



Strengthening the foundations of the circular economy

Lessons from Responsible Research and Innovation

Edurne A. Iñigo
Deusto Business School, University of Deusto

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Madrid

Bilbao

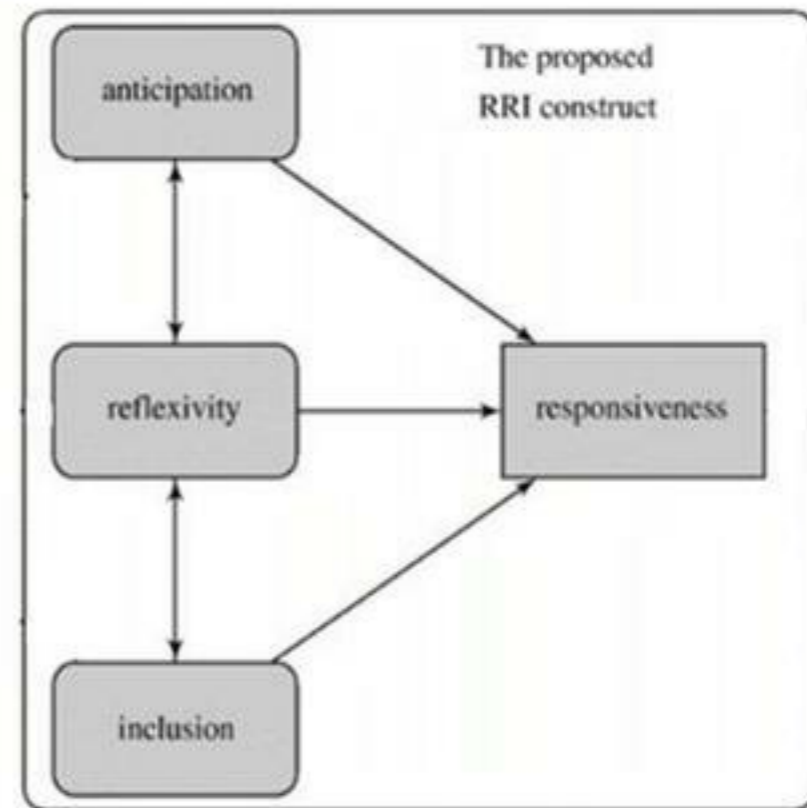
Donostia - San Sebastián

Development of the CE and RRI at the policy level

- Both have strong policy support.
- However, they have been developed in parallel, and separately at the policy level, tackling issues related to sustainable development (with a different scope and to a different extent) through innovation:
 - RRI: democratisation of innovation to tackle the 'grand challenges' of our time -including sustainable development-.
 - CE: fostering a closed-loop economy through new technologies and economic relationships for sustainable development.
- Very different acceptance on the business side.

