The basis of the Valencian Strategy in Bioeconomy
Key figures of the Agriculture, Livestock Fisheries, Forestry and Agri-food Sectors in Comunitat Valenciana
The agriculture, food, manufacturing, automotive and Chemicals and Pharmaceuticals sectors make up over 50% of the Regional industrial GDP.
Consumer goods sectors characterize our industry

Food and beverages: 21.4%
Transport material: 17.3%
Chemistry-Plastics: 16.8%
Metalwork: 13.8%
Ceramics-tiles: 7.0%
Shoes-leather: 4.8%
Paper & Graphic Arts: 4.6%
Textile-Dressmaking: 4.2%
Wood-Furniture: 3.6%
Quarry products: 2.0%
Construction Materials: 1.2%
Glass: 0.7%
Toys and Games: 0.7%
Other: 1.9%
Very competitive industrial clusters
**Export-oriented economy**

“Valencian export exceeded 28,500 M€ (26% of GDP)

<table>
<thead>
<tr>
<th>Products</th>
<th>Milions €</th>
<th>% 14/15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport material</td>
<td>7.017</td>
<td>47</td>
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<tr>
<td>Fruits</td>
<td>3.163</td>
<td>14</td>
</tr>
<tr>
<td>Ceramics- Tiles</td>
<td>2.492</td>
<td>6</td>
</tr>
<tr>
<td>Mecanical machinery</td>
<td>1.980</td>
<td>11</td>
</tr>
<tr>
<td>Shoes</td>
<td>1.622</td>
<td>17</td>
</tr>
<tr>
<td>Mineral product</td>
<td>998</td>
<td>2</td>
</tr>
<tr>
<td>Plastics &amp; rubber</td>
<td>996</td>
<td>16</td>
</tr>
<tr>
<td>Legums, vegetables</td>
<td>768</td>
<td>11</td>
</tr>
<tr>
<td>Fuel</td>
<td>671</td>
<td>-31</td>
</tr>
<tr>
<td>Electrical material</td>
<td>651</td>
<td>23</td>
</tr>
<tr>
<td>Wood Furniture/ lights</td>
<td>582</td>
<td>8</td>
</tr>
<tr>
<td>Food processing industry</td>
<td>414</td>
<td>5</td>
</tr>
</tbody>
</table>
The agri-food sector

- **Land use (73%)**
  
  Agricultural Surface = 637,754 hectares

- **Agricultural holdings. Number and size**
  
  - 80% of holdings smaller than 5 ha
  
  - 117,480 agricultural holdings

- **Legal nature of holders**
  
  - 86% physical persons

- **Education and training**
  
  - Majority of holders are self-trained

- **Origin of labour force**
  
  - Family farming

Source: INE. Encuesta de la estructura de las explotaciones agrícolas 2013.
The Agri-food sector

Major crops

- Major part of surface dedicated to tree crops and vineyards

Irrigation

- Irrigated surface: 256,587 ha (28%)
- Mostly drip irrigated

Organic agriculture

- Aprox 25,000 ha, specific plans for promotion

Livestock

- Pigs and poultry, our major livestock
The Agri-food sector

**Added Value**
- Added value of Valencian agriculture: 2.824 M€
- 49% Fruit, 77% fruit & veg.

**Other economic figures**
- An export-orientated agriculture

Agricultural exports (average 2010-14) 3.904 M€

**Other economic figures**
- A tractor sector

More than 2,500 companies and 20,000 jobs linked to Agriculture

**The Valencian food industry**
- 30,000 employees
- 9 billion € income
- 6 billion € Agrifood exports
The Valencian Forestry Sector

- 27 mill. ha (55%)
- 27.8% public ownership
- 72.2% private ownership

- 1.9 mill. ha (54%)
- 38.6% public ownership
- 61.4% private ownership

POOR PERFORMANCE

1.03% GDP
0.03% GDP

Potential use of Agricultural and Forest Biomass for energy production

The Valencian Fisheries Sector

- 41,000 tones (extractive fishing 65.6%
  + aquaculture 34.4%)
- Sales value for 165 million € (e.f. 60.5% + aq. 39.5%)
- 40,000 tones exports, 177.2 million €.
- 500 km of coastline
- 3,000 fishermen
- 49 Marine aquaculture facilities
Bioeconomy in the Research and Innovation Smart Specialization Strategy of Comunitat Valenciana
Bioeconomy in RIS3

• Region Specialization:
  – Agri-food
  – Tourism
  – Health
  – Consumer goods
  – Habitat
  – Automotive Industry

