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Bioeconomy policies and strategies: implications for the agro-forestry sector

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Presentation outline

- Introduction: bioeconomy overview and ongoing policies/strategies
- Different approaches to bioeconomy: technological and social-innovation approaches (with a focus on Mediterranean forests)
- Knowledge gaps and (research) challenges
- Some final considerations

1. Introduction: bioeconomy definitions and overview

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Bioeconomy: definitions

*"Bioeconomy refers to the set of economic activities relating to the invention, development, production and use of **biological products and processes**. A bioeconomy is a world where **biotechnology** contributes to a significant share of economic output"* (OECD, 2009)

*"Bioeconomy encompasses the **production of renewable biological resources** and their conversion into food, feed, bio-based products and bioenergy. It includes agriculture, **forestry**, fisheries, food and pulp and paper production, as well as parts of chemical, biotechnological and energy industries"* (EC, 2012)

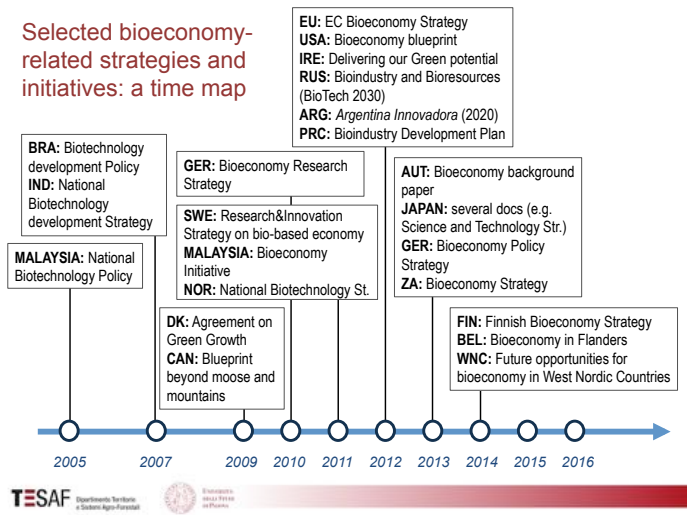
Borders not always clearly defined

- Bioeconomy
- Biobased economy
- Green economy
- Knowledge-based Bioeconomy
- Circular economy
- Circular Bio-economy
- ...

A global view: Bioeconomy Policies/ Strategies around the World (www.gbs2015.com)



Selected bioeconomy-related strategies and initiatives: a time map



Five points about the bio-economy strategies and visions that demand critical attention (Staffas et al., 2013):

- **Sustainability focus** → Sustainability is not heavily emphasized and it is over shadowed by economic growth
- **Measures of success** → Few measures are presented in the documents, but the importance of measures is highlighted
- **Scarcity of resources** → Only mentioned in a few of the documents
- **Consumption patterns** → Not addressed except for the documents by Finland and Sweden
- **Stakeholder interaction** → This is acknowledged in the documents as critical, but needs increased efforts.

2. Different approaches to bioeconomy

2 different (complementary?) approaches to bioeconomy

(modified from Toman, 2012; Pettenella, 2015; Secco *et al.*, 2015)

| | Technological approach |
|------------------------------|---|
| Focus on | <ul style="list-style-type: none"> • Technological innovations • Large scale investments • Value chain perspective • Sectoral development • Vertical integration |
| Input/output diversification | 1 input (e.g. timber) Diversification in outputs |
| Market power | Increasing role of business owning/controlling the (new) technologies |
| Model regions | Northern EU (UK, Scandinavian countries) |

Adaptive strategy (“Old wine in new bottles”) → conventional wisdom of innovation generation

Focus on forests, agriculture, fishery as **raw materials providers** with biotechnology being the engine of the growth

An example (1/2)



MGT TEESIDE

The Tees Renewable Energy Plant (Tees REP) is a proposed 299MW biomass power station that will generate electricity for the equivalent of 400,000 homes, 24 hours a day. The scheme will help to meet the UK's legally binding renewable energy target of 15% of all energy consumed by 2020, accounting for around 1% of the target. It will save about 1.2million tonnes of CO2 per year by displacing a mix of coal and natural gas from UK generation.

