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Integrating circular economy, green economy and bioeconomy within a strategic framework for strong sustainability

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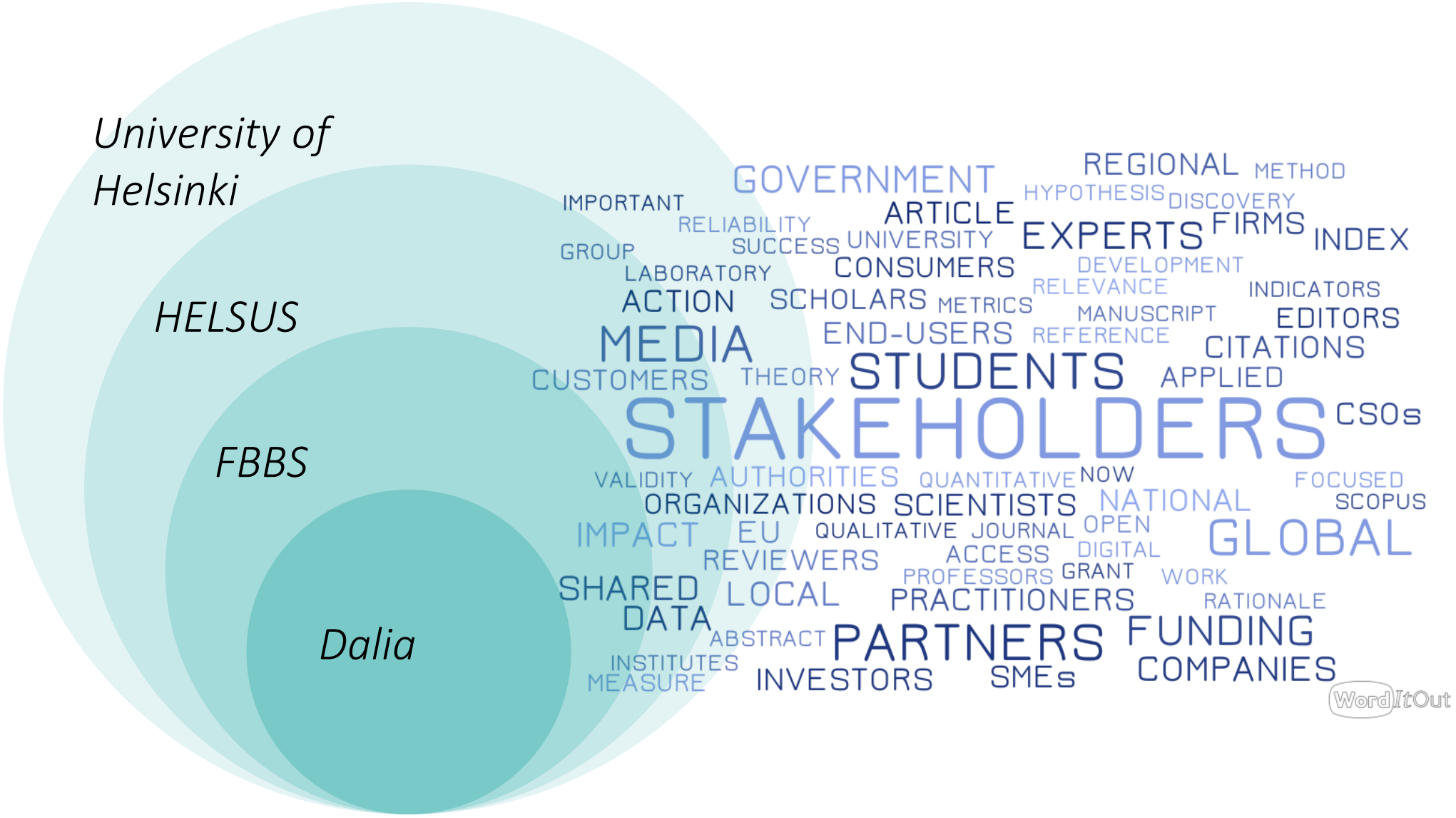
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Helsinki Institute of Sustainability Science (HELSUS) contributes to sustainability transformations of societies by means of inter- and transdisciplinary research co-creation and education.

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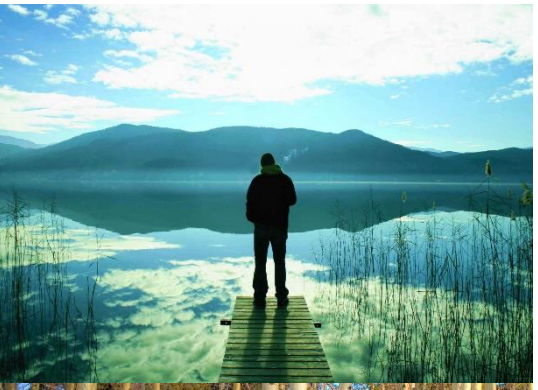
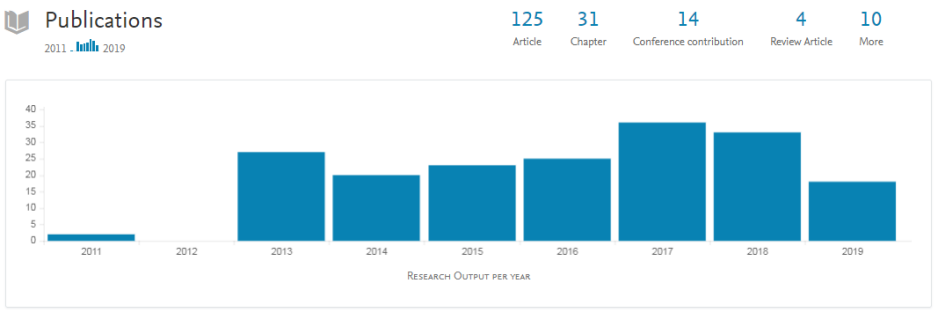


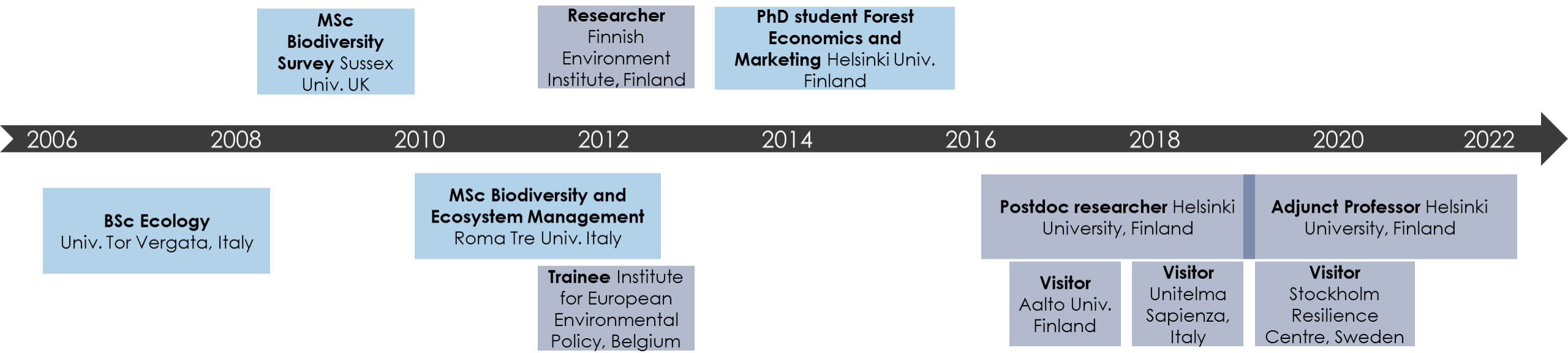
FOREST BIOECONOMY, BUSINESS AND SUSTAINABILITY (FBBS research group)

- Bioeconomy and other sustainability visions
- Ecosystem services and socio-ecological systems
- Forest economics and management
- Forest products industry, trade and marketing



Dalia D'Amato

Main research interest: Synthesis and integration of sustainability framings and concepts to inform the further development of sustainability transformations within strong sustainability.



