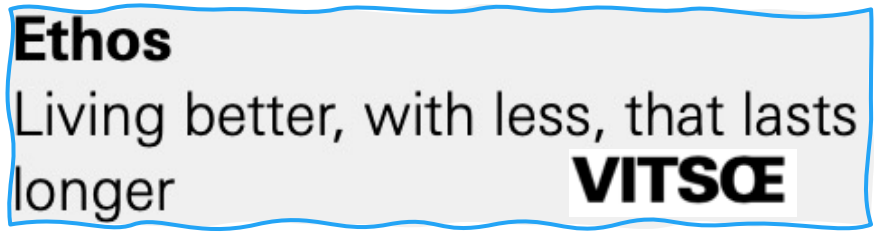
Some key findings

Ecologies of business models:

- Companies are modifying relations and dependencies to existing businesses and infrastructures
- They are disrupting the linear model & creating entirely new models

Institutional work:

- Legislation: Lobbying & advocacy
- Norms: A new form of ‘American dream’
- Culture: Forms of imitation & displaying new values



Bocken, N., Coffay, M. (under review) Circular business models in the USA: An institutionalization framework.

Emergence of CBMs: What's next?

- Exploring other contexts for the emergence of circular business models
→ Japan study in process, …

Want to be interviewed?
Email: Nancy.Bocken@Maastrichtuniversity.nl

- Diving into the value of legislation: E.g. Europe → USA

This project has received funding from the European Union's Horizon 2020's European Research Council (ERC) funding scheme under grant agreement No 850159

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Climatic impacts of circular business models (PSS)

ELSEVIER

Journal of Cleaner Production

Available online 11 April 2024, 142119

In Press, Journal Pre-proof ? What's this?

Review

Reviewing the climatic impacts of product service systems: Implications for research and practice

Steven Sarasini [a], Nancy Bocken [b], Derek Diener [a], Myrthe Velter [c], Katherine Whalen [a]

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https://doi.org/10.1016/j.jclepro.2024.142119 Get rights and content

Assumptions:

- ✓ **Environmental impact reductions up to 90% are possible**
- ✓ **More evidence on impact is needed**

- Bocken et al. (2018). Pay-per-use business models as a driver for sustainable consumption: evidence from the case of HOMIE. J. Cleaner Production. 198, 498-510.
- Sarasini, S., Bocken, N., Diener, D., Velter, M., & Whalen, K. (2024). Reviewing the climatic impacts of product service systems: Implications for research and practice. Journal of Cleaner Production, 142119.
- Tukker, A. (2004). Eight types of product–service system: eight ways to sustainability? Experiences from SusProNet. Business strategy and the environment, 13(4), 246-260.

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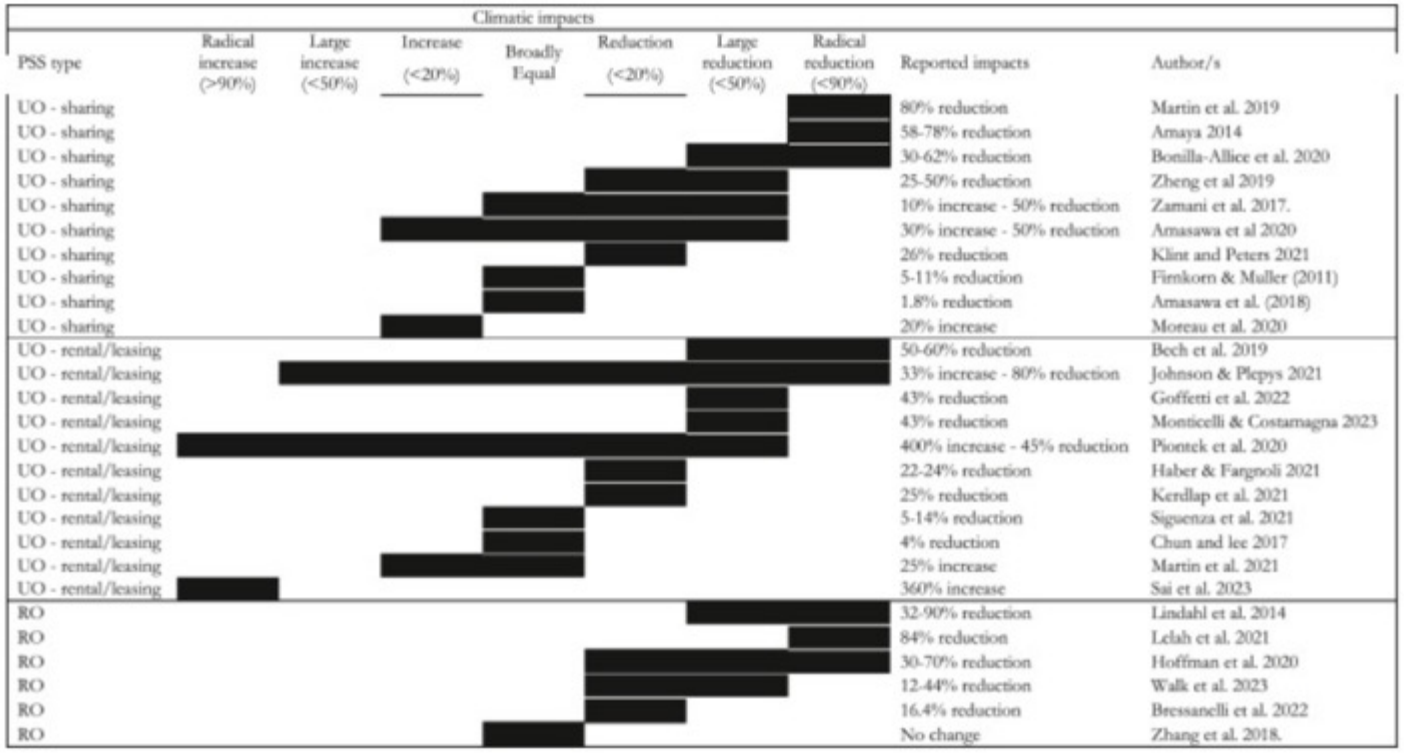
Climatic impacts of circular business models: findings



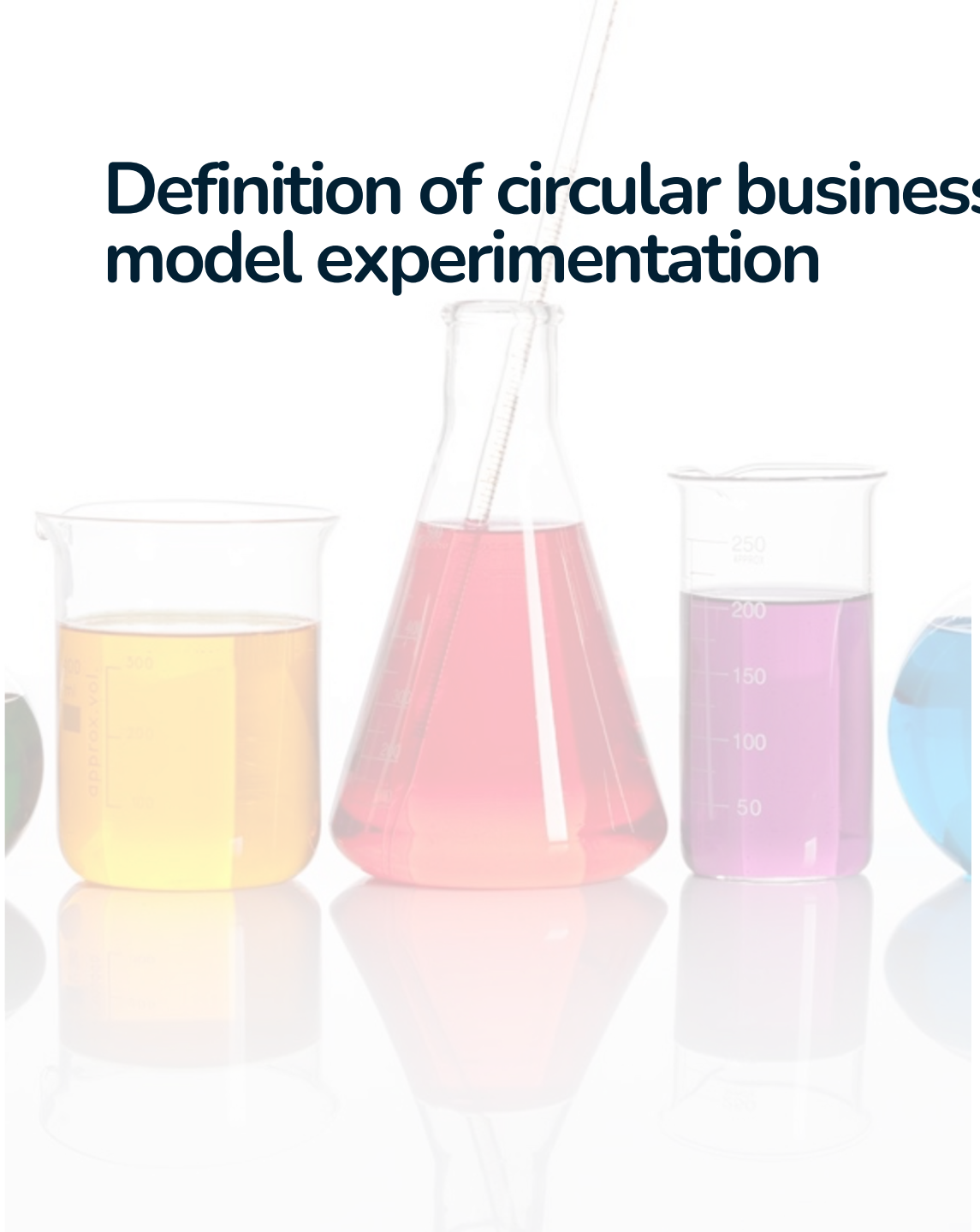
PSS type	Climatic impacts: Radical increase (>90%)	Large increase (<50%)	Increase (<20%)	Broadly Equal	Reduction (<20%)	Large reduction (<50%)	Radical reduction (<90%)	Reported impacts	Author/s
UO - sharing							■	80% reduction	Martin et al. 2019
UO - sharing							■	58-78% reduction	Amaya 2014
UO - sharing						■	■	30-62% reduction	Bonilla-Allice et al. 2020
UO - sharing					■	■	■	25-50% reduction	Zheng et al 2019
UO - sharing				■	■	■	■	10% increase - 50% reduction	Zamani et al. 2017.
UO - sharing			■	■	■	■	■	30% increase - 50% reduction	Amasawa et al 2020
UO - sharing					■			26% reduction	Klint and Peters 2021
UO - sharing				■	■			5-11% reduction	Firnkorn & Muller (2011)
UO - sharing				■	■			1.8% reduction	Amasawa et al. (2018)
UO - sharing			■	■				20% increase	Moreau et al. 2020
UO - rental/leasing						■	■	50-60% reduction	Bech et al. 2019
UO - rental/leasing		■	■	■	■	■	■	33% increase - 80% reduction	Johnson & Plepys 2021
UO - rental/leasing						■	■	43% reduction	Goffetti et al. 2022
UO - rental/leasing						■	■	43% reduction	Monticelli & Costamagna 2023
UO - rental/leasing	■	■	■	■	■	■	■	400% increase - 45% reduction	Piontek et al. 2020
UO - rental/leasing					■			22-24% reduction	Haber & Fargnoli 2021
UO - rental/leasing					■			25% reduction	Kerdlap et al. 2021
UO - rental/leasing				■	■			5-14% reduction	Siguenza et al. 2021
UO - rental/leasing				■	■			4% reduction	Chun and lee 2017
UO - rental/leasing			■	■	■			25% increase	Martin et al. 2021
UO - rental/leasing	■							360% increase	Sai et al. 2023
RO						■	■	32-90% reduction	Lindahl et al. 2014
RO							■	84% reduction	Lelah et al. 2021
RO					■	■	■	30-70% reduction	Hoffman et al. 2020
RO					■	■		12-44% reduction	Walk et al. 2023
RO					■			16.4% reduction	Bressanelli et al. 2022
RO				■	■			No change	Zhang et al. 2018.

