WORKSHOP ON BIOECONOMY
THE SPANISH STRATEGY

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Workshop on the implementation of the European Strategy for the Bioeconomy
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Integrated use of resources of biological origin

How to put in practice:
Trough Value chain creation and strengthening

• Classical value chains
• New value chains
Traditional value chains

FOOD

Sustainable

Efficient

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Traditional value chains

FOREST Value Chain

FORESTRY

WOOD Efficiency

Building materials
Textiles
Paper
Biomass: bioproducts
Heat / Energy

Sustainable management

Environmental services
Integrated use of resources of biological origin

Residues from food / wood chain

Sun energy
CO₂
Water
Soil/micro nutrients

Agriculture
Forestry
Marine activities

Food industries
Wood industries

Distribution

Food Fibers Paper Energy

Organic Material
Wastes, residues and Algae,
## Estimated Wastes and Residues in Spain

(PER 2020, 2011, Probiogas 2010)

<table>
<thead>
<tr>
<th>Category</th>
<th>M t/y</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biomass</strong></td>
<td></td>
</tr>
<tr>
<td>Forestry residues</td>
<td>18</td>
</tr>
<tr>
<td>Arable and permanent (trees) crop residues</td>
<td>30</td>
</tr>
<tr>
<td>- such as straw or husks, grass silage,</td>
<td></td>
</tr>
<tr>
<td>- brash and arboricultural arising</td>
<td></td>
</tr>
<tr>
<td>Agro food wastes</td>
<td>31</td>
</tr>
<tr>
<td>- Inedible components: peel, skin, husks, cores, fish heads, pulps</td>
<td></td>
</tr>
<tr>
<td>- Organic material from excess production or insufficient market</td>
<td></td>
</tr>
<tr>
<td>- Wasted materials from food and drinks: wine, beer, cheese,</td>
<td></td>
</tr>
<tr>
<td>- Food preparation: fat, cooking oils, food disposed of for safety reasons</td>
<td></td>
</tr>
<tr>
<td>Woody wastes, paper pulp, textiles, etc</td>
<td>6</td>
</tr>
<tr>
<td>Animal residues</td>
<td></td>
</tr>
<tr>
<td>Manures and slurries</td>
<td>48</td>
</tr>
<tr>
<td>Animal bedding such as poultry litter</td>
<td></td>
</tr>
<tr>
<td>MSW (municipal solid waste) and Sewage sludge</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>159</td>
</tr>
</tbody>
</table>

Estimated Availability: 60% collected and stored

96 M t/y
New value chains

RESIDUAL BIOMASS TRANSFORMATION

BIOMASS
Biological byproducts

lignin
Cellulose
Hemicelluloses
Proteins

Food products:
Feed products
Biomaterials: composites, binders, phenols
Bioproducts: sugars and biomaterials,
Biofuels
Energy
An opportunity and a necessity

- A society less dependent on non-renewable resources
- Consolidating the economic growth
- New technologies for more competitive companies
- Autochthonous resources
**The current economic activities**

**Estimated: 6,5% GDP and 9% working population**

**Agrifood Sector**
5,59% GDP (2015)
- 2,42 % GDP primary production:: 890.000 farms
- 0,20 % GDP Fisheries: 5.025 operations
- 2,97 % GDP, food processing industry: 28.800 companies

**Forestry Sector**
0,60% GDP (2015)
- 0,18 % GDP timber and cork
- 0,34 % GDP paper
- 0,08 % GDP other

**Biomass for energy**
0,34% GDP (APPA2015)
- 176 biomass companies for energy and other purposes
- 47 Companies devoted to biotech

**Non-health biotechnology sector:**((INE, 2015))
2.831 companies

17% of Spanish sales abroad
The knowledge generation capacity

Research in Bioeconomy

World position in:
* Agr. & Biol Sciences: 7º
* Environm Sciences: 8º
* Biotech & Biochem: 9º

2,780 research projects in 2015

Articles in journals (2015)
* 8.786 in Agr. & Biol Sc
* 5.162 in Environm Sc
* 3.499 in Biotech & Bioch

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Innovation: Public-Private collaboration

22% of the agrifood companies invested in innovation in 2014

Great collaboration between companies, universities and OPIs
Definition and Scope of Bioeconomy