- From 2019
- Area: 14ha
- Expected consumption of wood biomass: **1.2 M tonnes/year**
- Fuelled by wood **pellets and chips, imported by ship from sustainable forestry sources primarily from the United States**. The wood pellets are produced from the co-products of the saw-timber industry and are sourced entirely **from commercial forestry**

<http://teesside.mgtpower.com/>

An example (2/2)



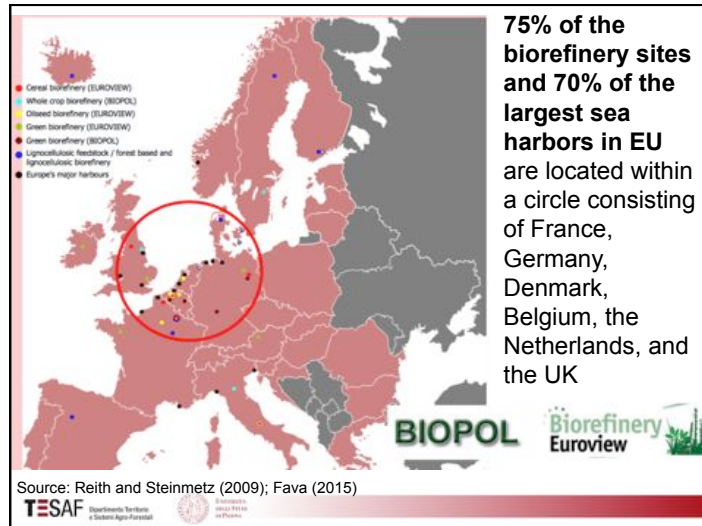
<http://bioproductmill.com>



- Largest investment in the history of Finnish forest industry
- **100%** of wood raw material used
- **1.3 M tonnes** of pulp/year + bioproducts (e.g. textile fibres, biocomposites, lignin products, fertilisers...) and bioenergy
- **+4.000 jobs** created (including value chain and consumption) → **61.000 jobs** expected in 30 years

Äänekoski bioproduct mill

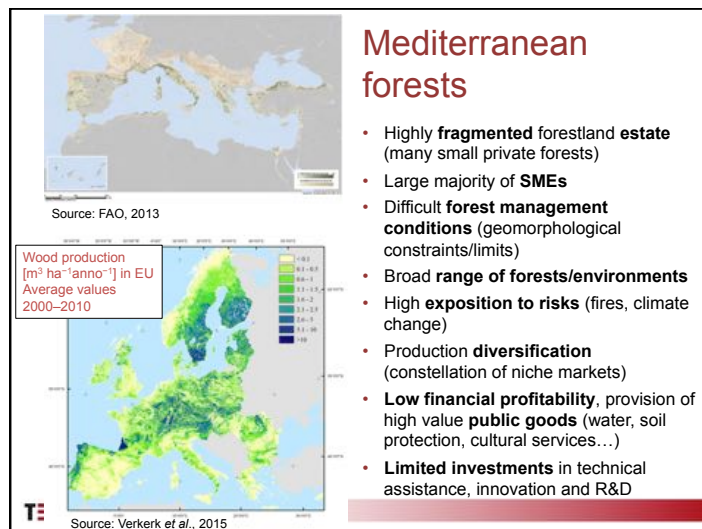




Does this approach fit the Mediterranean context?
Is it the most appropriate one?

Some considerations with a focus on the forestry sector

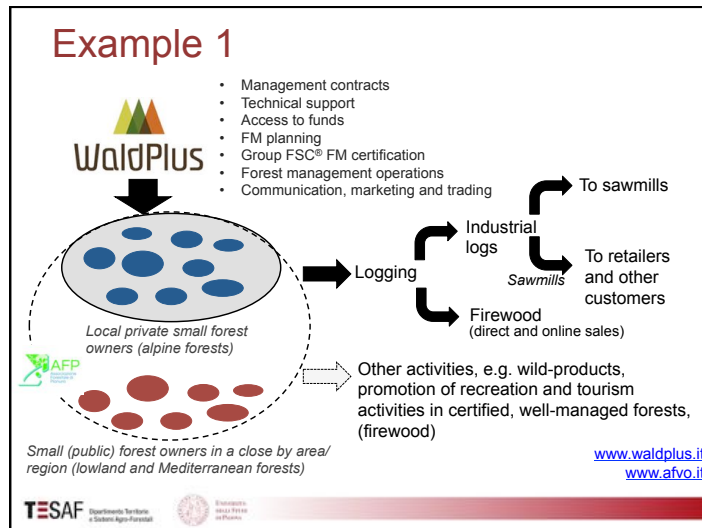
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2 different (complementary?) approaches to bioeconomy
(modified from Toman, 2012; Pettenella, 2015; Secco et al., 2015)

| | Technological approach | Social innovation approach |
|-------------------------------------|---|--|
| <i>Focus on</i> | <ul style="list-style-type: none"> Technological innovations Large scale investments Value chain perspective Sectoral development Vertical integration | <ul style="list-style-type: none"> Social innovations Small scale Networks Cross-sectoral development Horizontal integration (= forests (and agriculture) as the green infrastructures for rural development) |
| <i>Input/output diversification</i> | 1 or more inputs Diversification in outputs | Diversification in the use of inputs High added value Products & Services |
| <i>Market power</i> | Increasing role of business owning/controlling the (new) technologies | Role of networks, groups, associations, public-private partnerships... |
| <i>Model regions</i> | Northern EU (UK, Scandinavian countries) | Mediterranean region (?) |

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WHERE?