- ✓ In some cases, product service systems (e.g. rental, remanufacturing) can **reduce** climatic impacts by up to 80%.
- ✓ In other cases, climatic impacts **increase** compared to traditional product sales.
- ✓ Climatic impacts are influenced by **use intensity, transportation** and **production.**
- ✓ Other contextual factors such as the **energy mix** play a role.
- ✓ More **quantitative** assessments are needed with less reliance on estimations.

- Sarasini, S., Bocken, N., Diener, D., Velter, M., & Whalen, K. (2024). Reviewing the climatic impacts of product service systems: Implications for research and practice. Journal of Cleaner Production, 142119.

2. Circular business model experimentation

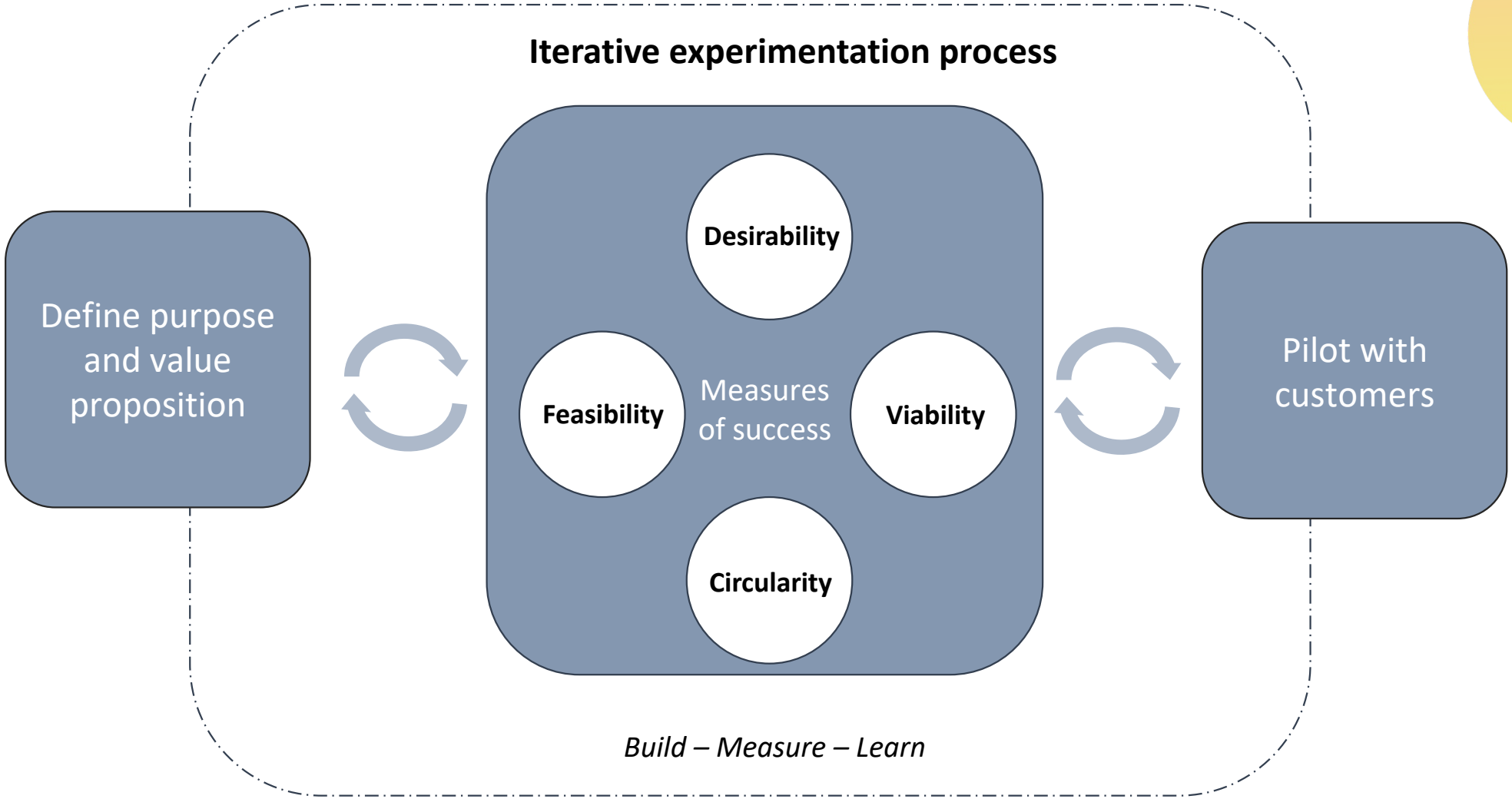
Definition of circular business model experimentation



- An **iterative approach** to develop and test **circular value propositions** in a real-life context with customers and stakeholders, starting with a shared goal.
- It involves **rapid learning** based on **empirical data** to provide evidence on the viability of circular value propositions.
- Iterations involve **increased complexity** of experiments.
- **Learning focus** on initiating wider **transitions**, such as transforming consumer behaviours

Bocken, N. M., Weissbrod, I., & Antikainen, M. (2021). Business model experimentation for the circular economy: definition and approaches. *Circular Economy and Sustainability*, *1*(1), 49-81. (P. 62)

How to do CBM experimentation?



Bocken, N., Kraaijenhagen, C., Konietzko, J., Brown, P., Baldassarre, B., Schuit, C. Experimentation practices with new business model strategies for the Circular Economy. Based e.g. on Eric Ries (2011) Lean startup

Desirability, feasibility, viability
+ circularity

Stanford Social Innovation Review / Spring 2022

Designing Your Circular Business Model

By Nancy M. P. Bocken & Thijs H.J. Geradts

Illustration by Mengxin Li

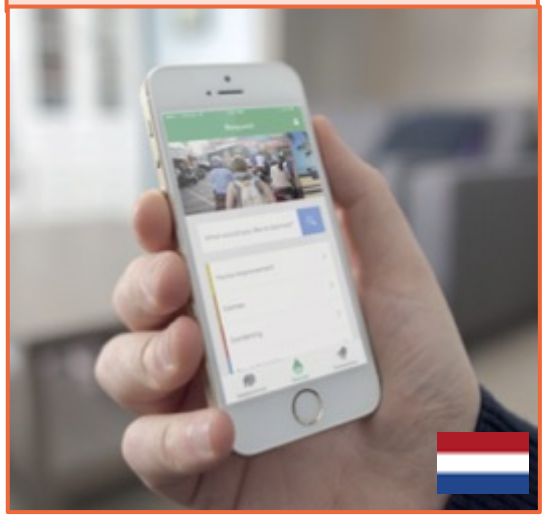
Corporations can achieve greater environmental and financial performance by developing and implementing circular business model strategies.

Source: Bocken, N.M.P., Geradts, T.H.J. (2022). Designing Your Circular Business Model. *Stanford Social Innovation Review. Spring 2022, p. 34-39*

Experimentation examples

1. In-shop experiment

2. Online experiment



3 Paper prototype

4. Customer pilot

1. Bocken, N. Weissbrod et al. (2017). Economics & Policy of Energy & The Environment (EPEE)
2. & 3. Schuit, C. S. C., Baldassarre, B., & Bocken, N. (2017). Sustainable business model experimentation practices: evide e from three start-ups. In *PLATE: Product Lifetimes And The Environment* (pp. 370-376). IOS Press.
4. Bocken, N., Mugge et al. (2018). Journal of Cleaner Production

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homie

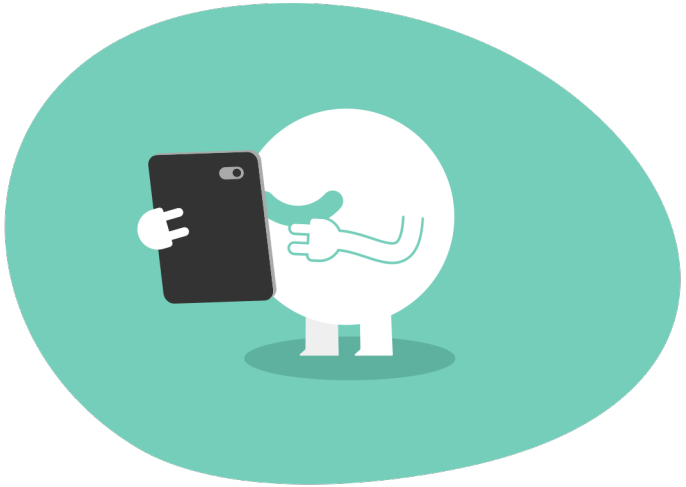
Customer pilot

Installation, repair & removal is included in the price

PAY PER USE

Tracking device sends usage data to Homie

Differentiated pricing to stimulate energy efficiency



Washing machines experiment

Washing machine prices to drive sustainable behaviour:

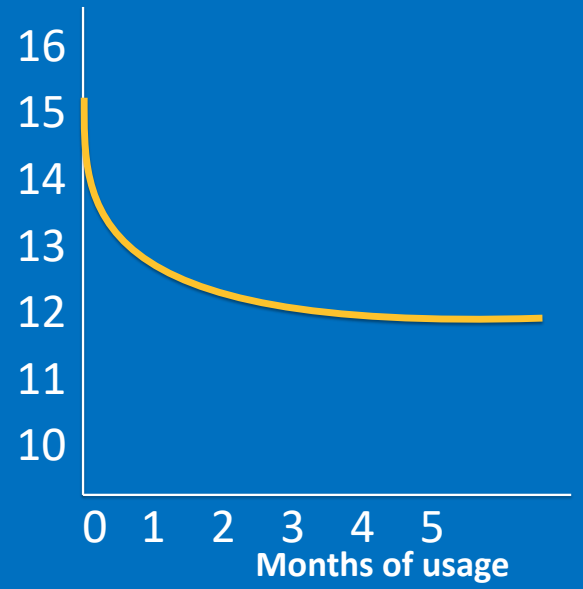
A cold wash	€0.75 (incl. VAT)
A 20° C wash	€0.85 (incl. VAT)
A 30° C wash	€1.00 (incl. VAT)
A 40° C wash	€1.50 (incl. VAT)
A 60° C wash	€2.00 (incl. VAT)
A 90° C wash	€2.50 (incl. VAT)

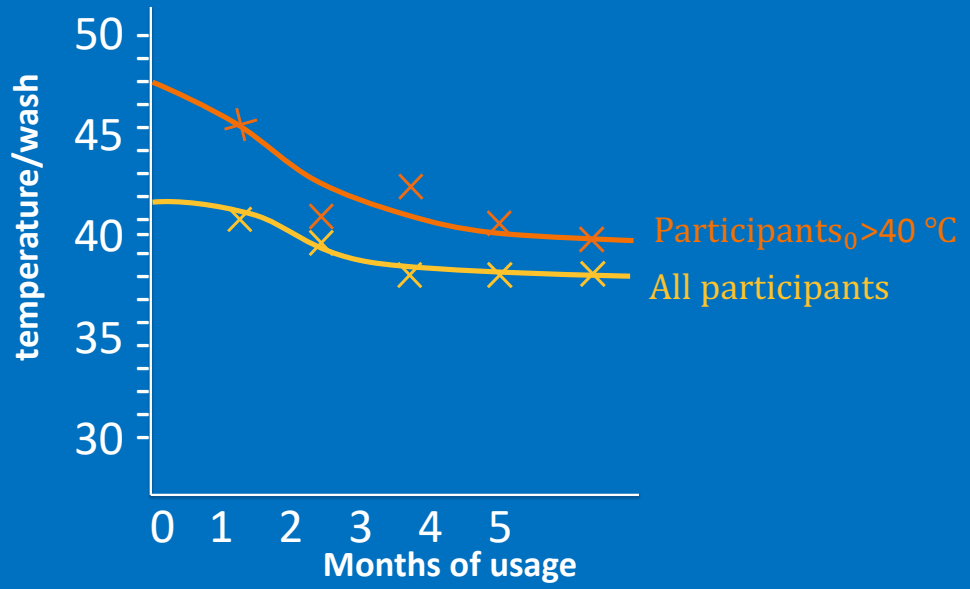
Using the ECO button will save you €0.25 each wash.