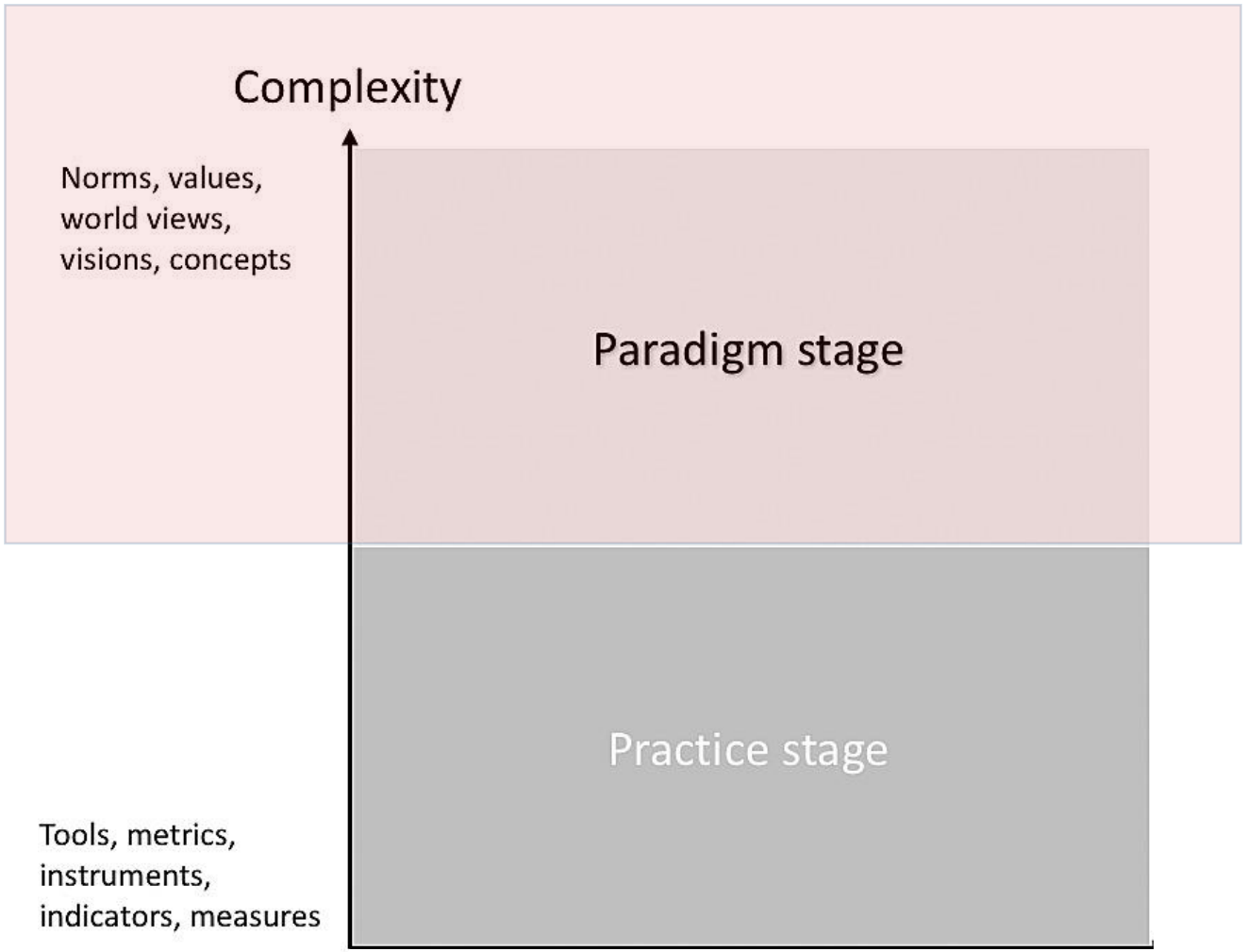
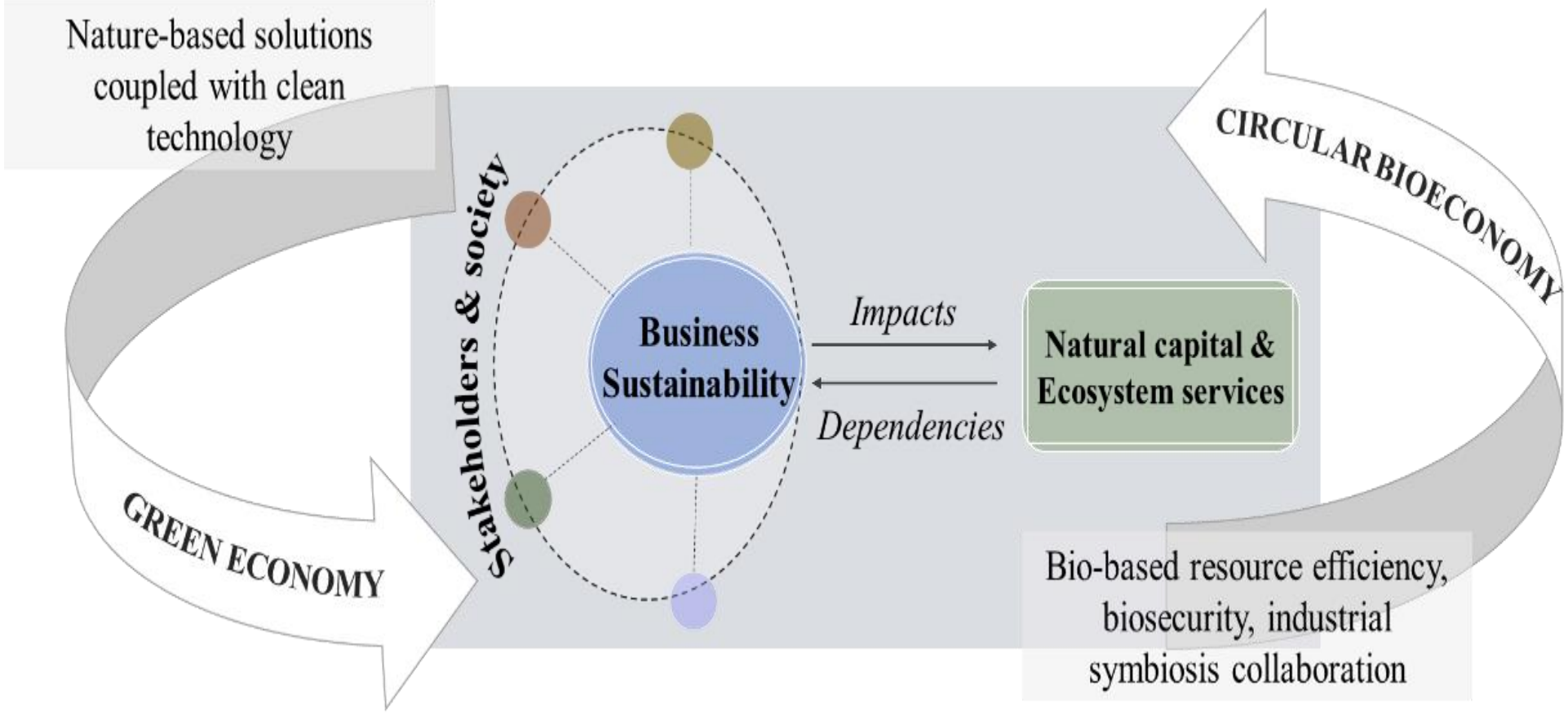


