

BAE 10th Anniversary paper

The Bioeconomy in economic literature: looking back, looking ahead

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Outline

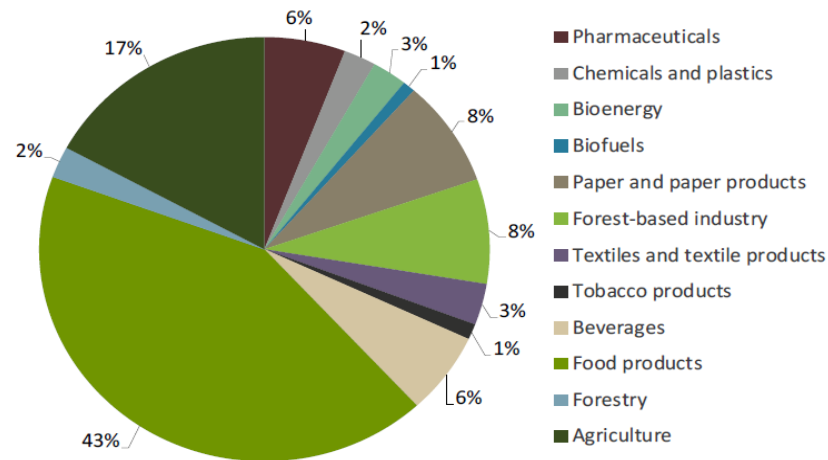
- Introduction and objectives
- Statistics on the bioeconomy
- Topics in demand, supply, markets and chain organisation in the Bioeconomy
- Bioeconomy, SDGs and ecosystem services
- Discussion
- Conclusions

Introduction and objectives

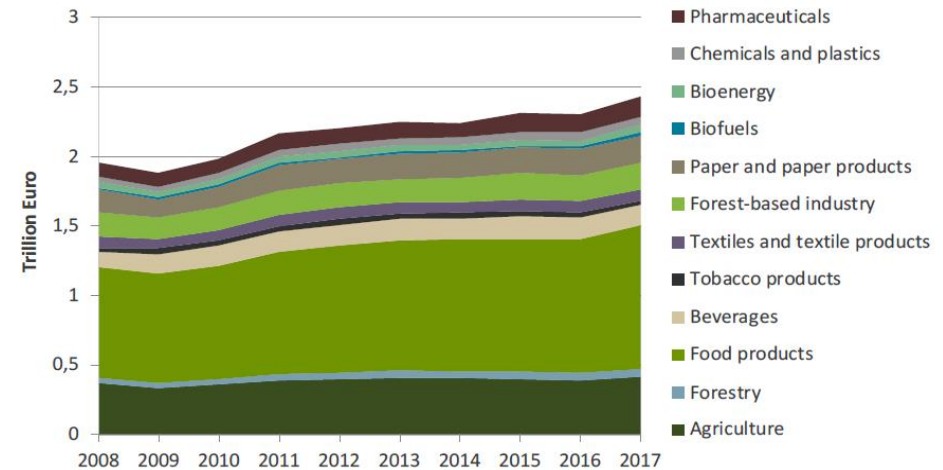
- Literature growing since 2011 (see Viaggi et al., 2012, Viaggi 2016; Viaggi, 2018)
- Parallel change of context and policy agenda
- Objective:
 - to provide a review of recent economic literature related to the Bioeconomy...
 - ...aimed at identifying relevant pathways for future research
- EU Bioeconomy definition 2018 (but...)

Statistics on the bioeconomy

Turnover in the bioeconomy in the EU-28,
2017, total: 2.4 trillion Euro



Turnover in the bioeconomy in the EU-28,
2008–2017



- Figure 1: Turnover in the Bioeconomy in EU 28: percentage between sectors and trends over 2008-2017 (Porc et al., 2020)

Statistics on the bioeconomy (cont.)

- Different types of bioeconomy (highly) depending on prevailing sectors
- Still uncertain estimations for new & mixed sectors/products
- Work needed on indicators and statistical coding/protocols