See for latest info: www.homiepayperuse.com

Pay-per-use transforms laundry behaviour

Customers wash less and at lower temperatures





See also: Bocken, N. M., Mugge, R., Bom, C. A., & Lemstra, H. J. (2018). Pay-per-use business models as a driver for sustainable consumption: Evidence from the case of HOMIE. *Journal of Cleaner Production*, *198*, 498-510.

Other circular business model ‘experiments’ at HOMIE

See also: www.homiepayperuse.com

Incumbent circular business pilots

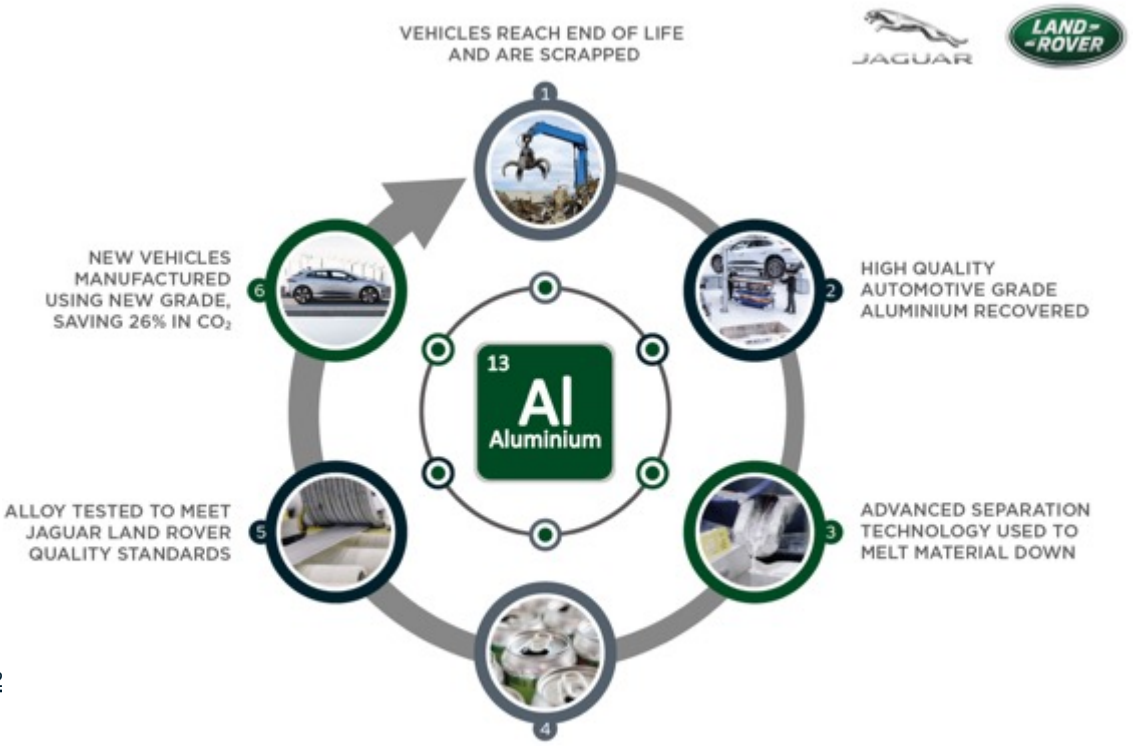
Vacuum-as-a-service: Electrolux trials new subscription-based business models

July 5, 2019

04-NOV-2020

The world's first Second-hand IKEA Pop-up store opens in Sweden

Jaguar Land Rover set to cut emissions by a quarter using recycled aluminium



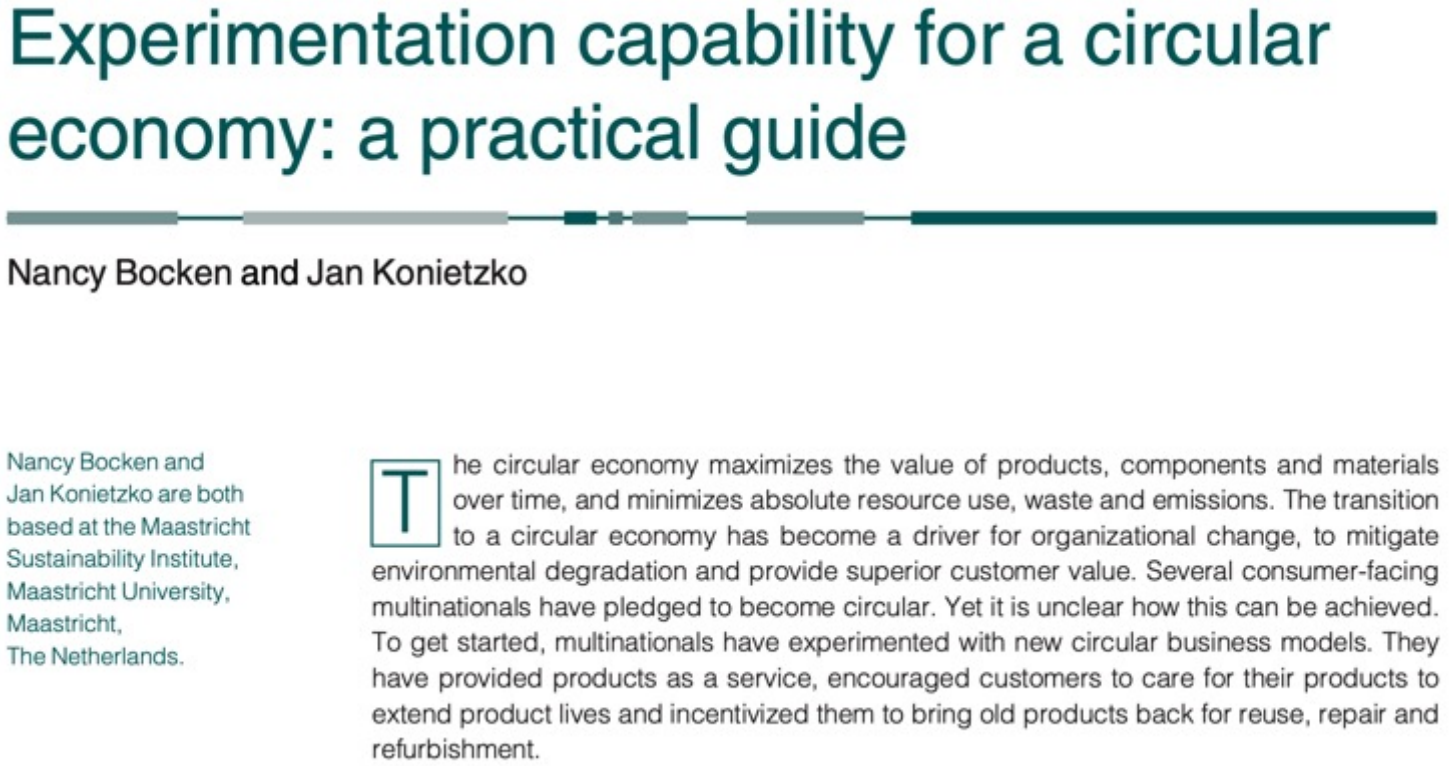
H&M TO TRIAL CLOTHING RENTALS FOR THE FIRST TIME

Fashion fans who missed out on our popular Conscious Exclusive collections now get a second chance to dazzle in their favourite sustainable dresses as H&M is set to debut clothing rentals in a Stockholm flagship store.

https://newsroom.inter.ikea.com/news/the-world-s-first-second-hand-ikea-pop-up-store-opens-in-sweden/s/b1aa5e3d-a9e8-4816-82
https://about.hm.com/news/general-news-2019/h-m-to-trial-clothing-rentals-for-the-first-time.html
https://www.electroluxgroup.com/en/vacuum-as-a-service-electrolux-trials-new-subscription-based-business-models-29880/
https://www.circularonline.co.uk/news/jaguar-land-rover-set-to-cut-emissions-by-a-quarter-using-recycled-aluminium/

Study on experimentation capability for CBM innovation

- How can corporations develop CBM experimentation capability?
- Study with Philips, IKEA and H&M



Experimentation capability for a circular economy: a practical guide

Nancy Bocken and Jan Konietzko

Nancy Bocken and Jan Konietzko are both based at the Maastricht Sustainability Institute, Maastricht University, Maastricht, The Netherlands.

The circular economy maximizes the value of products, components and materials over time, and minimizes absolute resource use, waste and emissions. The transition to a circular economy has become a driver for organizational change, to mitigate environmental degradation and provide superior customer value. Several consumer-facing multinationals have pledged to become circular. Yet it is unclear how this can be achieved. To get started, multinationals have experimented with new circular business models. They have provided products as a service, encouraged customers to care for their products to extend product lives and incentivized them to bring old products back for reuse, repair and refurbishment.

Bocken, N., Konietzko, J. (2023). Experimentation capability for a circular economy: a practical guide. Journal of Business Strategy

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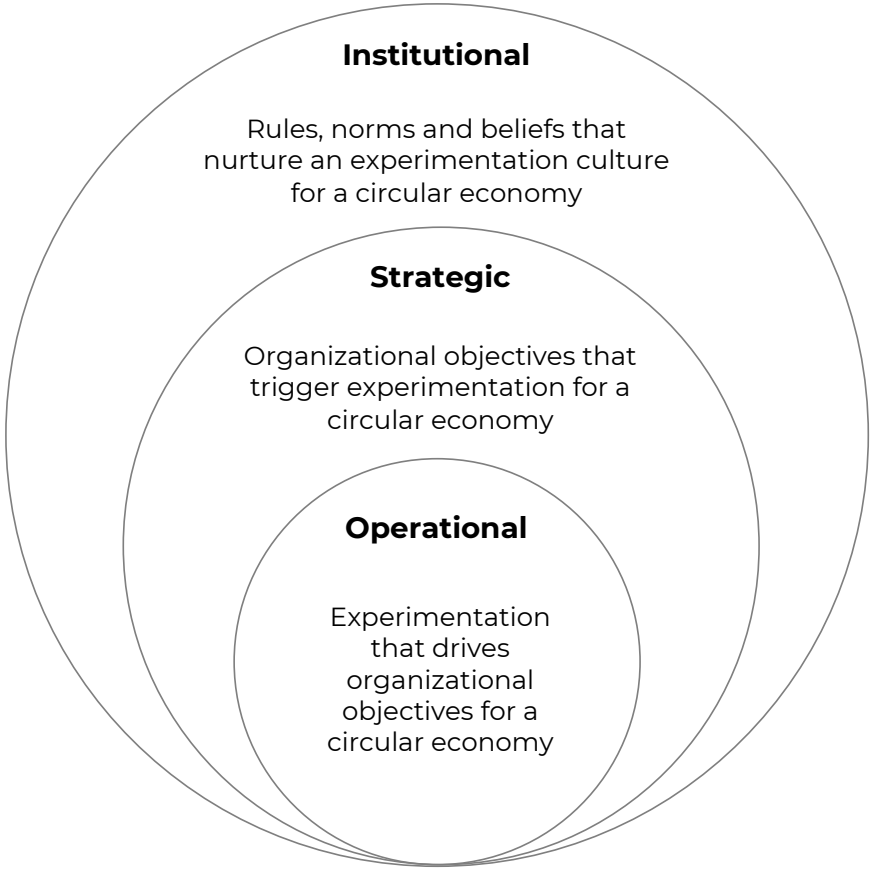
Results: experimentation capability for CBM innovation