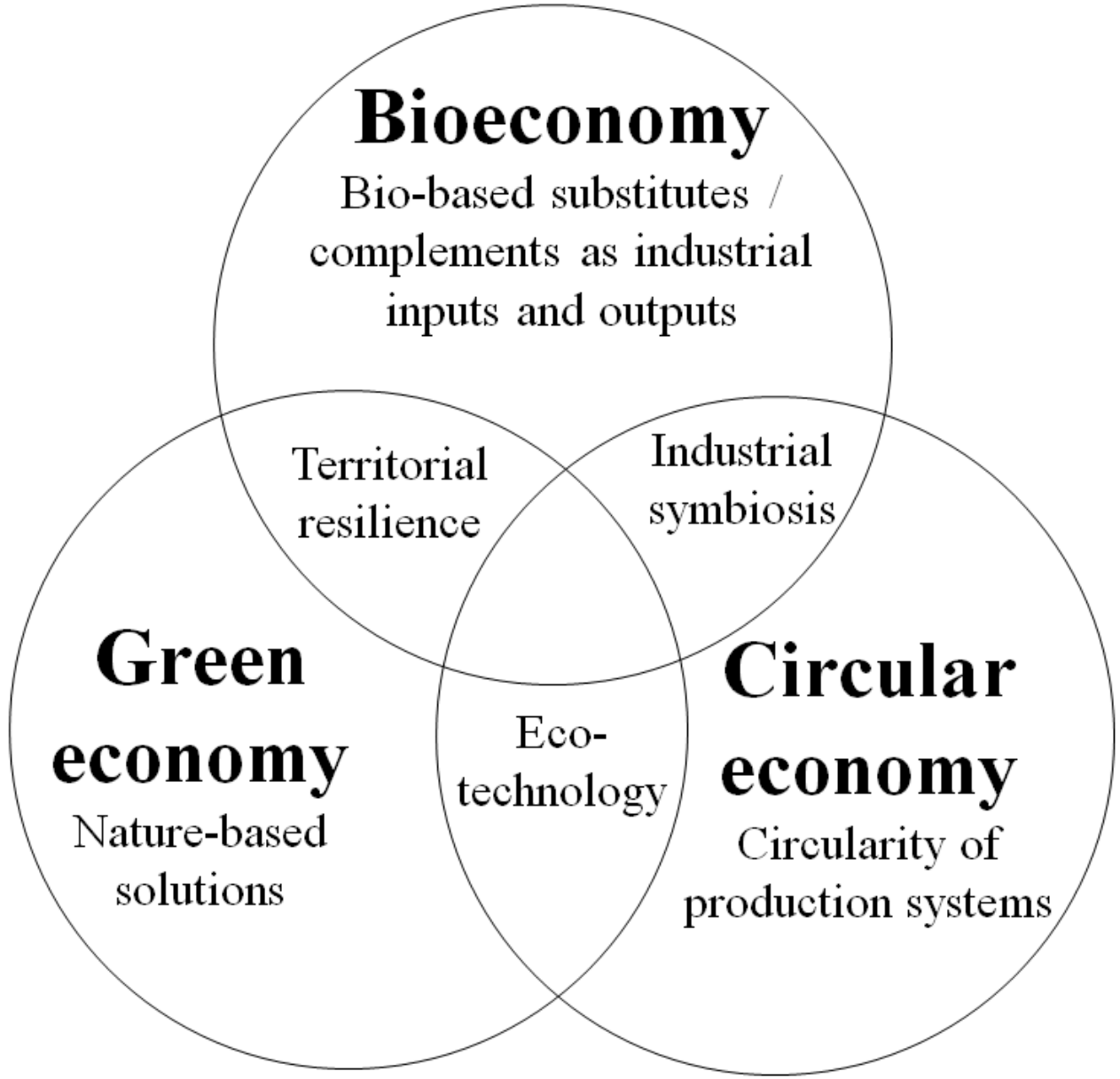
Fig. modified from Korhonen et al. 2018

Folke et al. 2016

Postdoc project 2018-2021

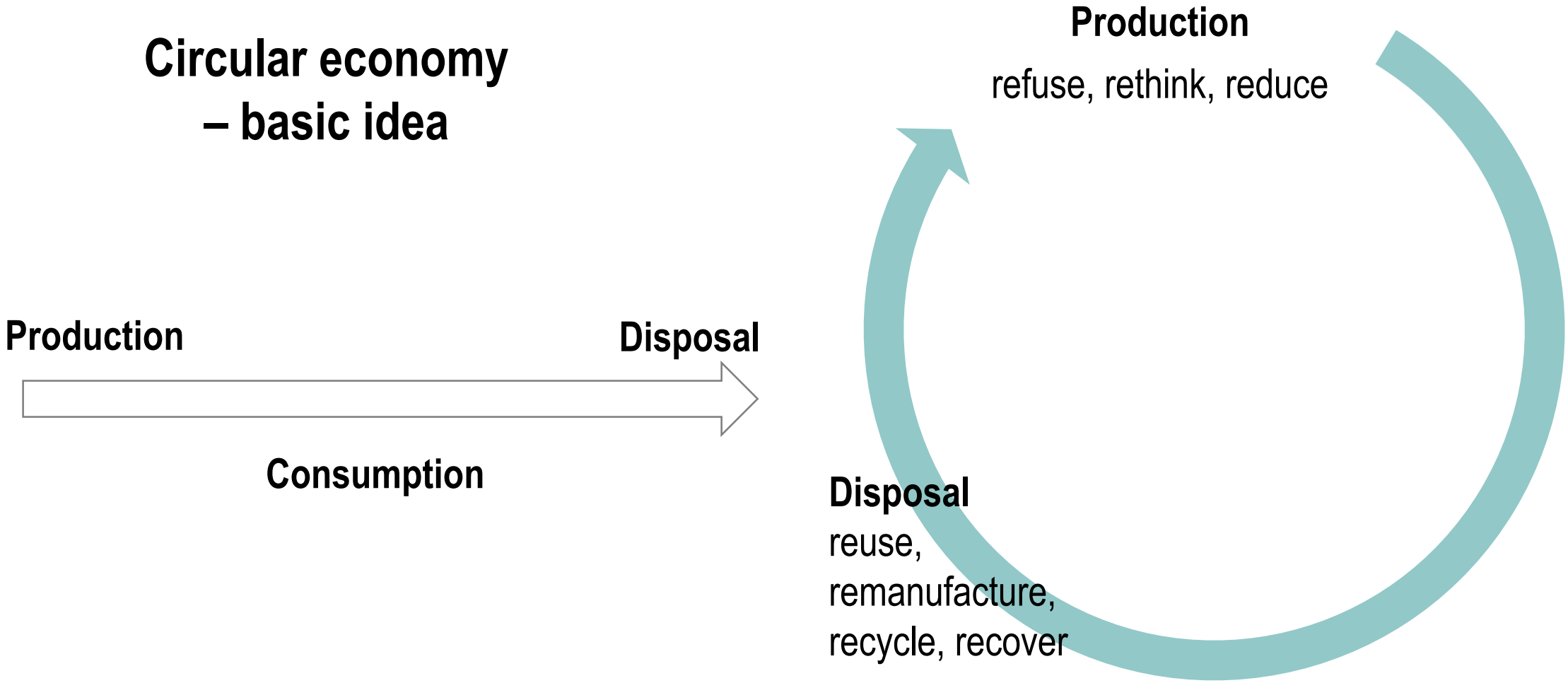
Operationalising ecosystem services in business sustainability: drawing from green and circular-bioeconomy (OPES)





