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Joint Research Centre
Innovation and sustainability – an updated EU BioEconomy Strategy

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The EU BioEconomy Strategy: BioEconomy the European Way

A sustainable BioEconomy

- **Within the planetary boundaries**
  - We have only this one planet

- **Good for all citizens**
  - Healthy products and environment
  - Rural and urban prosperity

- **Good for our economy**
  - Globally competitive
  - Jobs and income
What is **Bio** in our Economy?

The **EU BioEconomy Strategy** includes all economic sectors & systems that use / produce / process / or are driven by biological resources.
What is **Bio** in our Economy?

- **Primary production**: sustainable biomass & ecosystem services
- **Secondary production**: food and non-food uses of biomass, incl. bio-energy
- **Second generation of biomass uses**: use of bio-waste and bio-by-products, for food and non-food, incl. bio-energy
- **Tertiary production**: bio-based tourism
- **Bio-processing of abiotic materials**: gold leaching
## EU BioEconomy in figures

### Primary production:
- 55.0% employment
- 19.2% turnover
- 33.0% value added

### Agri-Food:
- 77.2% employment
- 66.7% turnover
- 65.5% value added

### Forest & F-industries:
- 13.9% employment
- 17.9% turnover
- 18.8% value added

<table>
<thead>
<tr>
<th>Sector</th>
<th>Employment (Million Jobs)</th>
<th>Turnover (Trillion EUR)</th>
<th>Value Added (Billion EUR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>9.2</td>
<td>380</td>
<td>174</td>
</tr>
<tr>
<td>Forestry</td>
<td>0.5</td>
<td>50</td>
<td>24</td>
</tr>
<tr>
<td>Fishing and Aquaculture</td>
<td>0.2</td>
<td>12</td>
<td>7</td>
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<tr>
<td>Food, Beverages and other Agro-Manufacturing</td>
<td>4.5</td>
<td>1 153</td>
<td>233</td>
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<tr>
<td>Bio-Based Textiles</td>
<td>1.0</td>
<td>103</td>
<td>28</td>
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<tr>
<td>Wood Products and Furniture</td>
<td>1.4</td>
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<td>47</td>
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<tr>
<td>Paper</td>
<td>0.6</td>
<td>187</td>
<td>46</td>
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<tr>
<td>Bio-Based Chemicals and Pharmaceuticals</td>
<td>0.4</td>
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<td>56</td>
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<tr>
<td>Liquid Biofuels</td>
<td>0.03</td>
<td>12</td>
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<tr>
<td>Bioelectricity</td>
<td>0.01</td>
<td>11</td>
<td>3</td>
</tr>
</tbody>
</table>

*Source: based on Ronzon & M’Barek, 2018*  
https://doi.org/10.3390/su10061745
“The purpose of the development of the field is to mitigate the impact of climate change on the agricultural sector and help the sector to adapt to climate change, increase the share of renewable energy in energy supply, implement energy-saving measures and reduce the environmental impact of energy production.”

(Website: Rep. of Estonia, Min Rural Affairs, 2017)

• Underused BE-potential; high primary production capacity
• Potential to develop value chain principles
• "the main interest in bioeconomy deployment in Estonia lies in increasing resource efficiency and generating higher value added from biomass." (Case Study Report Estonia, RTD, 2015)
What is new?

• **Not** the economic sectors

• **Not** the fact that together they are a significant part of the economy

  but

• The growing need to unleash its potential
How to reach a BioEconomy the European Way?

Sustainability

- **Environmental**
  - Increased (bio-)diversity of primary production
  - Promote and value environmental services
  - Think global, act local

- **Social**
  - Involve stakeholders in change management
  - Enhance the well-being of all
  - Reduce inequality (rural/urban)

- **Economic and financial**
  - Account for long term cost & benefits
  - Green financing
How to reach a BioEconomy the European Way?

Multi-dimensional innovation

- Technology
- Organisation
- Economic & financial
- Social
Technological innovation

- Digitisation at all levels
- Higher efficiency/less waste and pollution
- Bio-based products/processes
- From scale-up to scale-down
- Biotechnology
Organisational innovation

• Circular and cascade systems
• From central to de-central
• Bio-prosumer and new market structures
• Value networks: synergies from cooperation
• Linking rural and urban areas
Economic and financial innovation

• Sustainability pays, environmental costs are accounted for
• Collaboration trumps competition
• Long term effects are better accounted of
• Financing for new sustainable products and processes
• Financing for long term investments
Social innovation

- Producer, prosumer, and consumer networks
- Collaboration trumps competition
- Higher social appreciation of serving the common good
- Consumer behavior: sustainability is cool
- Towards a sharing economy
Action plan
1. Unlock investment and markets

• Mobilise stakeholders

• 100 million Euro Investment platform for circular BE

• Analyse enablers and bottlenecks for bio-based innovations

• Standards, labels and markets for bio-based products

• Facilitate new bio-refineries

• Develop bio-degradable products
2. Deploy local BioEconomies

- Strategic deployment for sustainable food and farming systems, forestry and bio-based products
- Pilot action for rural BioEconomies
- Support MS and regions to develop BE-Strategies
- Education, training and skills development
Action plan

3. Understand the ecological boundaries of BE

- Enhance knowledge of biodiversity and ecosystems
- Monitor progress towards a sustainable BioEconomy
- Promote good practices
- Enhance the benefits of biodiversity in primary production
The EU is committed to the **SDGs** and the **Paris agreement**.

A sustainable, circular BioEconomy is central for reaching this aim.

The BioEconomy concept can provide **win-win solutions**.

We must focus on these, and minimise trade-offs wherever possible.
Further reading

List of hyperlinks:

https://ec.europa.eu/knowledge4policy/bioeconomy_en
The biggest part of the BioEconomy:

The Agri-FOOD sector!

Food is not everything, but everything is nothing without food.