- Findings: Capabilities at the operational, strategic and institutional level
- For example:

  - **Institutional**: Top management to acknowledge the need for radical change to achieve sustainability

  - **Strategic**: Develop an organizational vision and goals for a circular economy

  - **Operational:** Define KPIs & conduct environmental impact analysis across the product portfolio



Bocken, N., Konietzko, J. (2023). Experimentation capability for a circular economy: a practical guide. Journal of Business Strategy

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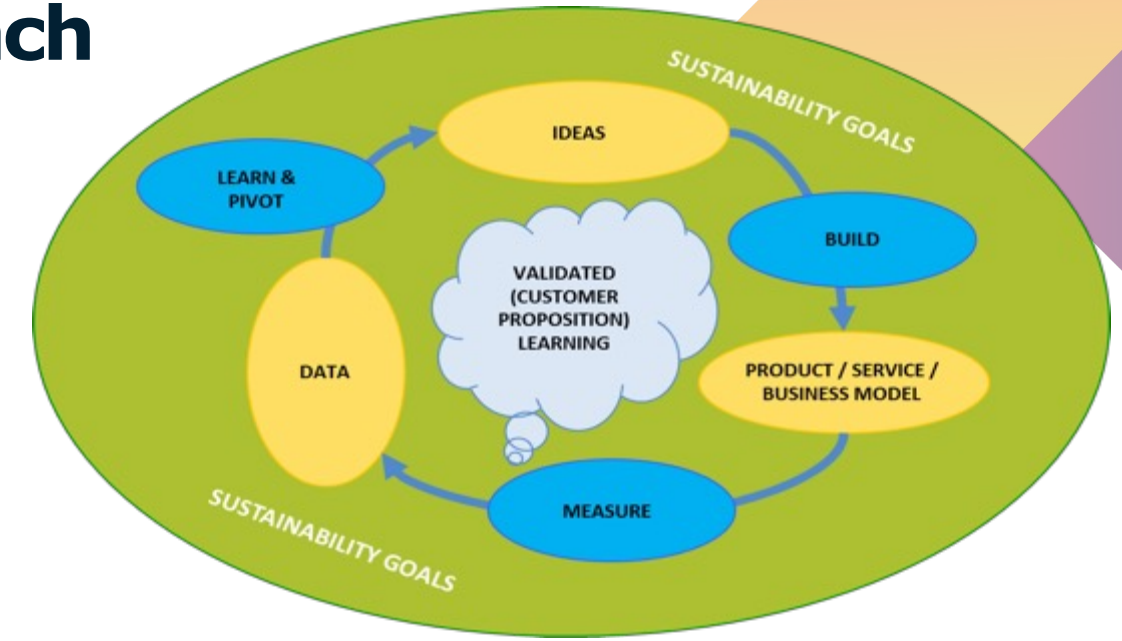
3. Experimentation & scale up tools

Example:
Circular Experimentation Workbench

Lean startup: an iterative approach of building, measuring, and learning about business models through experimentation based on hypotheses about the future business and testing ideas with customers early on

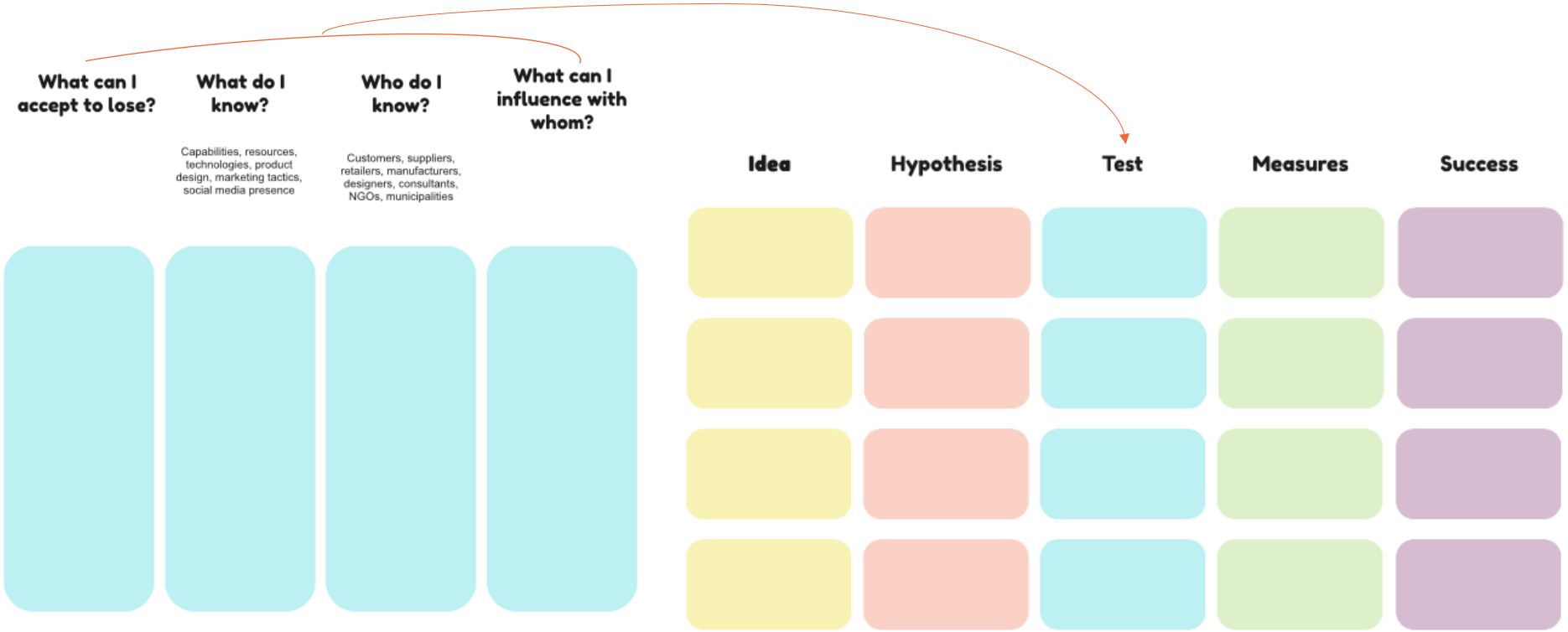


Effectuation: an entrepreneurial approach based on leveraging the resources available. Entrepreneurs leverage who they are (traits, abilities), what they know (expertise), and whom they know (networks).

Lean startup by Eric Ries (2011). Effectuation by Sarasvathy (2001, 2008, 2021)
See Bocken, N., & Coffay, M. (2023). The circular experimentation Workbench–a lean and effectual process. *Circular Economy and Sustainability*, *3*(3), 1361-1383.
https://miro.com/miroverse/circular-experimentation-workbench/

Supporting experiment development for circular business models

Circular Economy workbench



Bocken, N., & Coffay, M. (2022). The Circular Experimentation Workbench–a Lean and Effectual Process. *Circular Economy and Sustainability*, 1-23.
https://miro.com/miroverse/circular-experimentation-workbench/

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4. Experimentation labs

Experimentation in practice

This project has received funding from the European Union's Horizon 2020's European Research Council (ERC) funding scheme under grant agreement No 850159

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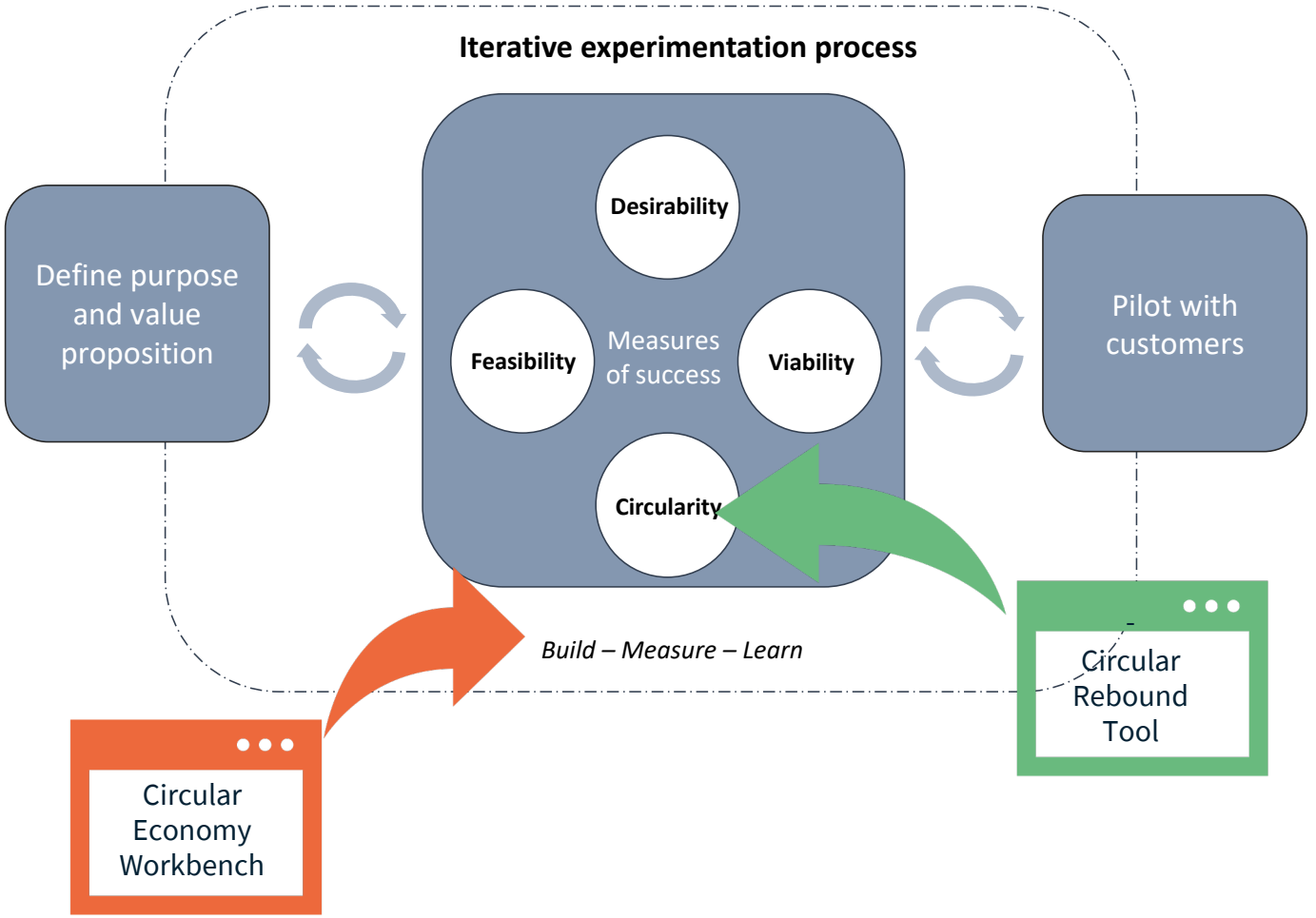
Circular Business Model Experimentation labs: a toolbox idea



Bocken, N., Coffay, M., Jorgensen, S., Pedersen, L. (2024). Circular Business Model Experimentation - A Business Experiment Lab Approach. 9th International Conference on New Business Models, 3-5 July 2024, Donostia / San Sebastian

Tool example 1: Circular Rebound Tool

Resources, Conservation & Recycling Advances 20 (2023) 200185

Contents lists available at ScienceDirect

Resources, Conservation & Recycling Advances

journal homepage: www.sciencedirect.com/journal/Resources-Conservation-and-Recycling-Advances

The Circular Rebound Tool: A tool to move companies towards more sustainable circular business models

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ARTICLE INFO

Keywords:
Circular economy
Circular business models
Environmental impact
Business model tool
Rebound effects

ABSTRACT

Companies design circular business models through experimentation. However, most companies do not consider the environmental impact of their new business model ideas during experimentation, an iterative phase of high uncertainty. Previous research shows that companies typically use 'rules of thumb' to estimate environmental impact in this stage due to limited time and reliable information to guide decision-making. This might prevent innovators from detecting unintended rebound effects that offset positive environmental gains of new business models. To mitigate this and let innovators think more profoundly about rebound effects during the circular business model experimentation phase, we propose an evidence-based business model ideation tool, the Circular Rebound Tool, designed around lifecycle thinking, the zero-waste hierarchy, and increased rebound effects awareness. The tool's development follows the design science research method, undergoing continuous improvement through 15 workshops. Our tool can help business innovators gain insights into the environmental impact of their early-stage business ideas.