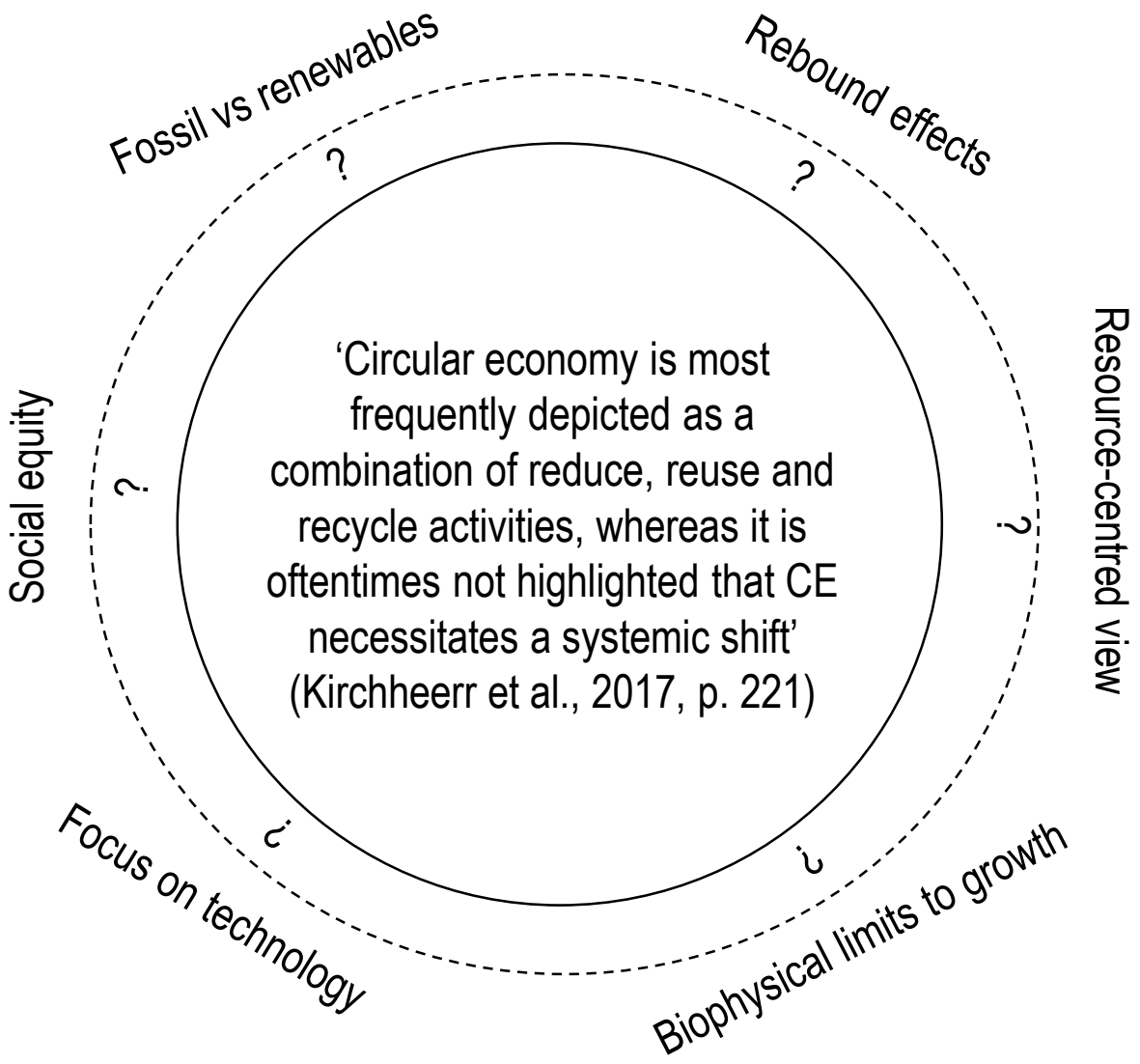
D'Amato, Korhonen et al., 2019

Circular economy – basic idea



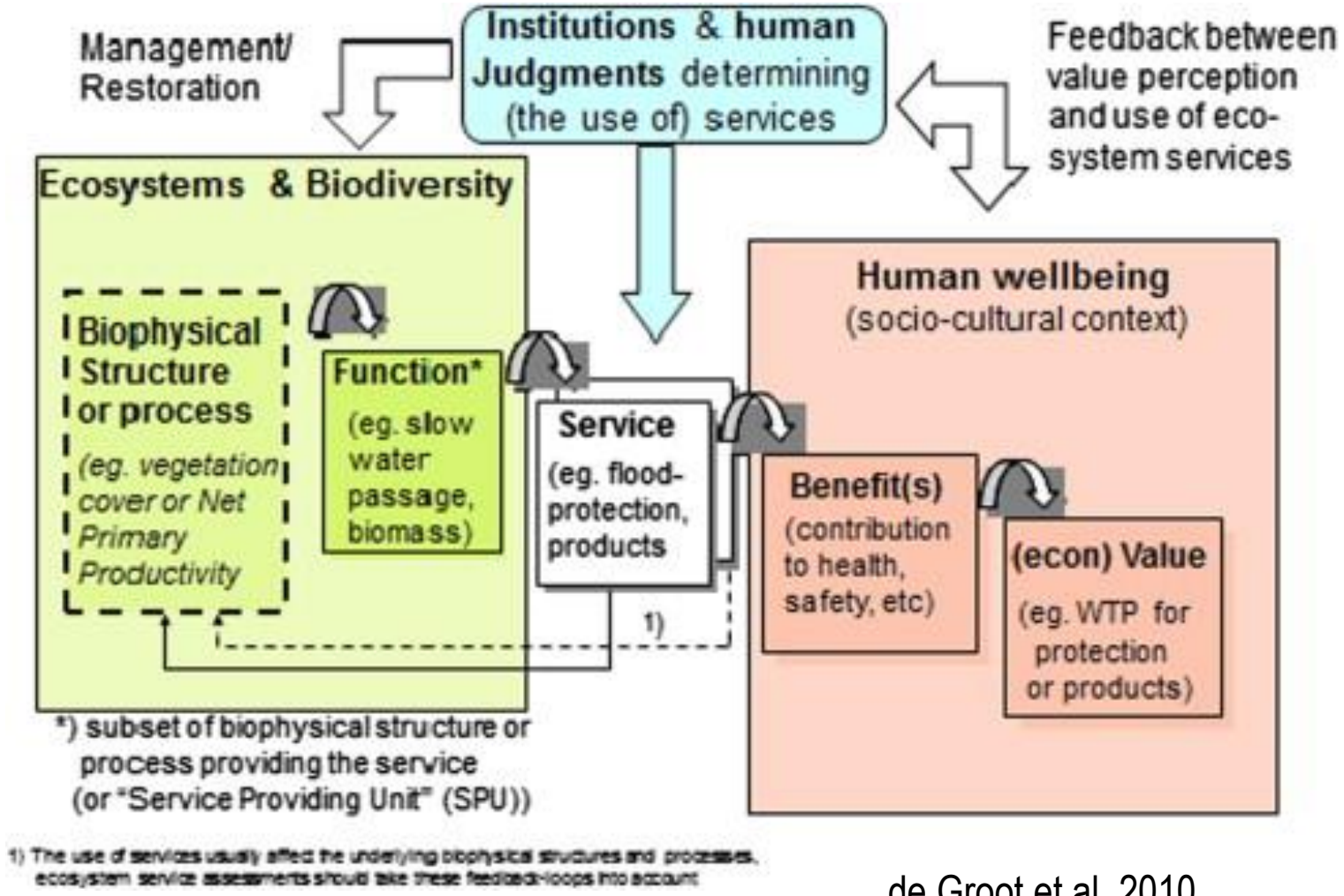
Own representation based on Kirchheerr et al., 2017; Korhonen et al. 2018

Circular economy – critical issues



Green economy - basic idea

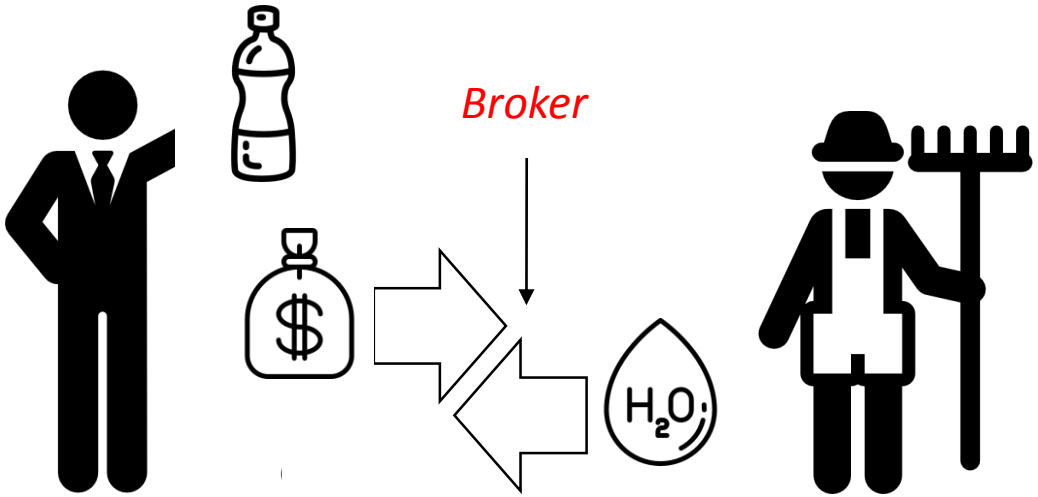
'reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services' (UNEP, 2011, p. 1).



de Groot et al, 2010

Green economy – basic idea

Payment for ecosystem services



1. Voluntary transaction of
2. a well-defined ES
3. which is bought by minimum one beneficiary
4. and sold by minimum one provider
5. at the condition that the provider ensures a secure provision

Example: Water company pays uphill forest owners to change or maintain a certain land use management in order to guarantee water purification services.
Note, there is a geographical link.

Green economy
– critical issues

Strong focus on technological and market-based solutions

Coordination and accountability

Utilitarian and not radical enough (green growth)

e.g. Brand 2012

Bioeconomy - basic idea

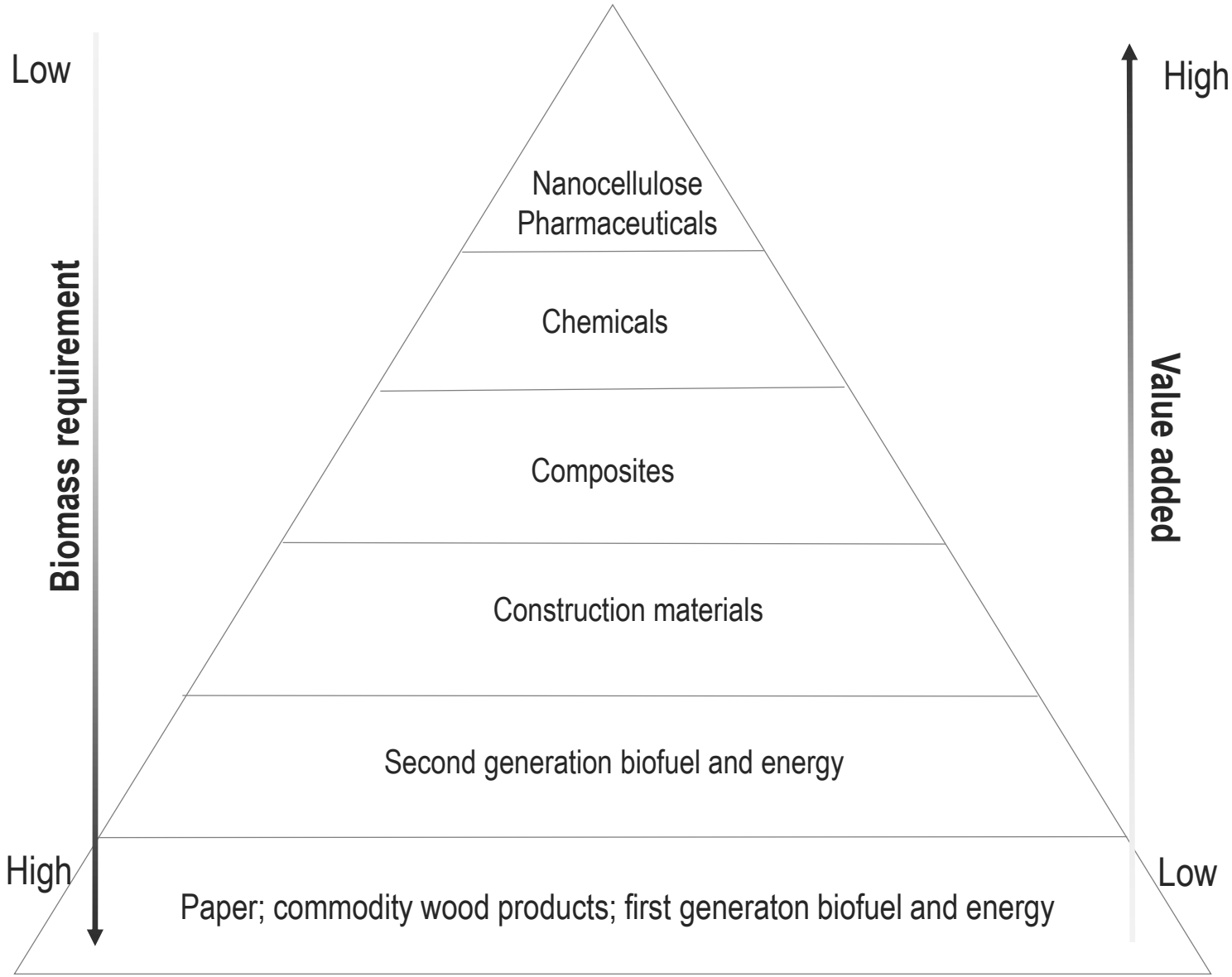


Fig. Own representation based on Toppinen et al. 2018

Bioeconomy
- critical issues

Trade-offs between biomass maximization and other land uses

Resource-centred vision

Social dimension of sustainability?