Set of economic activities
- Products
- Services

Use of resources of biological origin
- Efficiency
- Sustainability

For the production and merchandising
- Market food
- Forestry products
- Bioproducts
- Bioenergy

which are respectful of the environment, along with the development of rural areas
Definition and Scope of Bioeconomy

- Agro food production
- Forestry
- Marine And Maritime
- Water

- Biomass: wastes and residues
- Bioproducts
- Bioenergy
Definition and Scope of Bioeconomy

Science:
research
groups

Society:
demands

Economy:
companies
Strategic targets

Generating knowledge → Technological, organisational and management innovation

Society demands → Competitiveness of Spanish companies

New economic activities → BIOECONOMY 2030

Estrategia española de Bioeconomía Horizonte 2030
1. Collaboration between the Spanish administrations and the productive sectors

2. Interaction between the public and private Spanish and International science and technology systems and the productive sectors and their companies, stimulating the creation of multidisciplinary teams

3. Application of scientific know-how to the market and innovation
4. Identify limitations on bioeconomy expansion

5. Integrate all the backup tools for bioeconomy development

6. Facilitate the internationalization of companies, science and innovation
Operational targets

7. The generation and development of tools for employee education and training.

8. Knowledge, dialogue and social awareness of the bioeconomy, taking in all the scientific, social, economic and financial players and society in general.

9. Rural economic development and productive activities diversification

10. Creation of new markets
How to promote bioeconomy development?

1. To promote public and private research and company investment in innovation in the area of the bioeconomy.

2. To reinforce the social, political and administrative context of the bioeconomy.

3. To promote the competitiveness and development of the market associated with the bioeconomy.

4. To develop demand for new products.

5. Plan to expand and promote the bioeconomy.
1. Multidisciplinary alliances of researchers and companies, guaranteeing research that targets: H2020, State Plan, PDR, Regional Operating Programmes

2. Operational groups in the European Innovation Partnership (EIP) in rural development programs (PDR).

3. To develop models to facilitate the funding of pilot projects and demonstration plants, combining various public and private financial instruments.

4. Analyze successful public-private collaboration models in generating business innovation based on public/private research.

5. Annual conference on the bioeconomy.

6. To promote knowledge of the bioeconomy among private financial institutions and risk-capital companies.

7. To develop a repository of raw data on Spanish public research projects in the sphere of bioeconomy.

8. To strengthen and enhance interaction between the structures and existing operating networks: technological platforms and campuses of excellence.
Social, political and administrative context

**Spanish bioeconomy observatory**
- Follow-up group State Administration.
- Spanish Bioeconomy Strategy Management Committee:
  - Monitoring group.
  - Technical scientific support group.
  - Technological networks group.

**Program for social divulgation and dialogue on bioeconomy**
- Exchange of views
- Dissemination of knowledge
- Communication strategy, FECYC.
- Informal Bioeconomy Policy Group.

**To generate a broad group of parties interested in bioeconomy matters**
- Research groups, companies, technological platforms, innovation agents, organizations and NGOs

**Training in the bioeconomy field**
- Universities,
- Inside formal education system
- Outside formal education system.

**Cooperation and international exchange**
## Competitiveness of the market

- **To develop the concept of social and environmental sustainability**
- **To identify legal, administrative or other limitations to bioeconomy development: legals, administratives, etc.**
- **To promote exports and internationalisation in the field of new bioproducts**
- **To promote the development of chains of value**
- **To analyse the standardisation and certification processes**
- **To seek for alternatives to current productive and organizational models**
Demand for new products

- Identification of products and limitations
  - On technologic
  - On finance
  - In demand

- Innovative public procurement

- Labelling system for bioproducts
To compile and explain successes demonstrates the bioeconomy’s possibilities.

To promote potential R+D+i programmes related to the bioeconomy:
- At the national, regional and international levels
- Autonomous Communities and locally

Linking Spanish successes to similar measures articulated in another international sphere.
1. To promote public and private research and investment in innovation in the area of the bioeconomy.

2. To strengthen the bioeconomy’s social, political and administrative frame of reference.
1. Promotion of public and private research and investment in innovation.
2. Strengthen social, political and administrative sectors.
3. Competitiveness and market development
4. Development of new products
5. Expansion of the bioeconomy
6. Development of indicators
Thank you