Development of RRI concept and practice

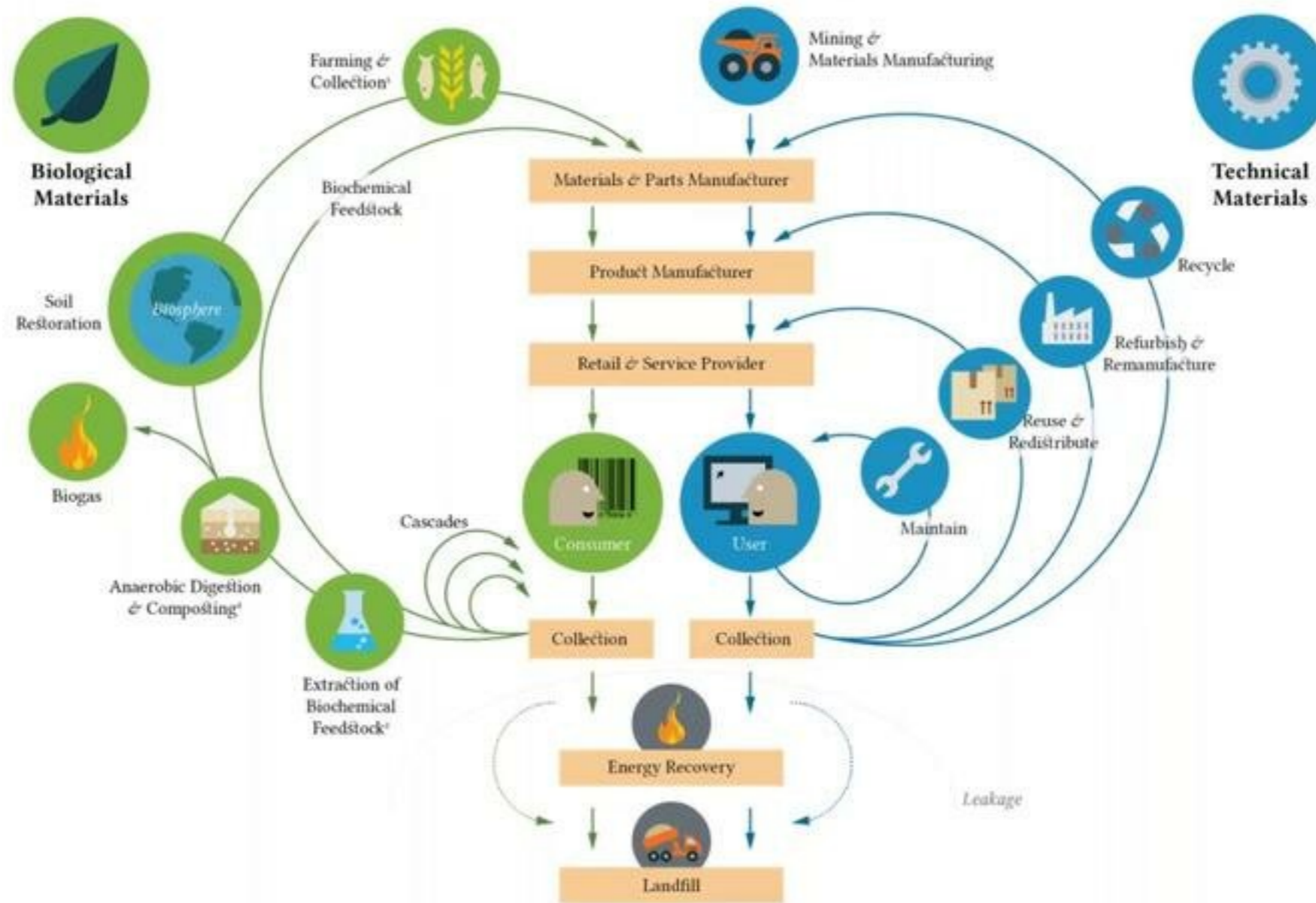
- *“Responsible Research and Innovation is a **transparent, interactive** process by which societal actors and innovators become **mutually responsive** to each other with a view to the **(ethical) acceptability, sustainability and societal desirability** of the innovation process and its marketable products (in order to allow a proper **embedding of scientific and technological advances in our society**)” (Von Schomberg, 2011).*
- Consequences in three dimensions of innovation (Blok & Lemmens, 2015):
 - Input of innovation: resolving grand challenges
 - Throughput of innovation: transparency, participation and responsiveness
 - Output of innovation: acceptability, sustainability and social desirability



Development of RRI concept and practice

- Framed under a techno-economic paradigm (Blok & Lemmens, 2015): focus on technological innovation and derived economic profit.
- Based on ELSA, ELSI and technological assessment.
- Literature and policy oriented towards basic research, often overlooking businesses as major actors in innovation.
- New research looks at RRI in industry, but RRI is found to often be at odds with business realities:
 - Feasibility of transparent and democratic participation of stakeholders in competitive landscapes?
 - Information asymmetries and power imbalances
 - Not extensive application of RRI projects beyond funded projects

The circular economy concept



... however, it is often simplified like this...



Source: European Commission, 2017

...or even this:



Source: Sustainable Brands, 2016

Main shortcomings of the CE

- **Conceptual fragmentation and lack of paradigmatic strength** (Blomsma and Brennan, 2017; Korhonen et al., 2018a, 2018b; Reike et al., 2018).
- **Oversimplistic, short-time goals that cause a neglect of thermodynamic limits** (Blomsma and Brennan, 2017; Geissdoerfer et al., 2017; Kirchherr et al., 2017; Korhonen et al., 2018b, 2018a; Sauve et al., 2016).
- **Loss of quality in materials over the loops and potential lock-in effects** (Ghisellini et al., 2016a; Kirchherr et al., 2017; Korhonen et al., 2018b; Winans et al., 2017).
- **Overlook of socio-ethical issues in its development and implementation** (Blomsma and Brennan, 2017; Geissdoerfer et al., 2017; Kirchherr et al., 2017; Korhonen et al., 2018b; McDowall et al., 2017; Naustdalslid, 2014; Sauve et al., 2016; Winans et al., 2017).



RRI as a tool of anticipation and reflection for the CE

- Anticipation:
 - RRI tools to prevent unintended consequences (e.g. loss of biodiversity) – Collinridge dilemma
 - Examining the social, technical, political and environmental context, ensuring acceptability and desirability.
 - Innovation governance: tackling uncertainty - Foresight, (stakeholder) engagement and integration in order to understand and manage impacts at different levels (e.g. technology foresight, multi-stakeholder dialogue and orchestration)



RRI as a tool of anticipation and reflection for the CE

- Reflexivity

- Moving away from the amorality of science / innovation
- Managing the trade-offs between the social, environmental and economic pillars.
- Self-awareness and consideration of potential lock-ins
- Inclusion – collective reflexivity tools



Supporting the socio-ethical foundations of the CE through RRI

- Introducing socio-ethical concerns in the CE
 - Issues like ownership, value capture and distribution of waste streams for the recycling industries, or how to involve the public in the design of socially acceptable and desirable environmental solutions.
 - Collaborative and systemic approach
 - Stakeholder integration
 - A new governance system for the CE



Source: Vlaanderen Circulair

Redefining the CE:

