

# Developing law for bioeconomy

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ISEE2016 June 26-29, 2016 Washington, DC

# Aim of the research

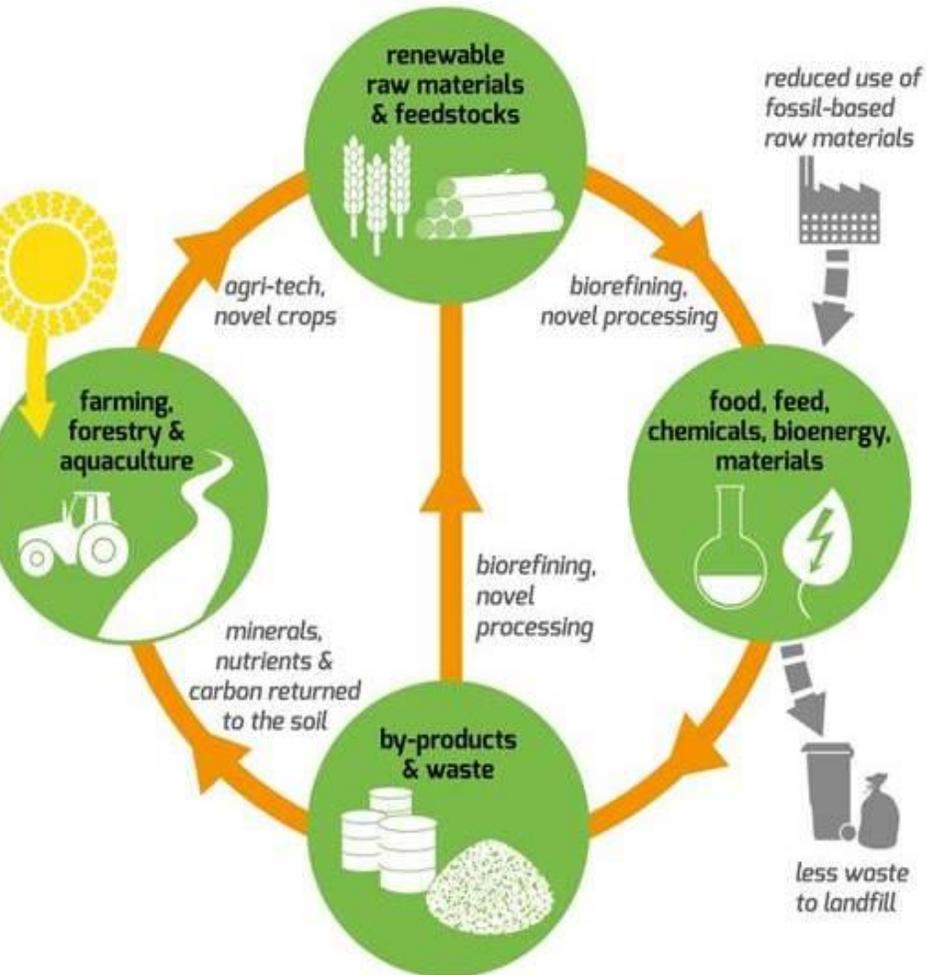
- ▶ To address the role of regulation in transition to bioeconomy in general
- ▶ To develop analytical tools to assess and develop regulatory systems for bioeconomy
- ▶ Key questions:
  - ▶ Why regulation is needed?
  - ▶ What are the key issues that call for regulatory intervention?
  - ▶ To what extent the existing regulations governing the production, management and use of biological resources are up to the job for addressing these issues?
  - ▶ Would other regulatory strategies/approaches work better? What would those be?

# Bioeconomy background

## ▶ Definitions:

- ▶ “The aggregate set of economic operations in a society that use latent value incumbent in biological products and processes to capture new growth and welfare benefits for citizens and nations” (OECD 2009)
- ▶ “Bioeconomy encompasses the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, bio-based products and bioenergy” (EU Commission 2012)
- ▶ “The bioeconomy is one based on the use of research and innovation in the biological sciences to create economic activity and public benefit” (White House, National Bioeconomy Blueprint 2012)”

# Bioeconomy background



<https://www.biovale.org/the-bioeconomy/>



<http://ec.europa.eu/research/bioeconomy/index.cfm?pg=policy&lib=strategy>

# Bioeconomy background

- ▶ Potential benefits: reduced greenhouse gas emissions, decreased dependence on fossil resources and improved food security, employment and creation of new non-food markets benefiting rural development
- ▶ Policy strategies OECD, EU, USA, China, Finland, Germany...
- ▶ Technical feasibility: over 90% of oil-based products could be replaced by bio-based alternatives

# Why regulate bioeconomy: Challenges and concerns

- ▶ Key issues to be addressed
  - ▶ Supporting innovations, technological development and market creation
  - ▶ Increasing energy and resource efficiency
  - ▶ Sustainability of production, management and use of biomass
  - ▶ Increased competition between different uses of biological resources
  - ▶ Health and environmental risks related to the development of new technologies

- ▶ Effective regulatory system includes adequate mechanisms for addressing above mentioned issues
- ▶ Development of regulations don't need to/cannot start from scratch
  - ▶ Use of biological resources has been promoted and regulated for long time
- ▶ Development of bioeconomy and emerging bioeconomy policies have revealed gaps and barriers in contemporary laws
  - ▶ i.e. inadequate sustainability standards, lack of regulations/complex regulations (such as for biofertilizers)
- ▶ Revising regulations and new tools needed

