Ecosystem session: ENERGY INTENSIVE INDUSTRIES

Clusters strengthening ecosystems
Clusters and ecosystems breakout session

Energy Intensive Industries Ecosystem

Antti Valle, DG GROW
The ecosystem approach to industrial policy

- The communication “A new industrial strategy for Europe” (March 2020):
  
  “ecosystems encompass all players operating in a value chain: from the smallest start-ups to the largest companies, from academia to research, service providers to suppliers”.

- The Commission SWD Identifying Europe's Recovery Needs (May 2020):
  
  “The notion of Ecosystems captures the complex set of interlinkages among sectors and firms spreading across countries in the Single Market [...]. They allow for a bottom-up approach that takes into account specificities of business models, high percentage of vulnerable players (SMEs and micro) and interdependencies.”
Industrial Ecosystems in Europe

- Social enterprises, associations and cooperatives aiming at generating a social impact, often proximity based
- Retail sales
- Wholesale connected to consumers
- Building of residential and non-residential estates
- Building of roads and railways
- Building of utilities and civil engineering
- Associated activates
- Telecommunications
  - Software publishing, computer programming and consultancy
  - Data processing, hosting, web portals
  - Manufacturing of computers, communication equipment and consumer electronics
- Pharmaceuticals and other medical products
  - Personal protective equipment
  - Medical services, hospitals, nursing homes, residential care
- Plant and animal production
  - Processing of food
- Electric motors, engines and turbines
  - Electric power generation
  - Manufacturing and distribution of gas
- News, books and periodicals
- Motion picture, video and television
- Radio and music
- Aircraft production
  - Space manufacturing and services
  - Defense products and technologies
- Production of textiles, wearing apparel, footwear, leather and jewellery
- Raw starting materials (semiconductor wafers)
  - Semiconductor manufacturing tools
  - Design and manufacturing of semiconductor components
- Production of motor vehicles, ships and trains, and accessories
  - Their repair and maintenance
  - Transport
- Raw materials
  - Manufacturing of products with high environmental impact: chemicals, iron and steel, forest-based products, plastics, refining, cement, rubber, non-ferrous metals, fertilisers, etc.
The ecosystem approach in practice

- Ecosystems as *networks* rather than (value) chains:
  - Map the complex links across firms, sectors and institutions.
- Ecosystems include both *private and public* activities.
  - Public institutions and research centres as key actors in their interactions with firms.
- Ecosystems *evolve* continuously.
  - Not meant as a fixed unit of observation.
Example: Global automotive network

Source: Rungi (2020), based on WIOD data
Measuring Industrial Ecosystems (2/2)
Most ecosystems display negative confidence in September 2020, but improving;

“Tourism” is the hardest hit, followed by “Textile”;

Durable goods (as reflected in the ecosystems, “Mobility-Transport-Automotive”, and “Construction”

Source: GROW.A1 elaborations on data by the Joint Harmonised EU Programme of Business and Consumer Surveys.

Note: Data cover only partially the ecosystems “Retail”, “Agrifood”, “Renewables” and “Creative & Cultural”, which are represented by dotted lines. For “Health” and “Social Economy” there are not enough NACE2 codes to measure the confidence indicators, so they are not included in the analysis.
Energy-Intensive Industries:

1. Make up more than half of the energy consumption of the EU industry.

2. Are at the heart of the EU value chains. Their products are needed for low-carbon solutions enabling the transition to climate-neutrality.

3. Share the ambition of the Paris Agreement, recognise the size of the transformation challenge and the opportunities it brings.
Infrastructure challenges

Need for (future) infrastructure mapping: start bottom up (clusters), identify EU industrial projects of common interest
Clusters strengthening ecosystems
Energy Intensive Industries

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Plastipolis: Facts & figures

Established in 2005
- Plastics, composites & polymers
- 350+ members including 250 firms
- 200 achieved or ongoing projects for 500 M€
- 35 European projects
- Gold label since 2013

Technology strategic domains
- Performant and innovative processes
- Sustainability and eco-design
- Advanced materials
- Smart plastics products
- Digital factory
Plastics industry

European figures:
- 60,000 companies
- 1.6 M employees
- 350 B€ turnover
## Energy Intensive Industries in Europe