- Companies often don't measure impact of CBMs
- Companies often use rules of thumb
- So how can we know the impact of CBM innovation efforts?
- Avoiding rebounds when designing CBMs can be of help

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What are Circular Rebound Effects?

- Unintended consequences that diminish intended environmental impact reduction of a new business intervention (Zink & Geyer, 2017).
- Recent research has defined this area as having many research gaps: Castro et al. (2022), Metic & Pigosso (2022).
- Awareness of rebounds is low among business.
- But businesses that do not account for rebounds may:
    - Not actually reduce their impact & miss achieving their environmental goals
    - Run afoul of future stringent legislation -> Penalties
    - Lose competitive advantage

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The Circular Rebound Tool

- Guiding RQ: How can companies be supported in preventing rebound effects in the early design phase, to create circular business models with lower environmental impact?
- Followed design science research method

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Regenerate

What is it? A business model that actively regenerates the space in which it operates, achieving a net positive carbon impact.

Positive Outcomes: Promotes use of carbon positive/neutral materials, and regenerates the environment.

Capacity Requirements:
Materials: Adequate finance for investing in long-term returns.
Knowledge: Longer-term vision & goals, and understanding of what a regenerative business means.
Personnel: Hire or collaborate with skilled personnel with knowledge of regenerative business practices.

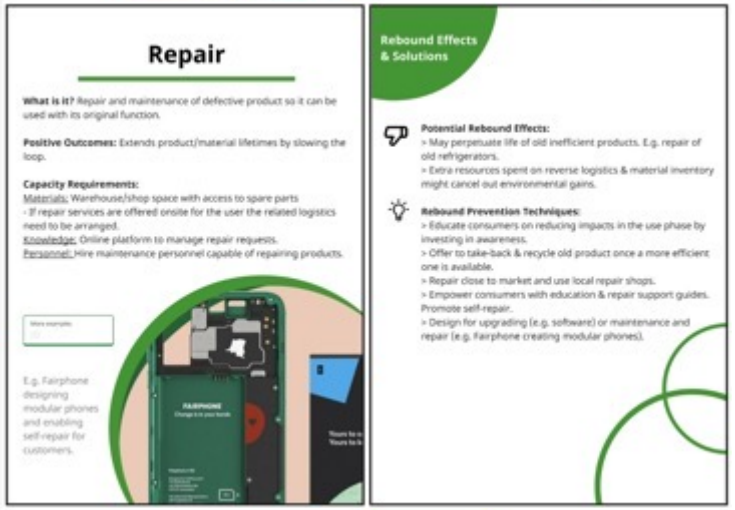
More examples

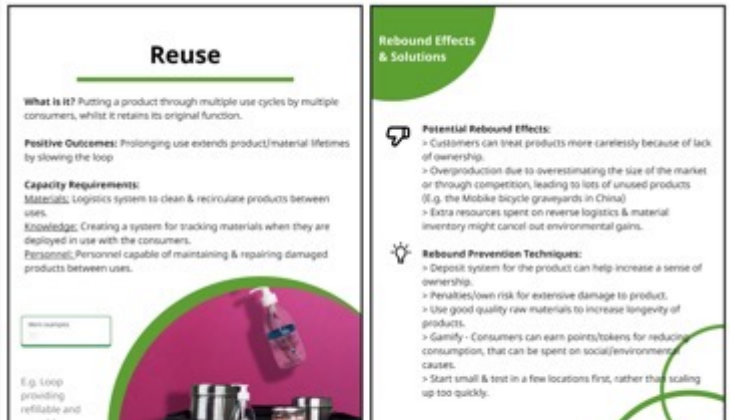
Eg: NotPla makes biodegradeable plastic-like packaging from seaweed for food products.

Rebound Effects & Solutions

Potential Rebound Effects:
> Increased consumption by consumers who might perceive that products are better for the environment, leading to increased resource extraction.
> Accidentally 'regenerating' the wrong things. E.g. monocultures, livestock overproduction, replenishing with the wrong flora & fauna leading to problems with invasive species.

Rebound Prevention Techniques:
> Educate consumers on reducing impacts in the use phase by investing in awareness.
> Remove bulk discounts & sales.
> Focus on local partnerships and long-term collaboration.
> Take a lifecycle perspective, conduct lifecycle analysis to forecast impact in early stages.



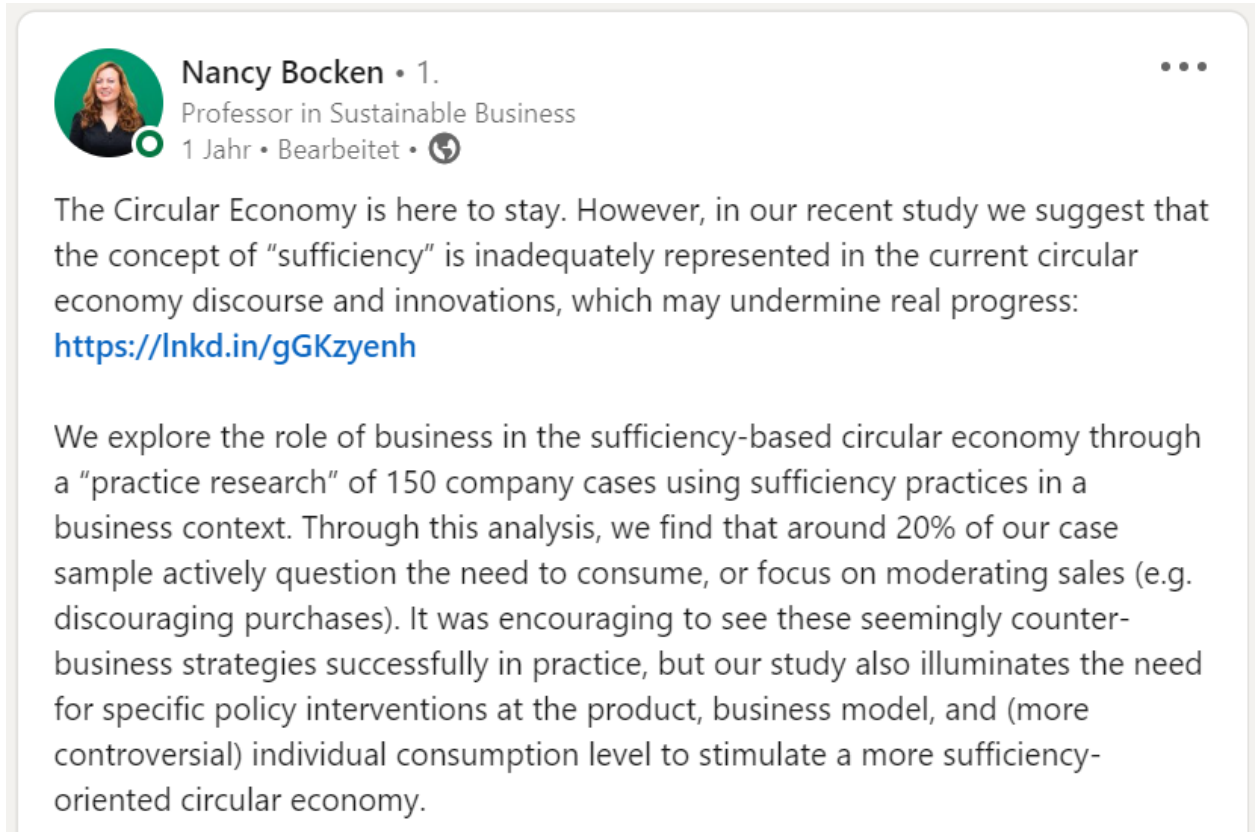


Tool example 2:
The Road Ahead Tool

- The Road Ahead Tool
- Provides a vision of business sustainability that goes beyond low-hanging fruits & challenge assumptions
- Provide sound information & inspiring examples
- Combinable with other tools
- Be fun

Bocken, N. M. P., & Short, S. W. (2021). Unsustainable business models – Recognising and resolving institutionalised social and environmental harm. *Journal of Cleaner Production*, 312. https://doi.org/10.1016/j.jclepro.2021.127828

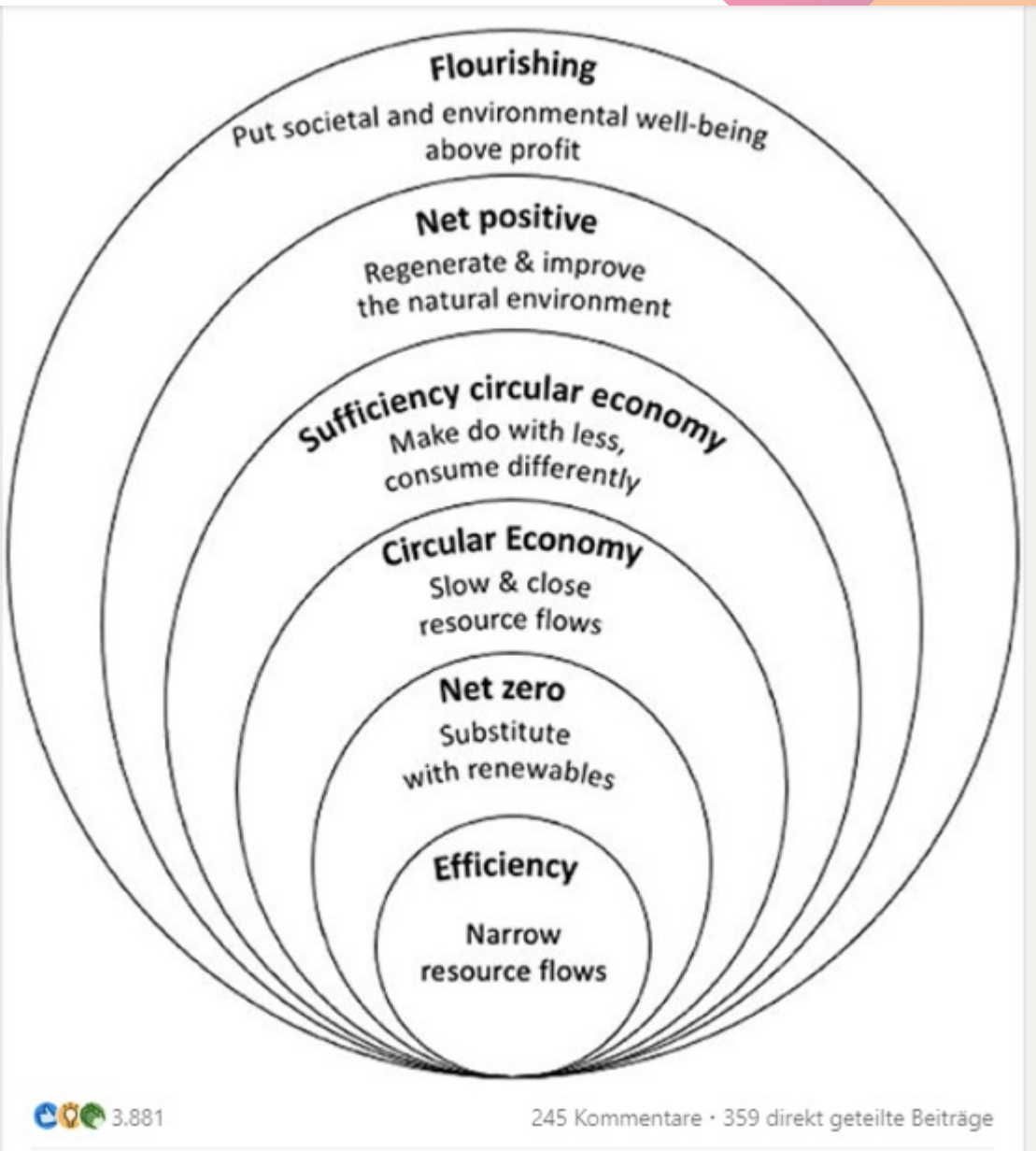
Why this?