e.g. Pfau et al. 2014

Journal of Cleaner Production
Volume 168, 1 December 2017, Pages 716-734

Green, circular, bio economy: A comparative analysis of sustainability avenues

D. D'Amato [a], N. Droste [b], B. Allen [c], M. Kettunen [c], K. Lähtinen [d], J. Korhonen [a], P. Leskinen [e], B.D. Matthies [f], A. Toppinen [a]

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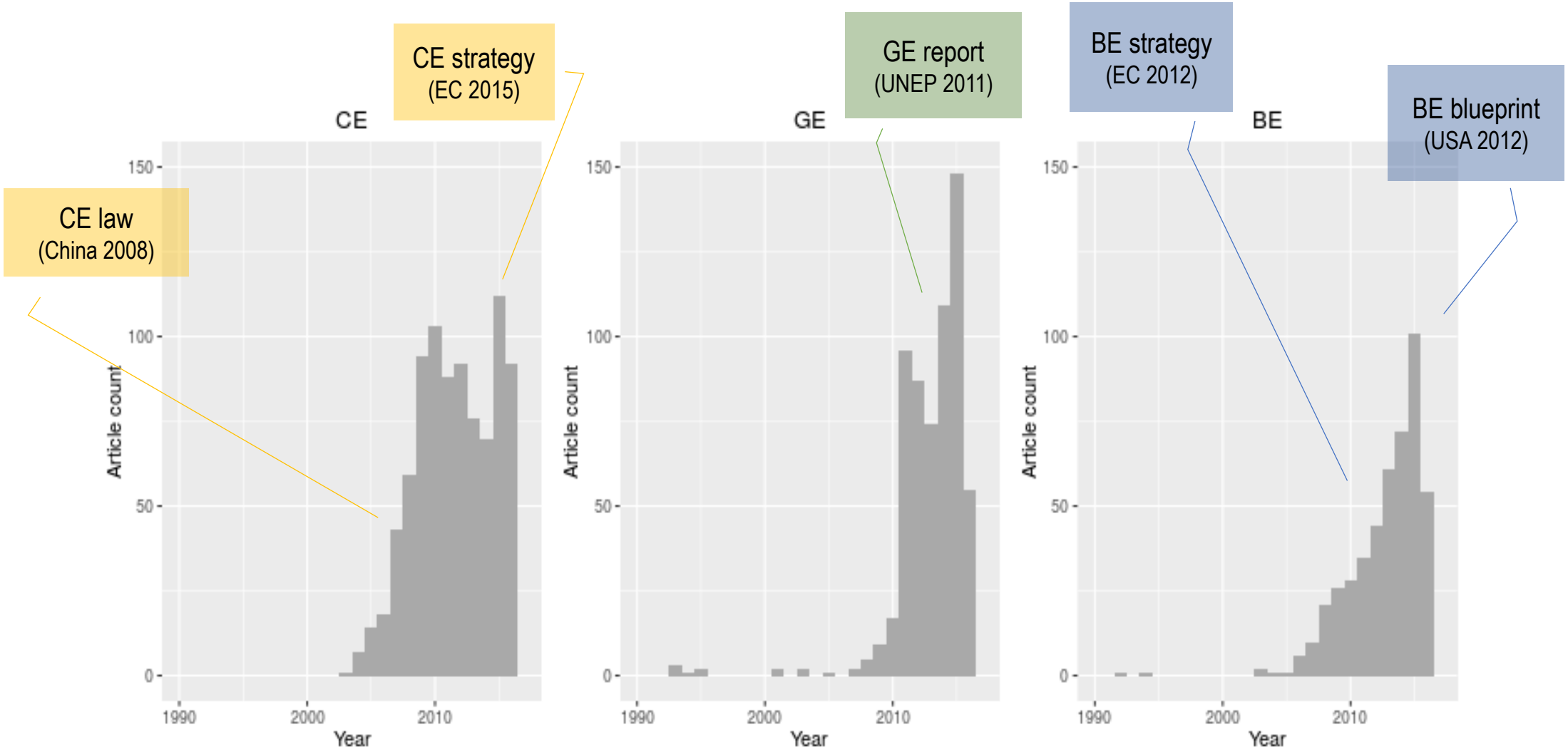
https://doi.org/10.1016/j.jclepro.2017.09.053

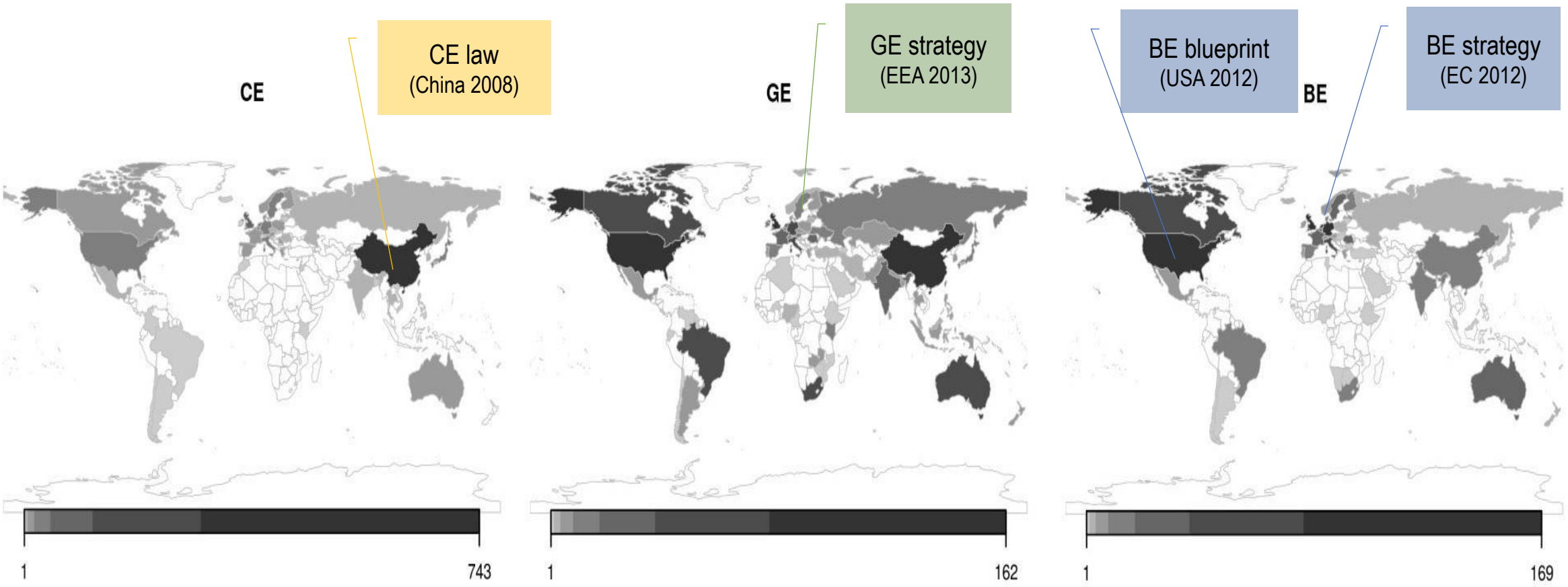
Highlights

- Circular, Green and Bioeconomy are mainstreamed as global sustainability concepts.
- They are compared based on a machine-learning analysis of literature.
- Green economy is more inclusive of social and environmental issues.
- The concepts are limited in questioning the economic growth paradigm.