• KET
  – Advanced materials and nanotechnologies
  – Advanced production
  – ICT
  – Biotechnology
  – Micro, nano-electronics and photonics
  – Environmental technologies
  – Logistics
Bioeconomy in RIS3

The matrix of priorities is the RIS toolkit to arrange 4 well-sized focus policy blocks:

1. Quality of life Policy.
2. New Sustainable Industry
3. Digital Agenda
4. Sustainability
The Valencian Rural Development Programme 2014-2020 and the Bioeconomy
Opportunities for Bioeconomy in the Valencian RDP - Agrifood

• Investments in Processing and Trading Industries. Objectives (92 M€):
  – Improve the overall performance of the agricultural production, creation of new partnerships and jobs
  – Increase added-value in the primary sector: better food quality and safety
  – Market-oriented, diversified production.
  – Protection of the natural environment
  – Sustainable social networks in rural areas, connecting primary production and processing industry
Opportunities for Bioeconomy in the Valencian RDP - Agrifood

• Measure 19. LEADER Local Development (27 M€).
• Objectives for Rural Areas (I):
  – Increase competitiveness and growth
  – Improve standards of living and quality of life
  – Maintain social networks
  – Promote sustainable occupation of territory (specially for youth and women).
  – Diversify the rural economy by supporting SMEs, entrepreneurship and innovation.
Opportunities for Bioeconomy in the Valencian RDP - Agrifood

- Measure 19. LEADER Local Development.
- Objectives for Rural Areas (II):
  - Enhance local governance and social animation
  - Promote high added value products
  - Ensure sustainability of rural activities
  - Defense and recovery of cultural and environmental heritage
  - Education, training and skill acquisition in the territory
Opportunities for Bioeconomy in the Valencian RDP - Agrifood

• Measure 16. Co-operation
  – Sub. 16.2. Pilot projects for the development of new products, practices, processes and technologies.
1st Valencian Plan on Organic Production

• Objectives
  – To support local organic farming, linked to conscious and responsible consumption
  – To boost high quality food production and processing, based on diversification, environmental respect, and natural resources preservation
  – Prioritization of bioeconomy and circular economy
1st Valencian Plan on Organic Production

• Actions
  – Implementation starts in 2017
  – Pilot project on agri-compost in collaboration with the municipalities:
    • Generation of quality compost for organic fertilization
    • Adequate sorting of solid urban waste
    • Lower inputs costs for farmers and less quantity of urban waste
Opportunities for Bioeconomy in the Valencian RDP - Forestry

• Measure 8 - Investment in forest area development and improvement of the viability of forests (60 M€)
  – Reforestation and creation of woodland
  – Establishment of agroforestry systems
  – Prevention and restoration of damage to forests from forest fires/natural disasters/catastrophic events
  – Improving the resilience and environmental value of forest ecosystems
  – Investments in forestry technologies, processing, mobilising and marketing of forest products
Opportunities for Bioeconomy in the Valencian RDP - Forestry

• Investments in technologies, processing, mobilization and marketing of forest products (60 M€).
  – Objectives:
    • promote marketing of forest products
    • integrate producers in the distribution chain to reduce management costs
    • adapt production to market needs using innovative technologies and processes
  – Focused on non-timber products (cork, honey, resins, aromatic, medicinal and seasoning plants, wild mushrooms) and residual wood management
Regional R&I potential in Bioeconomy

Enrique Moltó
Competitive R&I

- 6 Private and 5 Public Universities (with 5 Sciences Parks). Highly Competitive professionals.
- 11 research centers, most belonging to the Spanish National Research Council (CSIC).
- 4 CEEIs belonging to the European Centre of Enterprise and Innovation.

- 11 Technological Institutes
IVIA + extension services

- More than 300 people (50 researchers)
- 8900 m² laboratories and offices
- 45000 m² Experimental plots
IVIA + extension services

- Citriculture and Crop Production
- Plant Protection and Biotechnology
- Genomics
- Postharvest Technology
- Agric. Engineering
- Sustainable Agriculture
- Livestock Technology
Results oriented to

• New plant material: diverse, resilient, productive, resource-efficient, market-oriented
• Plant protection: Prevention and Bio-control
• Development of sustainable and organic agriculture: water, soil, fertilization
• Resource-efficient, precision farming
• Extension of shelf-life, freshness, organoleptic quality
Moving forward towards bioeconomy