Nancy Bocken • 1.
Professor in Sustainable Business
1 Jahr • Bearbeitet •

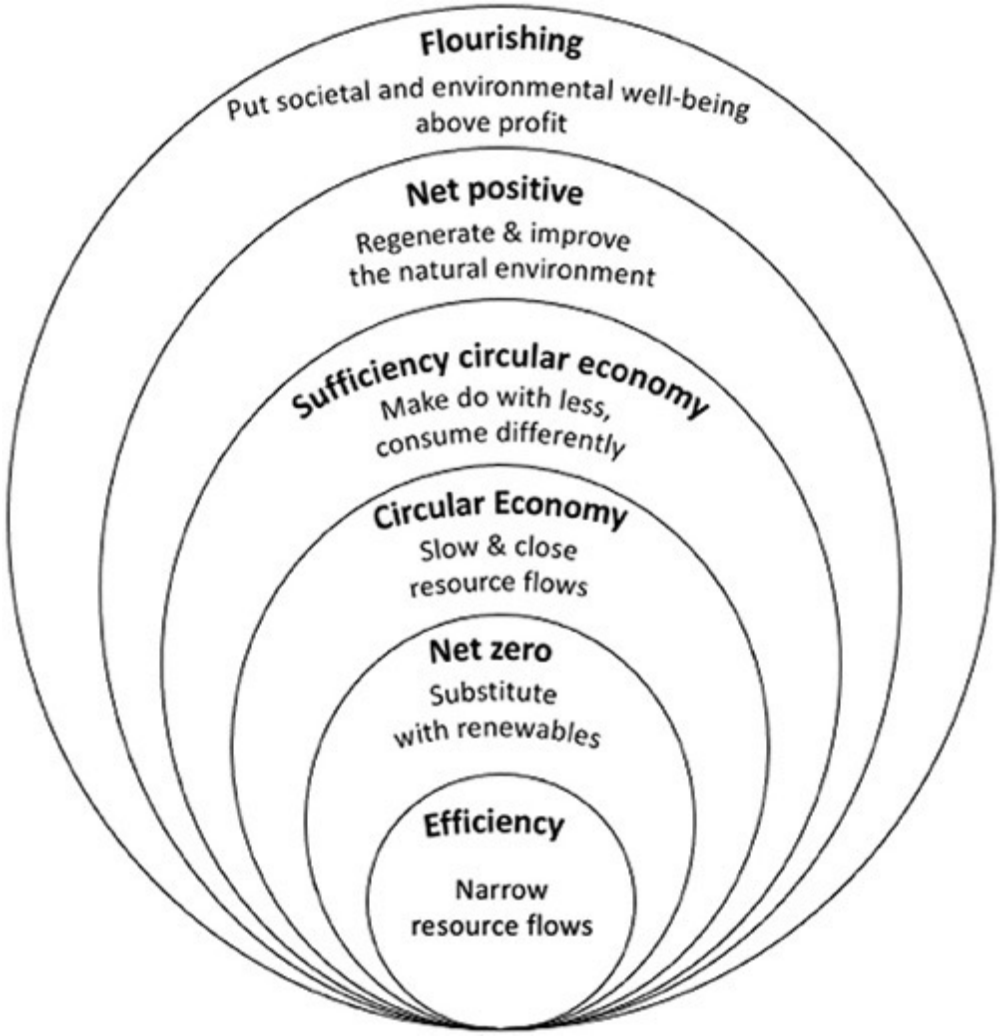
The Circular Economy is here to stay. However, in our recent study we suggest that the concept of "sufficiency" is inadequately represented in the current circular economy discourse and innovations, which may undermine real progress: https://lnkd.in/gGKzyenh

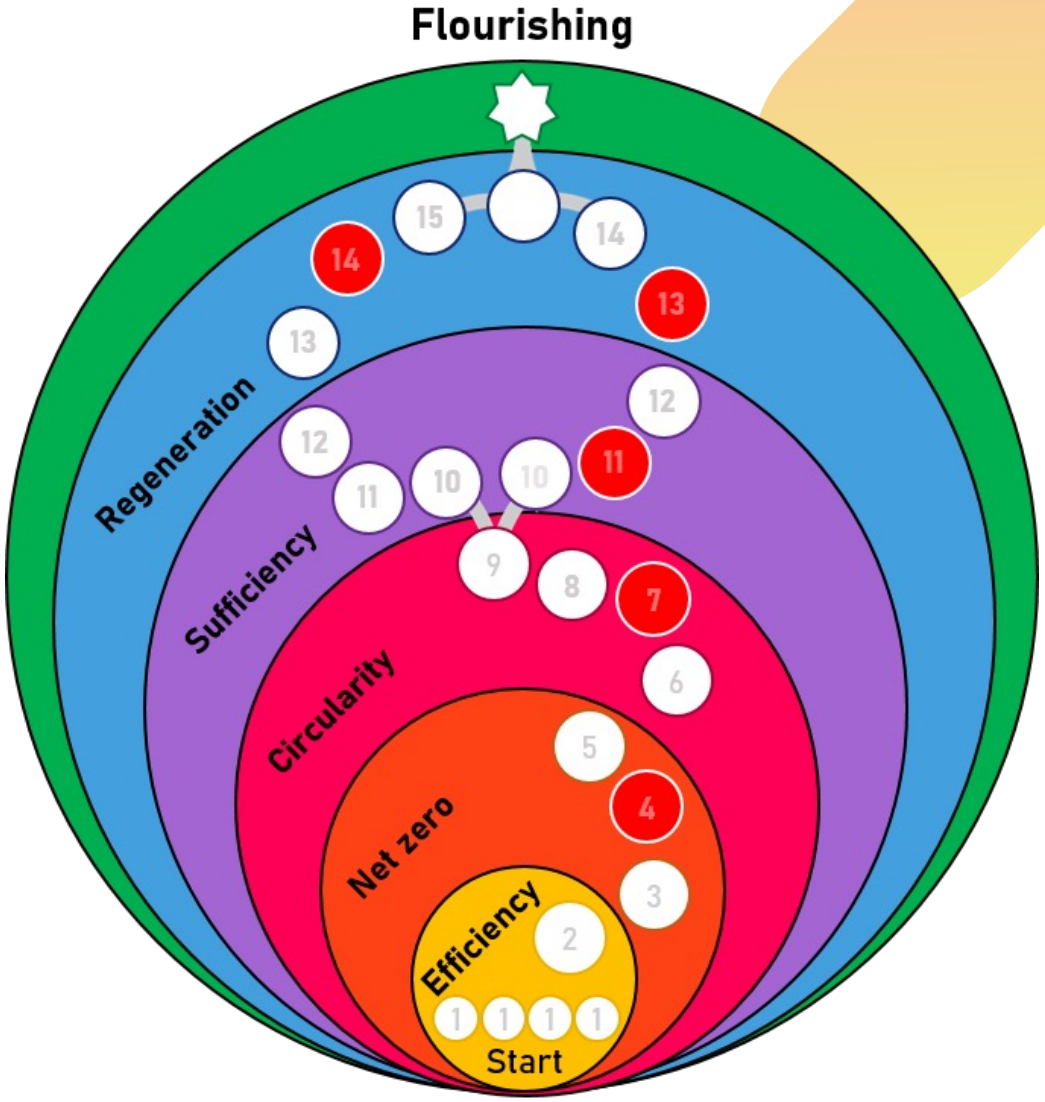
We explore the role of business in the sufficiency-based circular economy through a "practice research" of 150 company cases using sufficiency practices in a business context. Through this analysis, we find that around 20% of our case sample actively question the need to consume, or focus on moderating sales (e.g. discouraging purchases). It was encouraging to see these seemingly counter-business strategies successfully in practice, but our study also illuminates the need for specific policy interventions at the product, business model, and (more controversial) individual consumption level to stimulate a more sufficiency-oriented circular economy.



3.881 245 Kommentare · 359 direkt geteilte Beiträge

All 3,901 3,390 255 245 comments · 358 reposts 328,231 impressions





This project has received funding from the European Union's Horizon 2020's European Research Council (ERC) funding scheme under grant agreement No 850159

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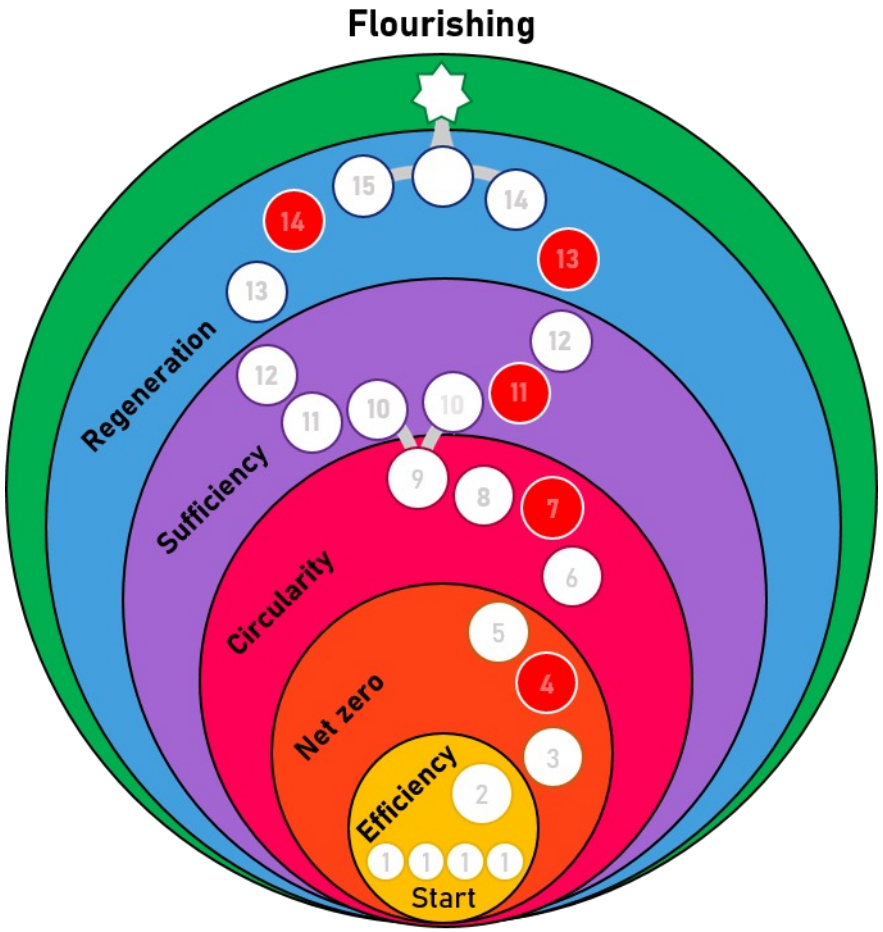