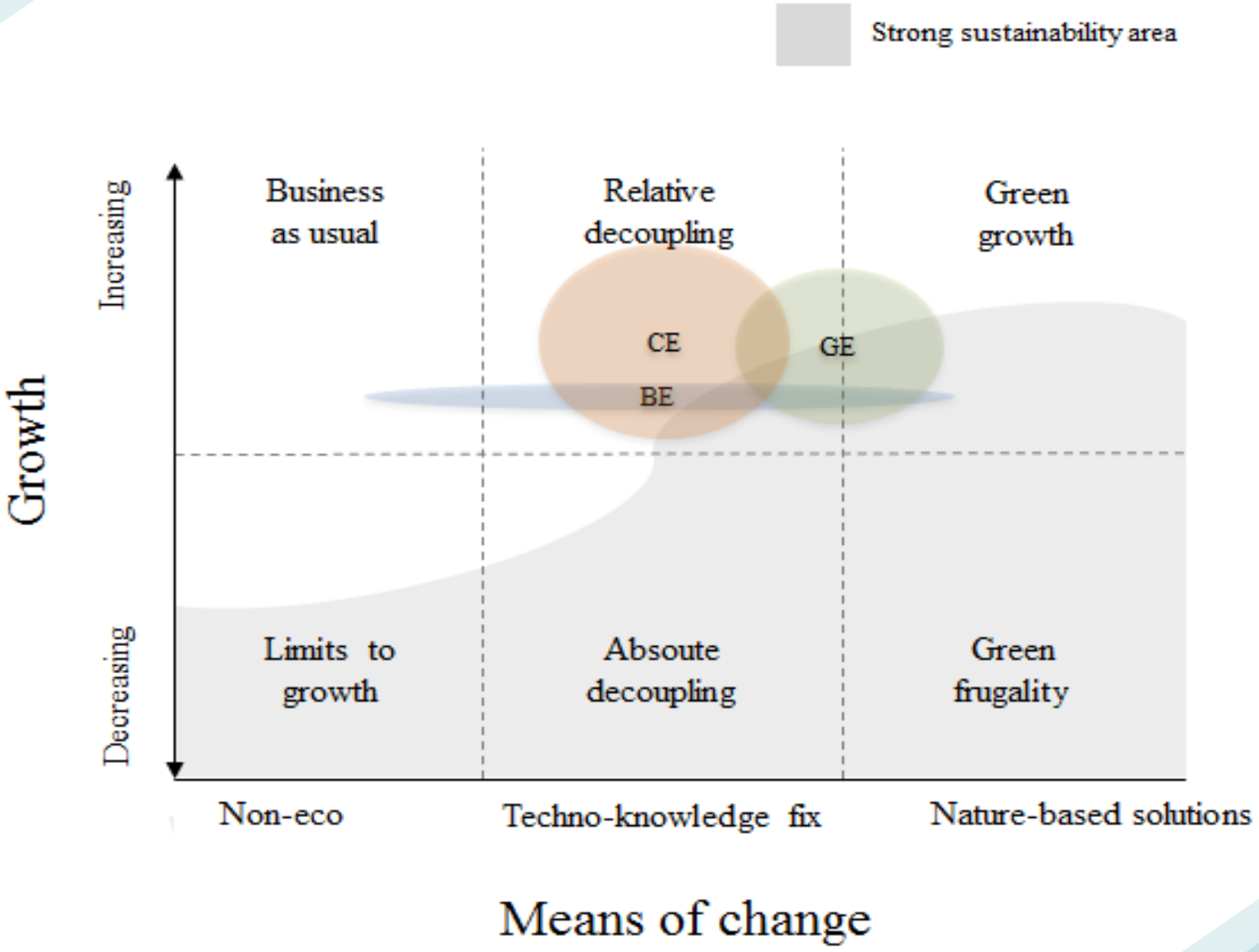
Scientific literature – distribution in time

D'Amato et al., 2017



Scientific literature – distribution in space

D'Amato et al., 2017



D'Amato et al., 2017

Ecological Economics
Volume 158, April 2019, Pages 116-133

Analysis

Circular, Green, and Bio Economy: How Do Companies in Land-Use Intensive Sectors Align with Sustainability Concepts?

D. D'Amato [a, b, c], J. Korhonen [a, b], A. Toppinen [a, b]

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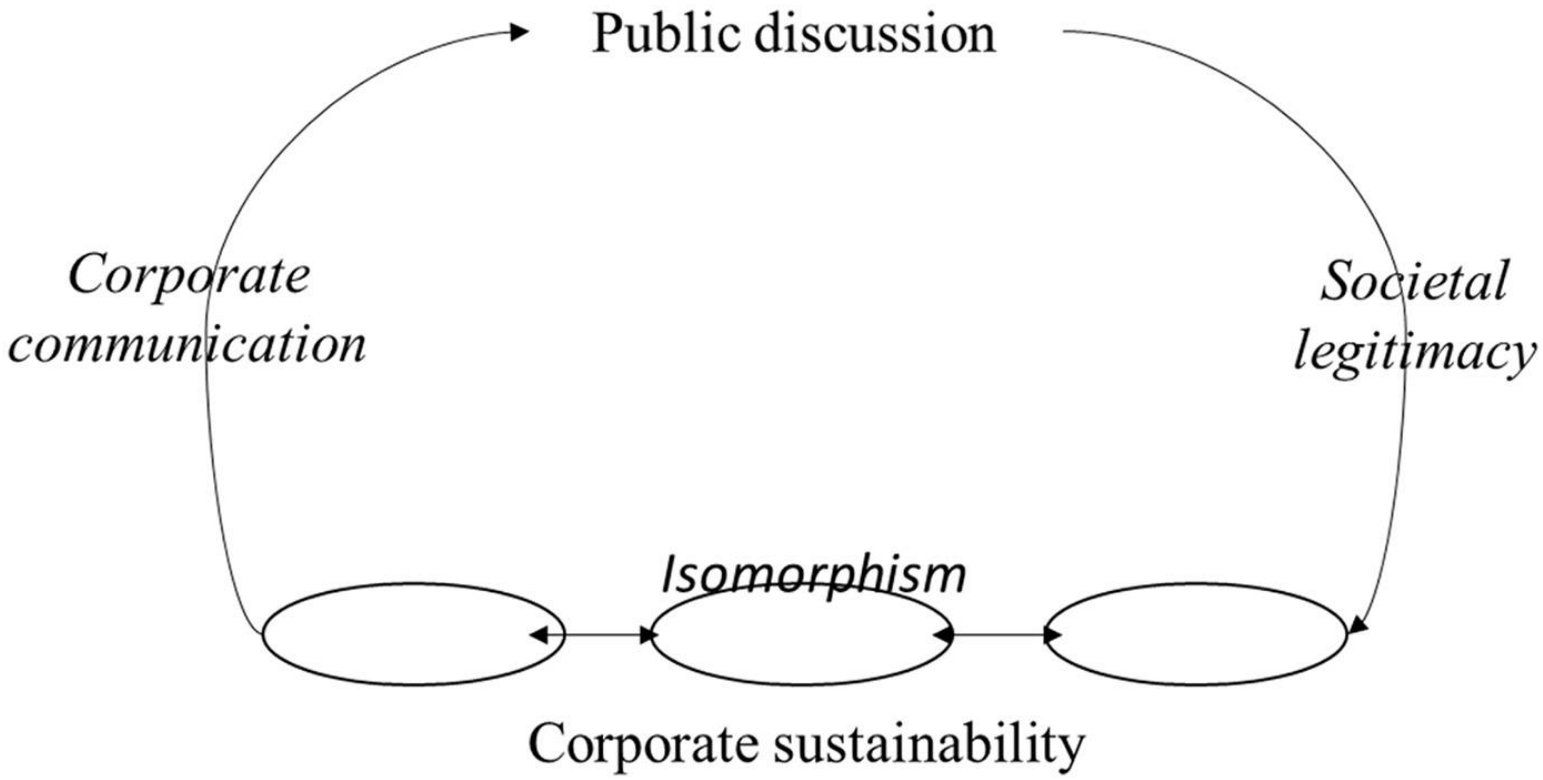
https://doi.org/10.1016/j.ecolecon.2018.12.026

Highlights

- Global sustainability concepts influence corporate practices, and vice versa.
- We analyse 123 sustainability company reports in five land-use intensive sectors.
- Circular economy is an omnipresent and homogeneous idea across companies and sectors.

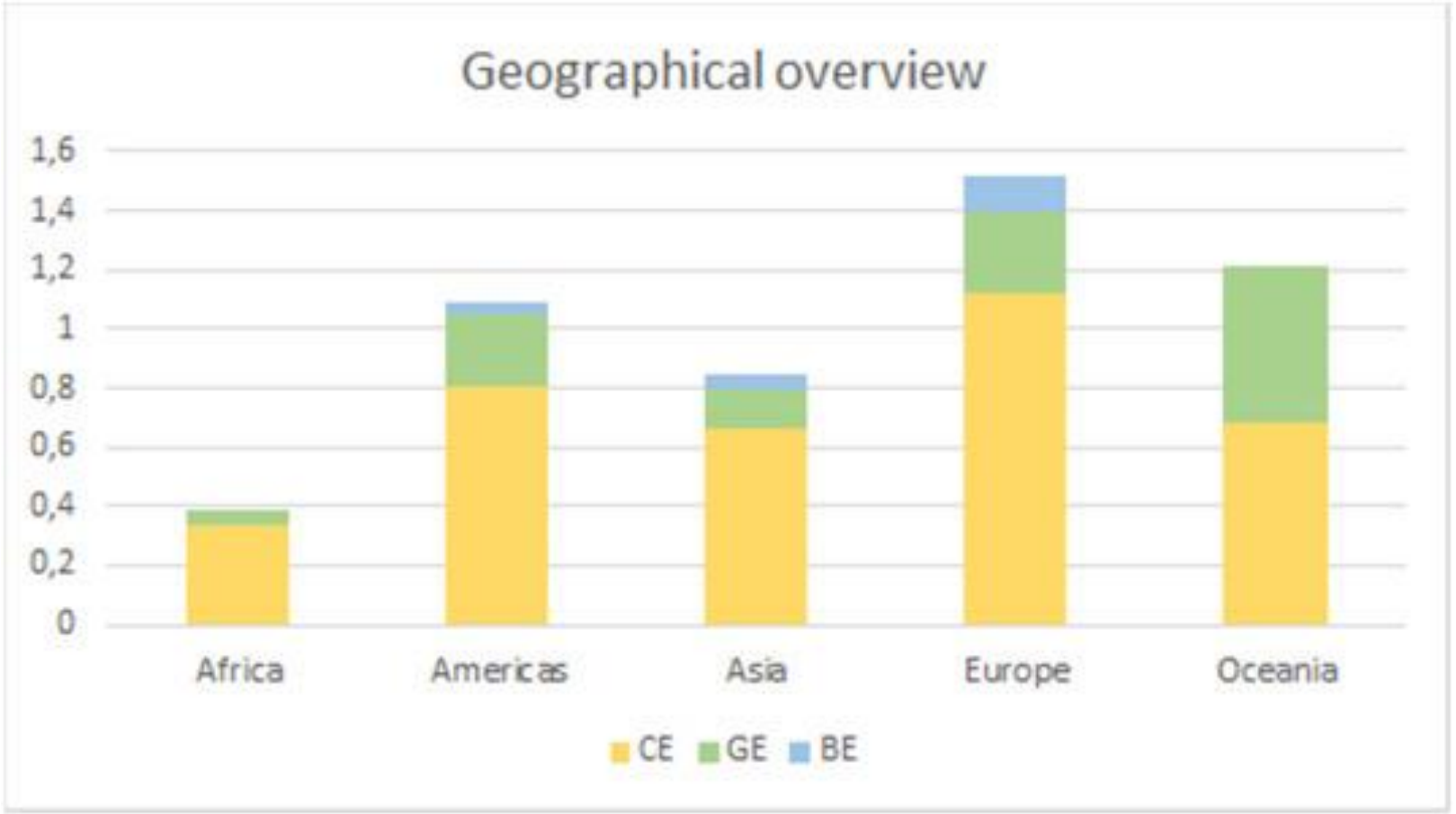
CE, GE, and BE are sustainability concepts that companies operating in land-use intensive sectors are driven to incorporate in their organizational conduct.