*An economic model wherein planning, resourcing, procurement, production and reprocessing are designed and managed, as both process and output, to maximize **ecosystem functioning and human well-being***

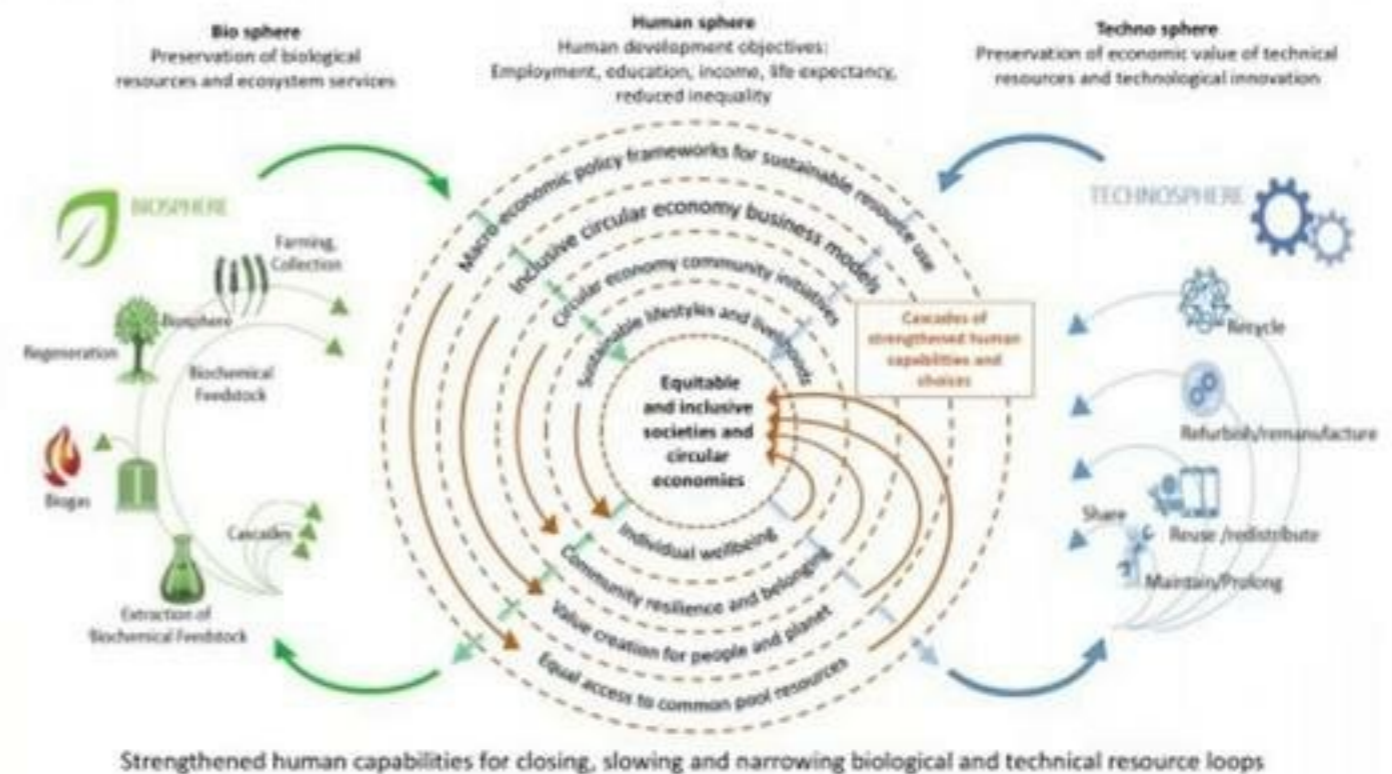
A CE that integrates the societal system in this relationship among systems.

Definition:

Murray, A., Skene, K., & Haynes, K. (2017). The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. *Journal of Business Ethics*, 140(3), 369-380. <https://doi.org/10.1007/s10551-015-2693-2>, p. 377

Picture:

Schröder, P., Lemille, A., & Desmond, P. (2020). Making the circular economy work for human development. *Resources, Conservation and Recycling*, 156, 104686. <https://doi.org/10.1016/j.resconrec.2020.104686>



Remaining blind spots and research agenda

- What can an RRI informed CE learn from frameworks for stakeholder participation in the context of competitive environments?
- In which way can supply and demand side be linked and coordinated for the CE through RRI practices breaking stakeholder divides?
- How can the anticipation and reflexivity dimensions of RRI help to coordinate RRI and CE agendas to identify synergies and lead to a more socially conscious CE?

Food for thought

- How to integrate the socio-ethical dimension in circular business models?
- How can we integrate anticipatory and reflexivity tools in circular business model design and innovation?
- What should be the role of consumers?
- Is the CE falling short on sustainability by still promoting an efficiency & economic growth based model, instead of a sufficiency and agrowth one?



Thank you!

Any questions?

Edurne Iñigo
edurneinigo@deusto.es

**Deusto
Business
School**

 Deusto