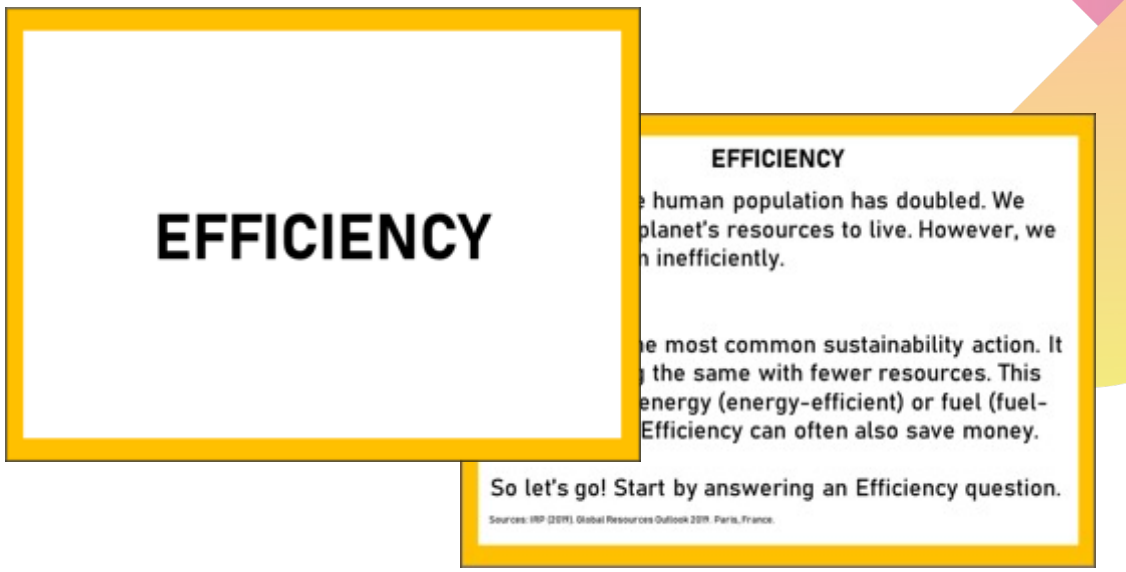

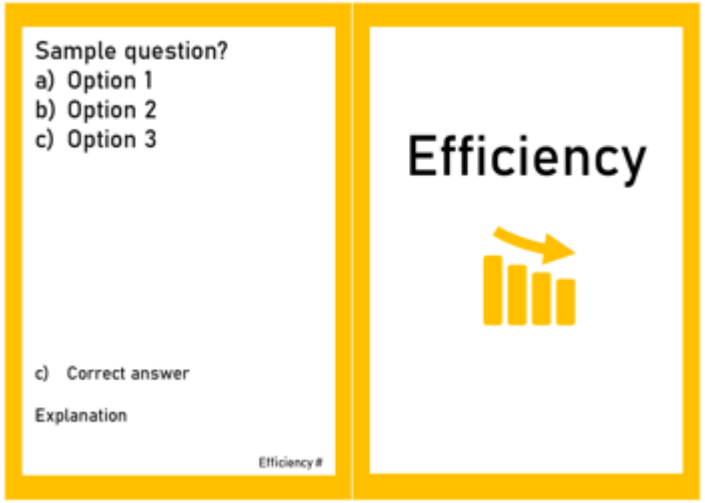

If you're right, move 1 field forward.

If you're wrong, don't move.

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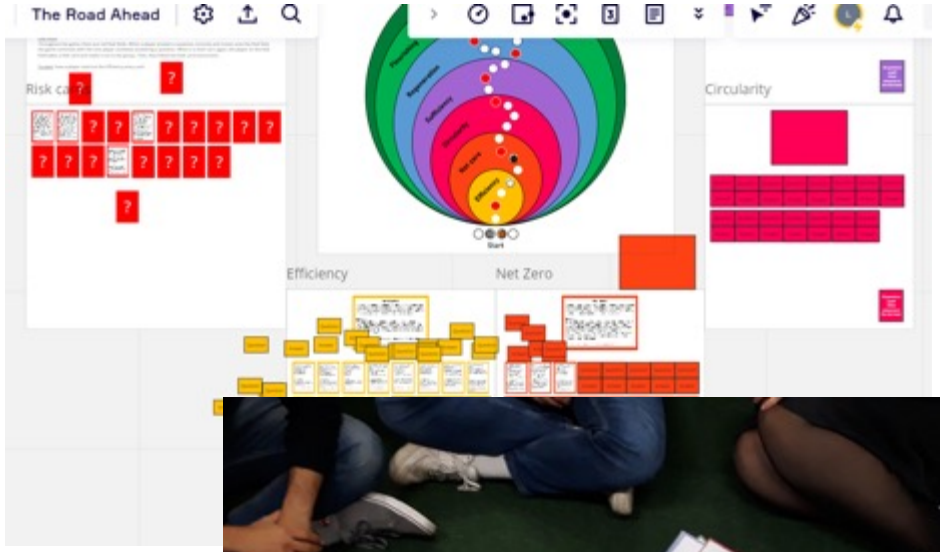
Trials (online & in-person)



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Circular Business Model Experimentation labs: sessions

- Europe: May 14th Norway, May 16th Netherlands, …
- USA: TBD (Autumn 2024)
- Japan: TBD (2025)

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5. Future outlook

Image: https://conceptually.org/concepts/explore-or-exploit

Circularity is dropping

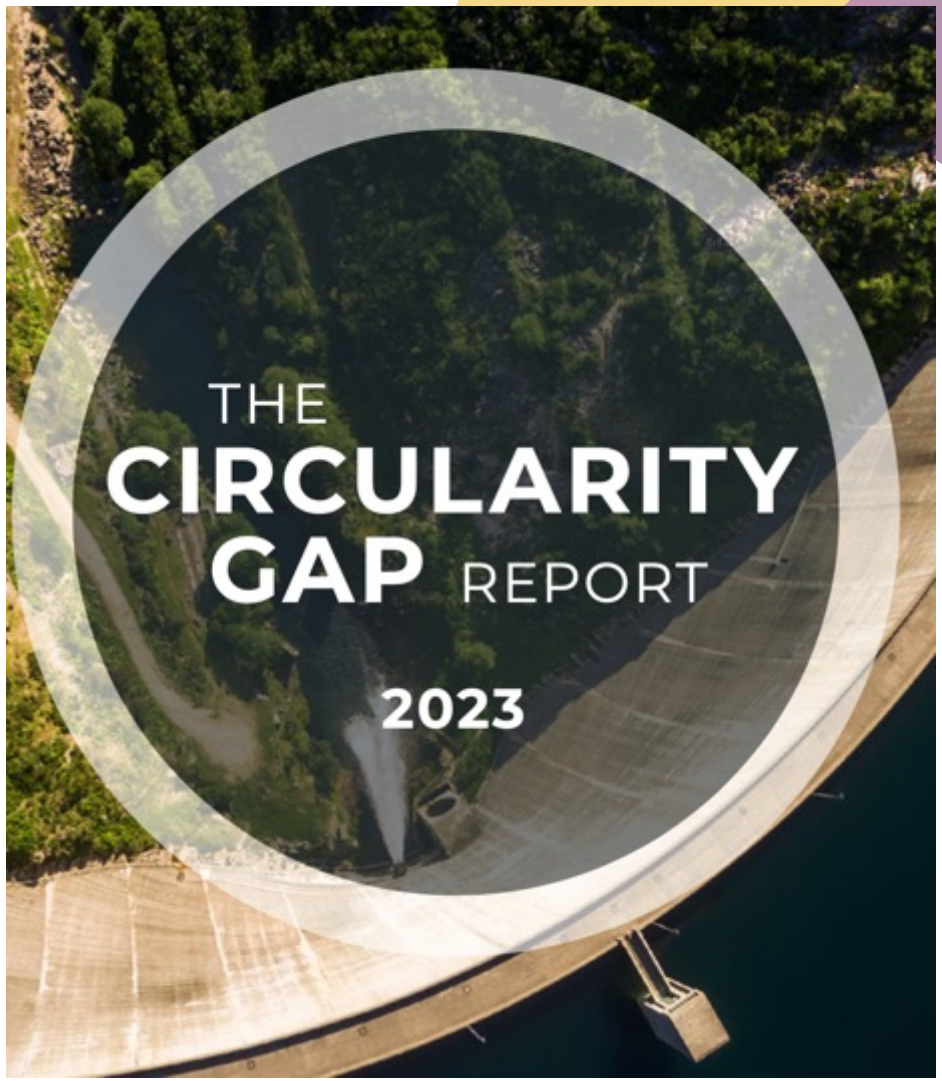
- **A year-on-year drop from 9% to 8% and now 7% (2023 Circularity Gap Report)**

- This is driven by rising material extraction and use

- A circular economy focused on *recycling* alone cannot keep up with virgin material use —we cannot recycle our way out of this crisis.

  -Without *reduction* and *regeneration,* the circular economy is an empty promise

  -Through *bold business strategies* and *institutional reform,* we need to fulfil the goal of *wellbeing within boundaries*



Https://www.circularity-gap.world

From challenges to solutions in the face of climate change

- We don’t do enough → **Experimentation & Scaling up**
- What we do might not be good enough → **Slow the loop & Regeneration**

“Less”: Sufficiency

> Because we live on a finite planet ..

> While a certain amount of consumption is needed, we need to question how, and how much we consume

> Consuming less can be enabled by business:

- Longer lasting products
- Second hand marketplaces
- Design for multiple lifetimes
- Frugal innovations (less complex, less resource intense)
- Sharing (clothes, cars etc)
- Alternatives to materialistic consumption (e.g., green spaces, socialising)

Bocken, N. M., Niessen, L., & Short, S. W. (2022). The Sufficiency-Based Circular Economy—An Analysis of 150 Companies. *Frontiers in Sustainability, 3* https://doi.org/10.3389/frsus.2022.899289

“More”: Regeneration

> Because significant environmental damage has already been done

> Regeneration: securing your future resource supply and conserving the environment you need

- How can we de “more good” rather than “less bad” as a business?
- Is the world a better place because your business is in it?
- Who can we collaborate to achieve these goals?

See also: Polman, P., & Winston, A. (2021). Net positive: How courageous companies thrive by giving more than they take. Harvard Business Press

Konietzko, J., Das, A., & Bocken, N. (2023). Towards regenerative business models: A necessary shift?. Sustainable Production and Consumption, 38, 372-388..

Slow & Regenerate loops

Slow/ sufficiency

- Tools & methods – Beyond Circularity
- Circular Rebound Tool *(Sustainable Production & Consumption journal)*
- Online sufficiency database at https://www.circularx.eu/en/tool and being developed further

Regeneration

- Towards regenerative business: a necessary shift? *(Sustainable Production & Consumption journal)*
- Regeneration database (nearly done)
- New PhD research: regenerative business

How do circular startups achieve scale?

19 companies, 22 interviews, all scaled circular businesses

Sustainable Production and Consumption 40 (2023) 363–375

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journal homepage: www.elsevier.com/locate/spc

How do circular start-ups achieve scale?