- Resource-efficiency, sustainability and eco-friendly technologies as cross-cutting issues in every research project
- Promotion of added value from agricultural residues
- IVIA is a BIC affiliate member
- Member of the European Stackholders Bioeconomy Pannel
- IVIA is a Climate-KIC affiliate member
- IVIA coordinates the Valencia H2020 working group on agrifood
Institute of Agrochemistry and Food Technology – IATA CSIC & the Bioeconomy

• Current projects related to bioeconomy
  – Improving microorganisms for process optimisation (more efficient yeasts for bioethanol production)
  – Waste and sidestreams valorisation for bioactives and novel materials (novel functional biopolymers from seaweed byproducts)
  – More efficient and resilient food production systems (sustainable pork production systems based on new breeding techniques)
  – New and improved enzymes (novel biocatalysts for biobased products)
Universitat de València in figures

- Students: >46,000
- Teaching Staff: >3,500
- Administrative Staff: >1,500
- 3 Campus sites: 440,000 m²
- Master and PhD students: >10,000
- Raised funding for RTD: > 50 M€/year
- 6,500 trainees in more than 2,400 companies and institutions
Bioeconomy: R&D capacities

- **Law**
  - Territorial Sustainability; Rural Development
  - Environmental, Territorial and Energy Regulation

- **Food & Nutrition**
  - Food Safety
  - Nutrition Assmt

- **Chemistry & Biochemistry**
  - Synthesis of Biomolecules

- **Ecology**
  - Environmental Engineering
  - Pest control

- **Biology**
  - Microbiological Systems

- **Economics**
  - Experimental Economy Lab
  - Water economy
Universitat Politècnica de València

- 5 campus sites
- 37,800 students
- 2,600 teaching and research staff
- 1,700 are administrative and services personnel.
- Associated schools: Ford, Business Studies, etc.
- International vocation: Colombia, Argentina, Mexico, Cuba, Uruguay, Japan, United Arab Emirates, Morocco, USA
Results with great societal impact

Next generation zeolites, nanophotonic metamaterials, intelligent medicines, vegetable production, optic chips...
AINIA

- Association of 700 enterprises:
  - Food
  - Environment
  - Energy
  - Packaging
  - Pharmaceuticals & Biomedicin
  - Cosmetics
  - Chemicals, cleaning, hygiene

- Customers: 1300 enterp.
- Staff: 185 people
- Income: 14 M €
- R&I projects: 180
- Patents: 19
- Analytical services: 208000
- Training: 1300 h
AINIA. Examples of R&I

- **PH BOTTLE**
  - New sustainable, functionalised and competitive material
  - From byproducts of the juice industry
  - For new food and non-food packaging
  - AINIA (Coordinator), AIMPLAS, TNO, INTI, Logoplaste Innovation Lab, CITRESA, MEGAEMPACK, LOGOPLASTE BRASIL, OMNIFORM, SIVEL, AIJN
  - [http://www.phbottle.eu](http://www.phbottle.eu)
AINIA. Examples of R&I

- New products from algae with immunological stimulant activity
- Low cost media for algae cultivation (molasses and other byproducts from the agri-food industry).
- Recuperation of bioactive compounds
- Microencapsulation and use in food (saucers, cookies)
- Studies of biodisponibility
Participation of Valencian entities and entreprises in EU funded projects related to Bioeconomy.
Participation in EU funded projects related to Bioeconomy

• In 2013 the Regional Government and a group of key stakeholders set up The H2020 Regional Action Plan (RAP)
Participation in EU funded projects related to Bioeconomy

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<th>PILAR H2020</th>
<th>PRIORIDADES</th>
<th>UNIDADES SUPERVISORES DE RESULTADOS</th>
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<td>C. EXC.</td>
<td>MNP-BIOTECH-ESP</td>
<td>DG Industria: 28,60</td>
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<td></td>
<td>TIC</td>
<td>DG Energia: 25,29</td>
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<td>ACCESO A FINANC.</td>
<td>DG Investigac. Sanitaria: 38,00</td>
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<td>SALUD</td>
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<td>DG UE: 12,74</td>
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<td>TRANSPORTE</td>
<td>2014-2106 ME: 6,11</td>
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<td>MEDIO AMBIENTE</td>
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<td>SOCIEDADES</td>
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<td>Instrumento PYME</td>
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<td>GENERAL</td>
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<td>TOTAL/DG</td>
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</tbody>
</table>

| IVACE FIN   | 17,28 |
| IVACE INN   | 29,80 |
| DG IND      | 88,28 |