# Challenges for designing regulatory systems for bioeconomy and potential responses

- ▶ Moderate evolution of norms, through filling in the gaps and introducing new instruments adding a new layer to regulatory systems inadequate
- ▶ Some features and aspects of bioeconomy development call for more fundamental changes in regulatory systems and new analytical tools for assessing and developing these systems. These features include:
  - ▶ nature of bioeconomy as cross-sectoral and intra-disciplinary field, in which different types of uses of biomass come together and where innovations are expected to happen in the intersection of different sectors
  - ▶ complex interdependencies between policies such as energy, climate and food
  - ▶ scientific uncertainties related to the causality between increased use of biomass, ecosystem degradation, loss of biodiversity and climate change
  - ▶ rapid development of innovations and technologies

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- ▶ Regulatory approaches responding to the challenges:
    - ▶ Integration, i.e. connections between different levels, actors and instruments of governance;
    - ▶ Adaptability, i.e. capacity to adapt to changes in circumstances and development of technology and scientific knowledge without changes in legislation;
    - ▶ Proactivity, i.e. capacity to act in advance rather than reactively respond to established harms and problems

# Integration

- ▶ Response to problems of fragmented regulation, such as:
  - ▶ inconsistencies, complexities, gaps and interpretation problems
  - ▶ failure in addressing complex interdependencies between different areas, sectors and considering joint effects
- ▶ Integration in environmental regulation:
  - ▶ increased connections between different fields of environmental regulation
  - ▶ increased connections between environmental regulation and other fields of regulation (such as land use, water supply, disaster preparedness and response, energy, and agriculture)
  - ▶ key features of the integrated regulatory systems:
    - ▶ good connections between instruments, actors, sectors and levels of governance
    - ▶ example: increased use of planning instruments such as (EU water framework directive and directive establishing a framework for maritime spatial planning and integrated coastal management)
- ▶ Relevance for bioeconomy:
  - ▶ complex sustainability problems and interdependencies such as those between energy, climate and food policies
  - ▶ bioeconomy is a multisectoral and interdisciplinary field: innovations/products developed in the intersection between different sectors may fall between regulatory categories (regulatory gap) or face complex regulatory environment

# Adaptive law

- ▶ A response to scientific uncertainty, economic, social and political risks, dynamic and complex nature of socio-ecological systems, rapid technological development..
- ▶ Roots in adaptive management i.e. a method where learning and experimentation are incorporated in the management action through iterative processes
- ▶ Public laws are often considered hampering full realization of adaptive management
- ▶ Adaptive law theorists seek to solve this problem by developing legal framework cable to support adaptive management and making legal systems more responsive towards changes
- ▶ Features of an adaptive legal system:
  - 1) multiplicity of articulated goals;
  - 2) polycentric, multimodal, and integrationist structure;
  - 3) adaptive methods based on standards, flexibility, discretion, and regard for context; and
  - 4) iterative processes with feedback loops, learning and accountability.  
(Arnold and Gundersson 2015)

# Adaptive Law

- ▶ Problems/Criticism
- ▶ The basic tension between adaptability and legal certainty
- ▶ Major (bio)economic investments call for stability and predictable business environment
- ▶ Acceptability problems: adaptability often implies exemption from the rights granted
- ▶ Democratic deficit: delegation of powers to lower level civil servants
- ▶ Ways forward?

# Proactive law

- ▶ Response to dissatisfaction with “traditional” approach to law and law-making:
  - ▶ past-looking focus (responding to deficits, disputes, missed deadlines and breaches, seeking to resolve and remedy) -> passive, reactive and costly
  - ▶ the prevailing legal logic “law as a coherent conceptual system that creates legal cause and effects relationships in a framework of greatest possible neutrality” fails to take into account the many-sided, varied and interactive social and economic realities
- ▶ Proactive law approach:
  - ▶ instead of constrain on companies and individuals, a cost factor and an administrative burden law is regarded as an enabling instrument to create success and facilitating the productive interaction of citizens and businesses
  - ▶ focus from inside the legal system, rules and institutions, to outward, to the users of the law: to society, citizens and businesses
  - ▶ two aspects of proactivity:
    - ▶ promotive dimension (promoting what is desirable, encouraging good behaviour)
    - ▶ preventive dimension (preventing what is not desirable, keeping legal risks from materialising)
  - ▶ theory of proactive law aims to develop understandings, structures, rules and procedures that ex ante enable the creation and achievement of desired goals and the avoidance of unnecessary problems

# Proactive law

- ▶ Emphasize:
  - ▶ active and effective participation of regulated entity itself and other stakeholders in regulatory processes
  - ▶ regulating the form of decision-making rather than the outcome
  - ▶ inter-disciplinarity and cross-professional collaboration between layers, managers, subject-matter experts.., “legal expertise is only able to help in achieving desired goals if it is intertwined with adequate knowledge of the prevailing circumstances” (Pohjonen 2009)
  - ▶ the importance of legal education and providing legal information and assistance for business and individuals
- ▶ Relevance for bioeconomy:
  - ▶ reactive, incremental regulations of established harms and risks problematic form the point of you of developing and advancing novel biotechnologies
  - ▶ regulating new technologies, bio-innovations etc. demands scientific, technical, business and social expertise, and it is often the regulated entities themselves who has the best knowledge and possibility to assess the effects of the regulation
  - ▶ transparency and involving concerned stakeholders into regulatory processes is important in terms of gaining public support for bio-economy business and governance

# Conclusion: framework for assessing and developing regulatory systems for bioeconomy

- 1) Coverage: does regulatory system provide adequate tools for address key issues and concerns related to the transition to bioeconomy?
- 2) Integration: is regulatory system capable of addressing those issues across different scales and sectors in holistic, coordinated and coherent manner?
- 3) Adaptability: is regulatory systems capable of responding to changes in conditions, scientific knowledge and technological development without changes in legislation?
- 4) Proactivity: does the regulatory system facilitate the productive interaction of citizens and businesses? Does it help business and individuals to make full use of legal instruments and avoid potential problems in advance?

# Thank you!



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