D'Amato et al., 2019

Analysis of 123 sustainability company reports in five land-use intensive sectors

Mentions of each concept (average frequency per page)

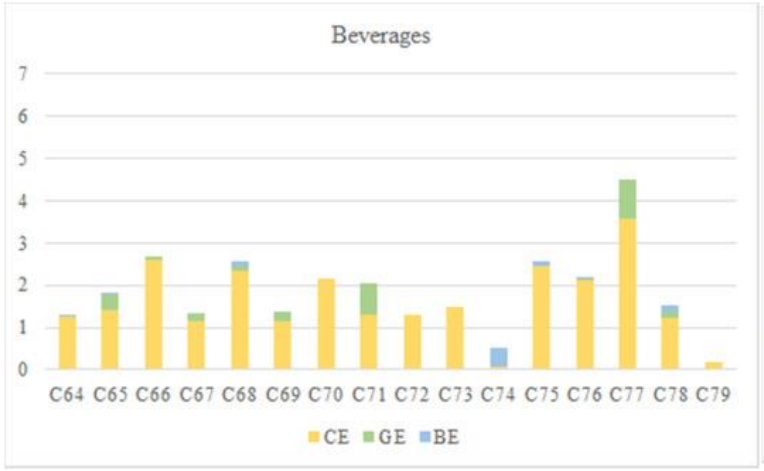


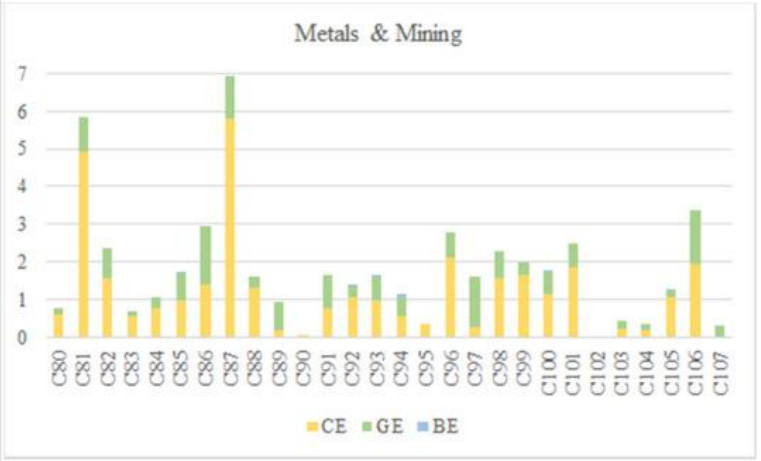
D'Amato et al., 2019

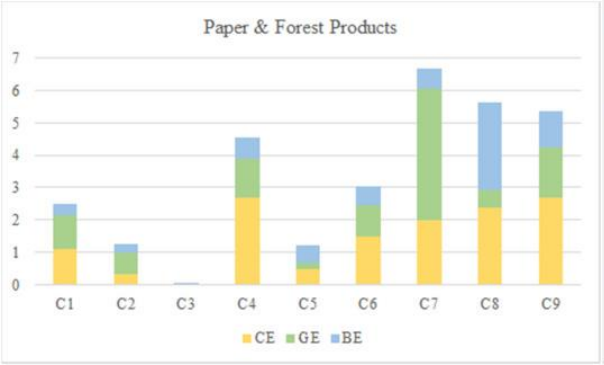
D’Amato et al., 2019

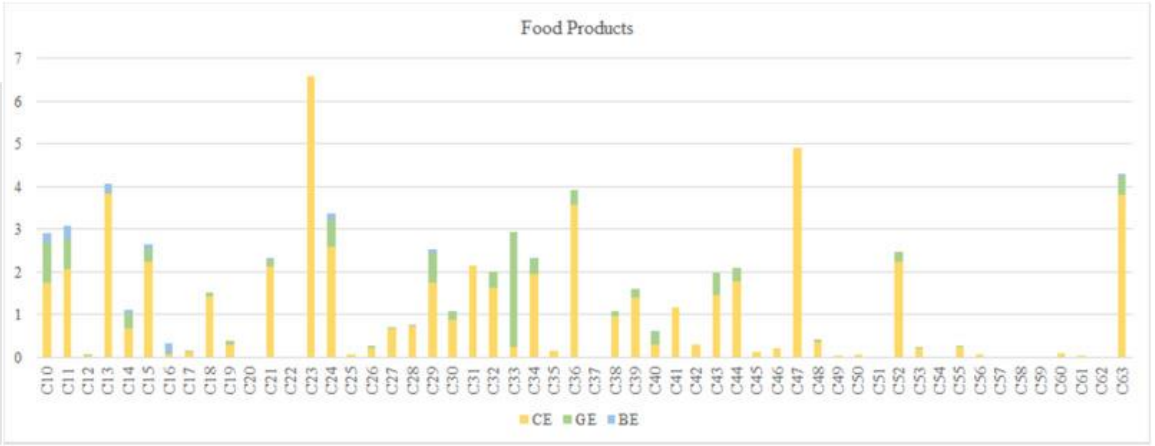
CE omnipresent and homogeneous across all companies and sectors

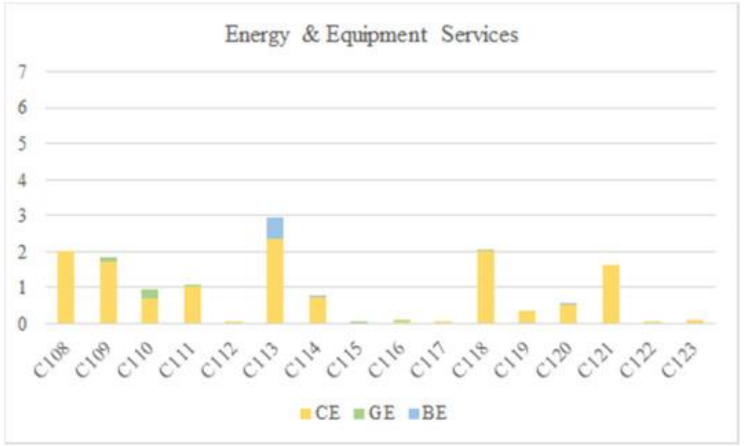
Mentions of each concept (average frequency per page)











CE in reports is about

1) monitoring/assessing; reducing/optimizing;
2) recycling/reusing of energy;
3) material flows.

GE in reports is about

1) accounting, avoiding, and offsetting operational impacts;
2) managing land and resources sustainably (e.g. through an ecosystem approach and nature-based solutions);
3) conserving biodiversity and ecosystems both for altruistic reasons and to enhance ecosystem services beneficial to company operations (e.g. pollination for food production);
4) engaging stakeholders in landscape-level ecosystem management.

BE in reports is about

1) bio-based energy and fuels;
2) higher value use of biomass (bio-based materials and composites);
3) biosecurity, emerging especially in forest and food sectors.