1. Bosco del Parauro
2. Bosco San Michele Vecchio
3. Bosco delle Crete
4. Oasi Trepalade

WHAT CAN YOU DO IN OUR FORESTS?

- Playground for kids
- Picnic areas
- Areas equipped for disabled persons
- Swimming
- Relaxing
- Bird-watching
- Environmental education
- Cultural events
- Research activities
- Fishing
- Mushroom picking
- Slow-tourism: Hiking
- Boat excursions
- Biking

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Example 2

produtos silvestres do alentejo

- 7 municipalities
- 16 associations and cooperatives
- 5 research institutes
- 2 national business associations
- 59 individual private promoters

International cooperation/exchange of best practices...
...but local knowledge, expertise, typical products, niche markets

www.alentejosilvestre.com

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PARMA LA REGIONE DEL FUNGO PORCINO

Companies: 62

- 15 agriturismo
- 12 Hotels
- 8 B&B
- 9 Farms performing direct sales (cheese, wine, ...)
- 2 Farms offering environmental education services
- 3 Museums/Private Collections
- 30 Restaurants
- 26 Local/Typical products shops

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Example 4
Can biomass for energy be part of this?

Forest biomass: an opportunity to reduce the impact of forest fires

An opportunity to reinforce the convergence of forests, economy and green energy

This study, led by researchers of the Forest Science Centre of Catalonia (CTFC), CREAL, CSIC and UAB, suggests that biomass extraction has the potential to substantially contribute to reshape fire regime towards a more desirable scenario by decreasing the number of large fires and, in turn, the amount of burned areas.

Photo: CTFC

A. Regos, N. Aquilué, I. López, M. Codina, J. Retana, L. Brotons (2016) Synergies Between Forest Biomass Extraction for Bioenergy and Fire Suppression in Mediterranean Ecosystems: Insights from a Storyline-and-Simulation Approach. *Ecosystems*. DOI: [10.1007/s10021-016-9968-z](https://doi.org/10.1007/s10021-016-9968-z).

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Some ideas and good practices

- Wood mobilisation
- **Cascading** (grading, added value)
- “New” **contract forms**: Multi-year contracting, increment contracts, network contracts...
- **Short, local supply chains**
- Biomass trade centers
- Energy contracting, district heating systems
- Procurement policies
- Biomass **quality** standards

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3. Knowledge gaps and some on-going/future initiatives

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Some gaps and research questions
(Secco *et al.*, 2015)

- **Empirical evidences of the cause-effect links** between social innovation and economic performances in forestry
- **Short and long-terms effects of new institutional and policy frameworks/policy reforms** on SI implementation in Mediterranean forests, e.g. EU RDP 2014-2020 (art. 35 Cooperation)
- Development of new/refinement of sets of **methods to measure social dimensions in innovative forestry** (e.g. Social Network Analysis)
- Role of networks and Social Capital in **increasing the provision of ecosystem services**

(...)

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SIMRA - SOCIAL INNOVATION IN MARGINALISED RURAL AREAS

H2020-EU.3.2 - SOCIETAL CHALLENGES - Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bioeconomy

Call for proposal: H2020-ISB-2015-2

Funding scheme: RIA - Research and Innovation action

Duration: 2016-2020

Description

Social Innovation (SI) encompasses the new forms of interrelating which aim at solving shared problems and achieve common goals through strengthened collaboration. This social structure is especially relevant in rural areas to overcome provisioning, commercial or environmental challenges i.a. Consumer-producer networks, associations, or cooperatives exemplify some SI.

SIMRA seeks to advance understanding of SI and innovative governance in agriculture, forestry and rural development, and how to boost them, particularly in marginalised rural areas across Europe, with a focus on the Mediterranean region (including non-EU) where there is limited evidence of outcomes and supporting conditions.

The project aims to better understand the role of Social Innovations in building territorial capital and enhancing sustainable development through application of a systematic theoretical and operational framework of SI governance in rural areas across Europe and non-European Mediterranean regions

http://cordis.europa.eu/project/rcn/200385_it.html

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4. Some final considerations

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Conclusions (1/2)

Bioeconomy is a multifaceted, complex concept that can be understood in multiple ways and shall be addressed with an appropriate and tailored mix of:

- Policies
- Approaches
- Tools
- Players
- Funding resources
- ...



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Conclusions (2/2)

From a Mediterranean perspective the real innovative aspects of the bio-based economy are related to **equity, social inclusion, promotion of local knowledge and employment creation**, i.e. to **social innovation**, more than to problems connected to technology innovation



A fragile area with strongly specific features → need for tailored development models, otherwise the Med region might be crashed by competition with other big players

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