Dihui Han *, Jan Konietzko, Marc Dijk, Nancy Bocken

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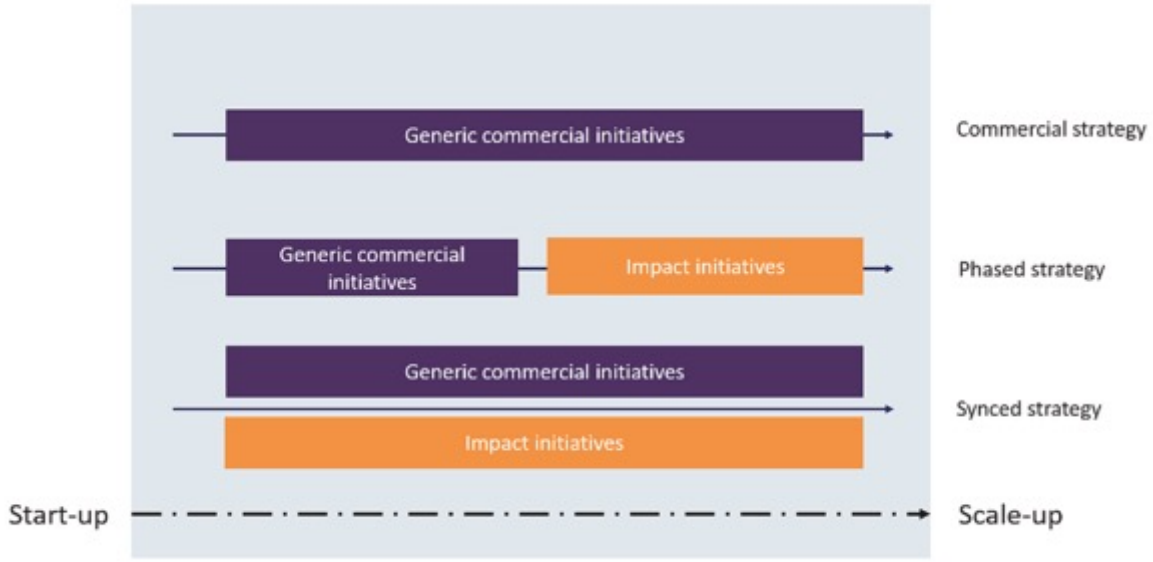
ABSTRACT

The scaling of circular initiatives is vital to the transformation towards circular businesses. However, empirical research on how circular start-ups scale is lacking. Circular start-ups are distinct from traditional start-ups, which are solely based on a growth-centred scaling logic. This study aims to understand how circular businesses scale up. A three-step flexible pattern matching approach is used to synthesize a new perspective on scaling formed with extant literature and empirical data. We found circular start-ups scale through both commercial and impact activities. This means their strategic aims to scaling are not limited to revenue generation, but also include

Commercial, phased, and synced strategies



More Circular business research

- **Circularity for renewables**
  - Lichen blades research (circular windturbine blades, NWO funded))
  - Circular solar PV research (follow up from circusol.eu)

- **Circularity in cities**
  - JustNexus – nexus of housing, mobility & energy (Mobility in a Sustainable Future program, NWO Netherlands)
  - Urban Upcyling project (RAAK Pro with HVA Amsterdam)
  - CDCUL project on shared living solutions (Dirving Urban Transitions)
  - DRASTIC project on low carbon circular living (Horizon Europe)

- **Circularity and social impact**
  - 2 PhD researchers: with KU Leuven and VITO

- **Regenerative business**
  - Ongoing Circular X PhD research
  - PhD research with LUT Finland

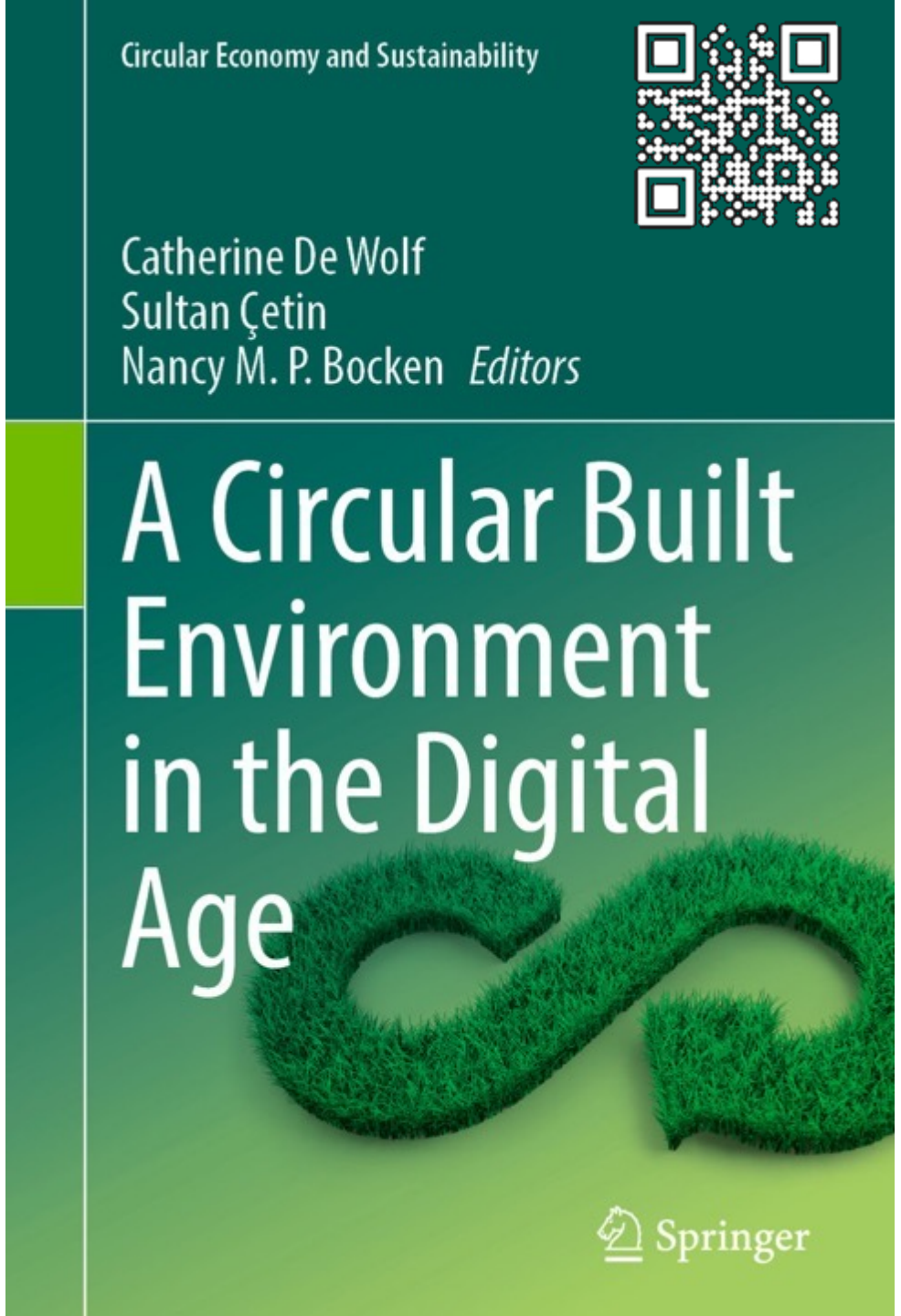
- **Sufficiency business**
  - Ongoing Circular X PhD research
  - PhD research with TU Berlin
  - Fixophobia project with TU Delft on repair (NWO funded)

Suggestions for future research & practice

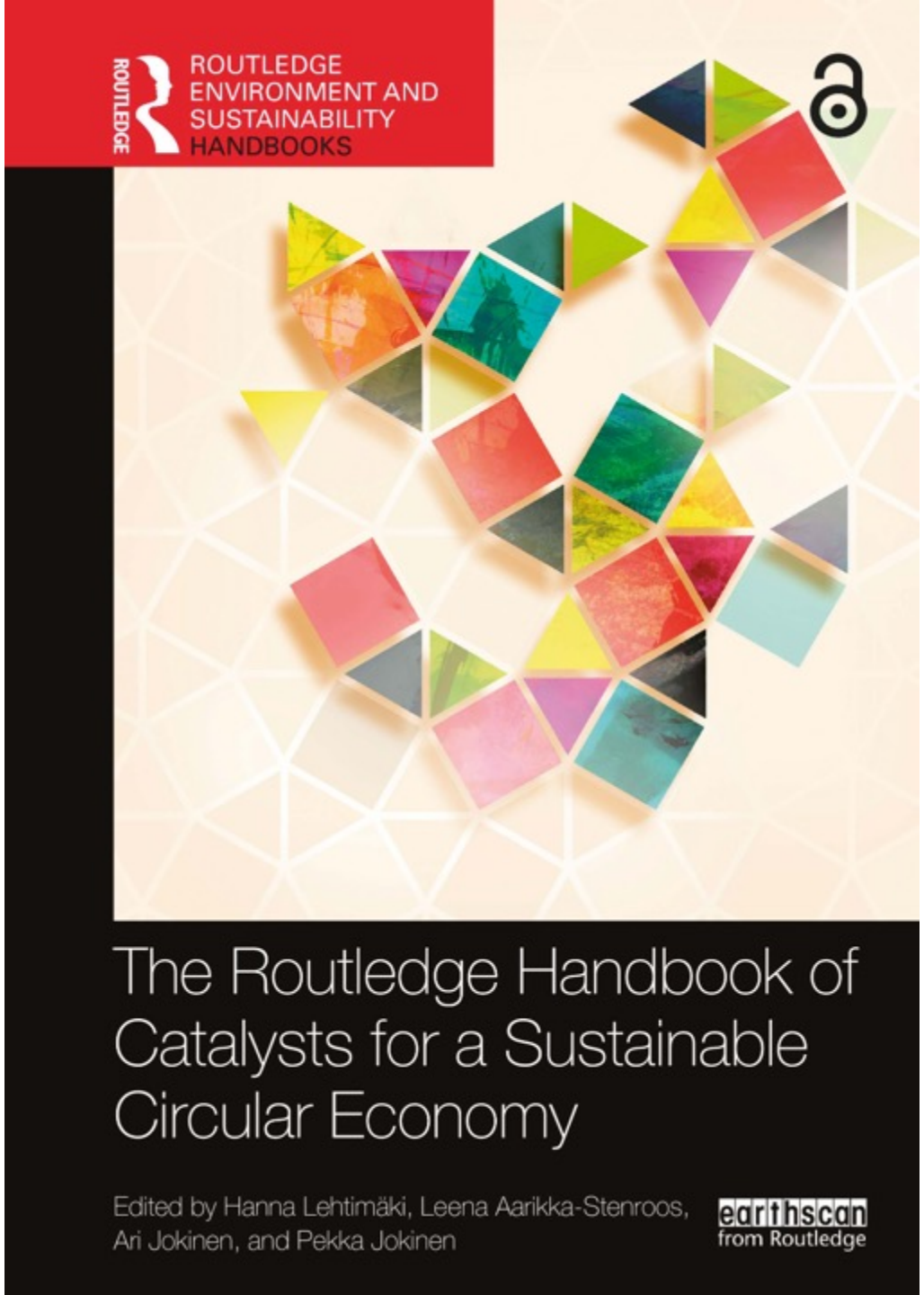
- Twin transition: Digital x Circular
- Understanding impacts and rebounds
- ‘Decision support’ (tools/ methods)
- Action-oriented research
- Holistic view on circularity
  - expanding the R’s towards **r**egeneration, **r**efuse etc beyond **r**ecycling
- From Circular Economies to Circular Societies

Research agenda. See: Bocken, N., Pinkse, J., Darnall, N., & Ritala, P. (2023). Between Circular Paralysis and Utopia: Organizational Transformations towards the Circular Economy. *Organization & Environment*, 10860266221148298.
Image: https://conceptually.org/concepts/explore-or-exploit

Twin transition Digital & Circular



Handbook for circular economy



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Are you an organization already working with, or experimenting with a circular business model?

- Please email me at: nancy.bocken@maastrichtuniversity.nl for a virtual interview (about 45 minutes) for project Circular X
- We can add you to our case database: https://www.circularx.eu/en/cases
- And include you in one of our international research studies!

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The best way to predict the future is to invent it

(Alan Kay & others)

Or:

Just do it!

(Nike)

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