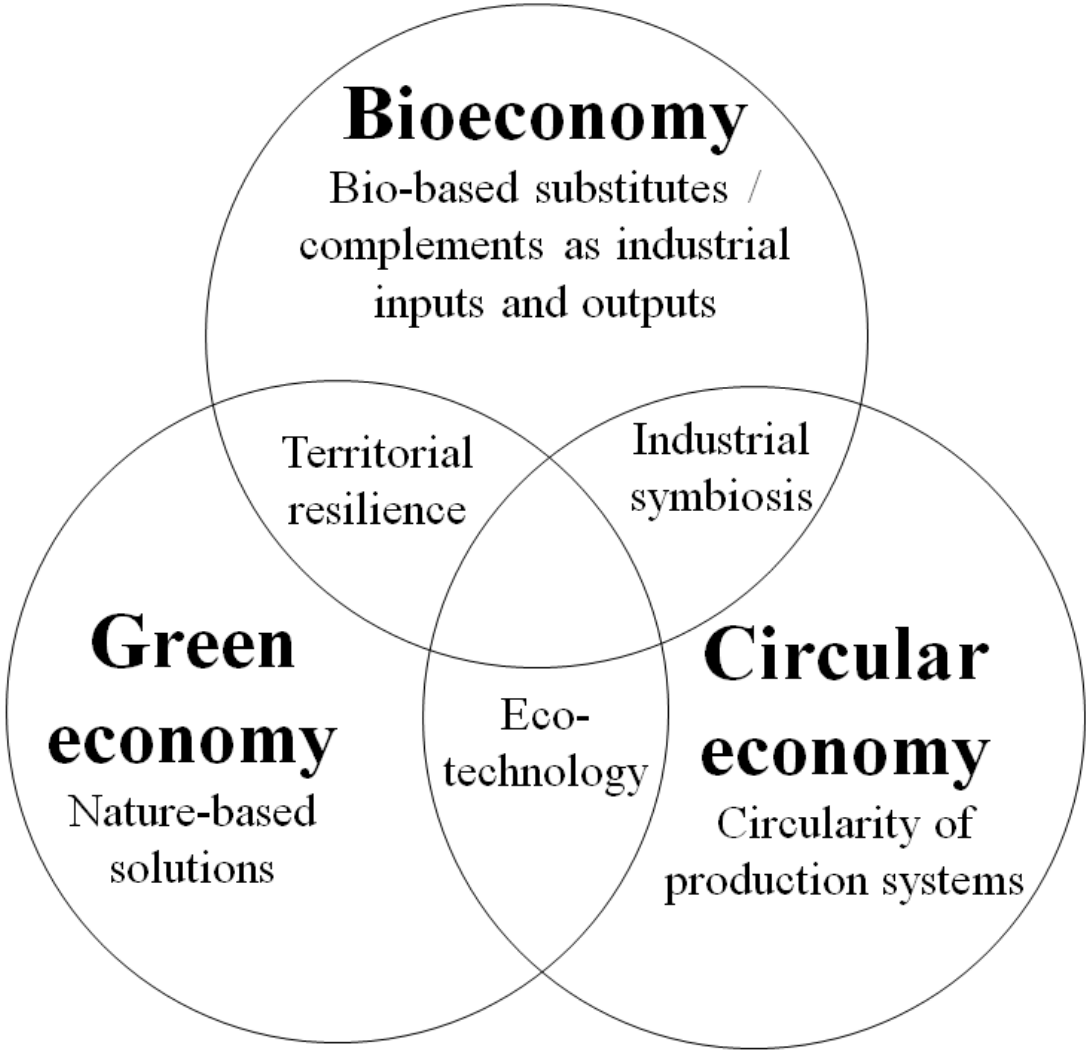
D'Amato et al., 2019

Integrating circular economy, green economy and bioeconomy within a strategic framework for strong sustainability

A convergence of these concepts is 'in the air'

- Updated European Bioeconomy strategy 'Circular bioeconomy' (EC, 2018)
- 'Renewable circular economy' (Ellen Mac Arthur Foundation, 2018)
- Shared opinions of sustainability researchers hinted to possible synergies between CE and GE+degrowth (D'Amato et al., 2019a)

However CE, GE and BE are still siloed in scientific literature (D'Amato et al., 2017) and also in corporate reporting (D'Amato et al., 2019b)



D'Amato et al., 2019b

Punti di contatto con CIRPS

- Complementarietà aspetti concettuali e astratti
- Ruole del settore privato nelle trasformazioni per la sostenibilità
- Capacity building, insegnamento remoto

Grazie

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Dept. Forest sciences ranked
4th in the World (CWUR)

Journal of Cleaner Production
Volume 230, 1 September 2019, Pages 460-476

Thinking green, circular or bio: Eliciting researchers' perspectives on a sustainable economy with Q method

D. D'Amato [a, b, c], N. Droste [d], K.J. Winkler [e], A. Toppinen [a, b]

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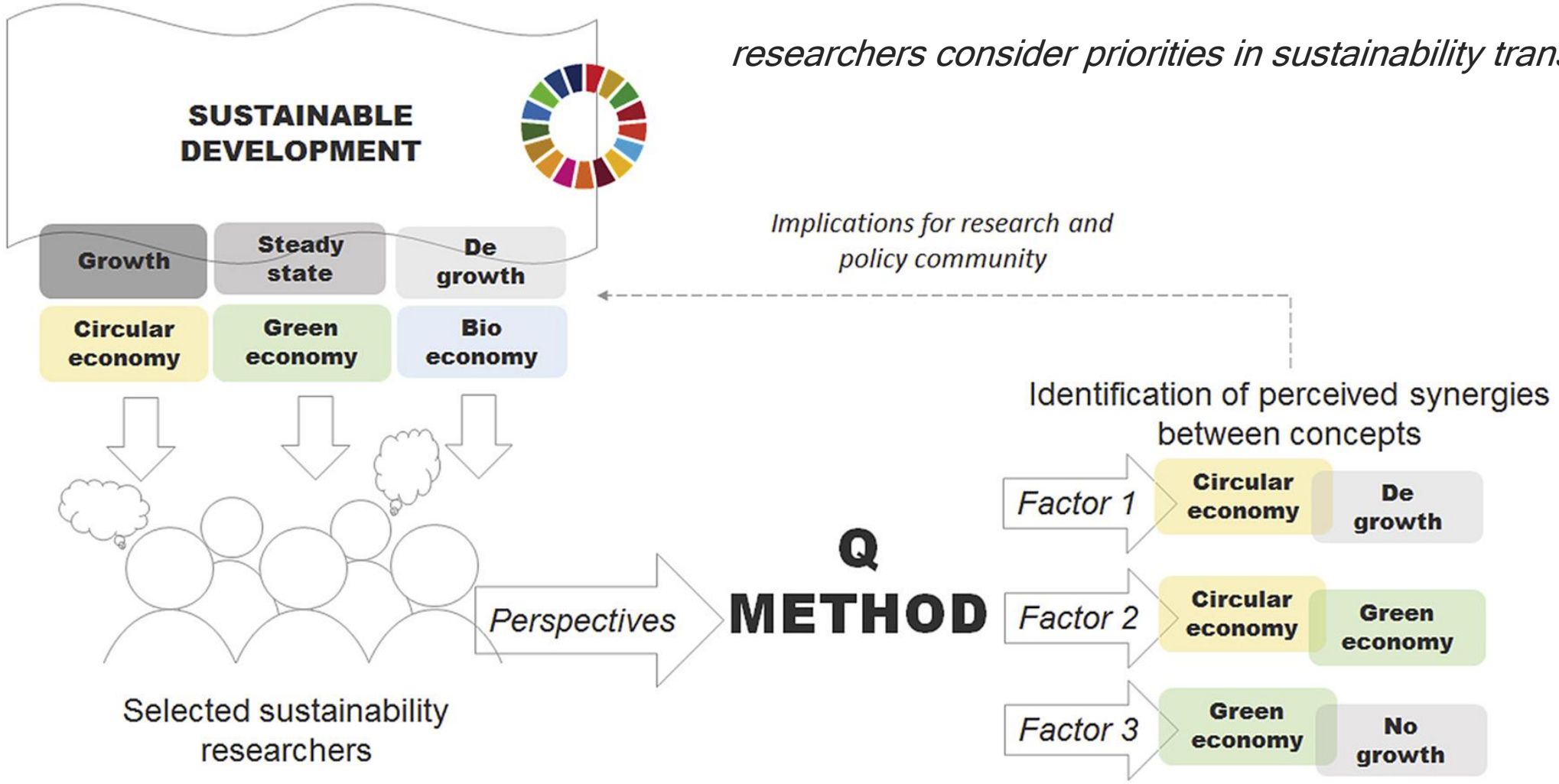
https://doi.org/10.1016/j.jclepro.2019.05.099

Highlights

- Researchers ranked preferences regarding sustainability concepts.
- Q method found three factors, i.e. archetypical perspectives or shared opinions.
- Combined circular green (CEGE) solutions towards degrowth were preferred.
- Bioeconomy (BE) received little support, despite current political emphasis.
- Research and policy should focus on BE acceptability and CEGEBE synergies.

D'Amato et al., 2019

*What combination of sustainability concepts (**circular, green, bioeconomy**) and development models (**growth, steady-state, degrowth**), researchers consider priorities in sustainability transformation?*



Factor name	**CE degrowth**	**CEGE**	**GE no growth**
Description	Decoupling/ dematerialization through circular solutions	Resource efficiency & biodiversity / ecosystem conservation	Ecological resilience towards decoupling/ dematerialization
Statement most agreed with	‘Minimize harmful emissions and waste to the environment’	‘Protect biodiversity and ecosystem services’	‘Promote ecosystem resilience at landscape level’
Statement most disagreed with	‘Foster economic growth to facilitate satisfaction of (basic) needs’	‘Maximise the use of renewable resources’	‘Foster economic growth to facilitate satisfaction of (basic) needs’
No. of flagged respondents	5	4	2

D’Amato et al., 2019

No support for growth and bioeconomy, despite current political emphasis
No circular-bioeconomy cluster, despite conceptual affinity (D'Amato et al., 2018)

- OECD respondents experience growth as decoupled from basic life needs (Buch-Hansen, 2018)
- Bioeconomy more recent, more technical and sector-specific concept
- (D'Amato et al., 2017)
- Bioeconomy perceived critically for its limited sustainability contribution (Pfau et al., 2014)

No generalization beyond the sample, but valuable insights about
emerging and under-investigated research and policy avenues