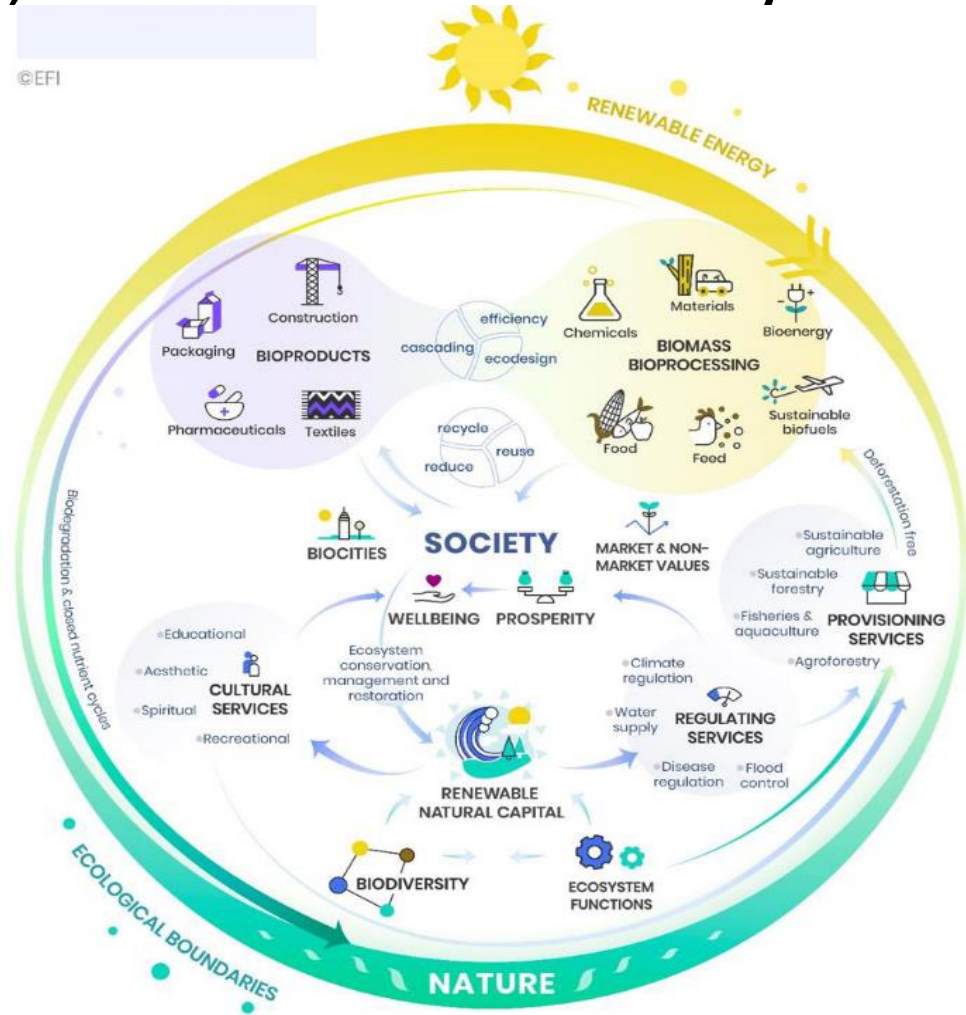
Topics in demand, supply, markets and chain organisation

- Demand
 - WTP, elasticity
 - Visions, Perceptions, Acceptance, Behavioural aspects
 - Individual vs. collective
 - Information
 - (Public policies)
- Supply
 - Primary production, processing (biorefinery)
 - Alternative and emerging sources (wastes, microalgae,...)
 - Connection between different streams
- Markets
 - New markets
 - Relationship among markets

Topics in demand, supply, markets and chain organisation

- Organisation and business models
 - Separability, flexibility, cascading
 - Beyond value chains (e.g. value webs)
 - Business models (focus on how new products can create value)
- Innovation mechanisms and entrepreneurship
 - Regulation
 - Innovation systems & Entrepreneurship
- Governance and political economy
 - Strategies, regulation and sectorial policies
 - Issues in governance linked to conflicts

Bioeconomy, SDGs and ecosystem services



• Figure 2 - Circular Bioeconomy and wellbeing

Bioeconomy, SDGs and ecosystem services

- Conflicting views on benefits and risks
 - Unconditional sustainability VS competitions for resource use and unknown env. and social impact
- Contribution to provisioning services is quite evident, other ecosystem services (i.e. regulating, cultural and supporting) are less investigated
 - Terrestrial (forest and agriculture) and marine ecosystems well explored as sources of biomass
 - Study of circularity limited to provisioning services
- Source of biomass relevant for sustainability
 - Residue from urban area/ agricultural sector
 - Co-products
 - Dedicated crops
- Unclear trade-offs or synergies over scale and space (i.e. outsourcing of environmental damages)
 - Due to Governance of new supply chain and actors involved

Discussion

- Tensions and contrasting views
- Perception studies
- Methods (from qualitative to quantitative)
- Scenarios
- Data (again)
- ... Systemic views & better understanding of the human-biosphere-technosphere nexus

Conclusions

- Year 2010-2020 largely exploratory
- The field is taking shape
- ...but still highly depending on strategies and policies
- More economic research (of course)
- Most promising in the next decades:
 - Innovation and transitions
 - Holistic views
 - Account for citizens and institutions
 - ...

Thank you very much

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