<table>
<thead>
<tr>
<th>Sector</th>
<th>Final energy consumption Mtoe/y</th>
<th>Economic potential savings by 2030 (payback &lt;=2 year) Mtoe/y</th>
<th>Technical potential savings by 2030 Mtoe/y</th>
<th>Energy cost/Value Added Million</th>
<th>No. of employed</th>
<th>Value added, gross € billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulp and paper</td>
<td>34.3</td>
<td>1.1</td>
<td>7.2</td>
<td>16%</td>
<td>1.43</td>
<td>79.0</td>
</tr>
<tr>
<td>Iron and steel</td>
<td>50.8</td>
<td>2.9</td>
<td>16.3</td>
<td>36%</td>
<td>0.63</td>
<td>39.7</td>
</tr>
<tr>
<td>Non-metallic mineral</td>
<td>34.2</td>
<td>1.2</td>
<td>7.1</td>
<td>23%</td>
<td>1.29</td>
<td>63.9</td>
</tr>
<tr>
<td>Chemical and pharma.</td>
<td>51.5</td>
<td>2.6</td>
<td>16.5</td>
<td>12%</td>
<td>1.72</td>
<td>229.8</td>
</tr>
<tr>
<td>Non-ferrous metal</td>
<td>9.4</td>
<td>0.5</td>
<td>1.9</td>
<td>23%</td>
<td>0.46</td>
<td>23.7</td>
</tr>
<tr>
<td>Petroleum refineries</td>
<td>44.7</td>
<td>1.7</td>
<td>10.6</td>
<td>44%</td>
<td>0.12</td>
<td>24.3</td>
</tr>
<tr>
<td>Food and beverage</td>
<td>28.4</td>
<td>1.4</td>
<td>6.8</td>
<td>10%</td>
<td>4.53</td>
<td>251.4</td>
</tr>
<tr>
<td>Machinery</td>
<td>19.3</td>
<td>1.0</td>
<td>5.3</td>
<td>3%</td>
<td>9.03</td>
<td>579.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>272.5</strong></td>
<td><strong>12.4</strong></td>
<td><strong>71.7</strong></td>
<td></td>
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</table>

Including plastics & polymers

Workshop on “Continuing efforts to make EU industry less energy intensive and more competitive” – Brussels, June 2018
Plastics industry

European figures:
- 60,000 companies
- 1.6 M employees
- 350 B€ turnover
Recovery plan at cluster level

Area 1: Increasing Climate Ambition - Cross sectoral challenges
  • Topic 1.1: Preventing and fighting extreme wildfires with the integration and demonstration of innovative means
  • Topic 1.2: Towards climate-neutral and socially innovative cities
  • Topic 1.3: Climate-resilient innovation packages for EU regions

Area 2: Clean affordable and secure energy
  • Topic 2.1: Demonstration of innovative critical technologies to enable future large-scale deployment of offshore renewable energy technologies (with the possibility to address also hydrogen applications)
  • Topic 2.2: Develop and demonstrate a 100 MW electrolyser upscaling the link between renewables and industrial applications

Area 3: Industry for a clean and circular economy
  • Topic 3.1: Closing the industrial carbon cycle to combat climate change
  • Topic 3.2: Demonstration of systemic solutions for the territorial deployment of the circular economy

Area 4: Energy and resource efficient buildings
  • Topic 4.1: Building and renovating in an energy and resource efficient way

Area 5: Sustainable and smart mobility
  • Topic 5.1: Green airports and ports as hubs for sustainable and smart mobility

Area 6: From Farm to fork
  • Topic 6.1: Testing and demonstrating systemic innovations in support of the Farm-to-Fork Strategy

Area 7: Ecosystems and Biodiversity
  • Topic 7.1: Restoring biodiversity and ecosystem services

Area 8: Zero-pollution, toxic free environment
  • Topic 8.1: Innovative, systemic zero-pollution solutions to protect health, environment and natural resources from persistent and mobile chemicals
  • Topic 8.2: Fostering regulatory science to address chemical and pharmaceutical mixtures: from science to evidence-based policies

Area 9: Strengthening our knowledge in support of the European Green Deal
  • Topic 9.1: European Research Infrastructures capacities and services to address European Green Deal challenges
  • Topic 9.2: Developing end-user products and services for all stakeholders and citizens supporting climate adaptation and mitigation
  • Topic 9.3: A transparent and accessible ocean: towards a Digital Twin of the Ocean

Area 10: Empowering citizens for the transition towards a climate neutral, sustainable Europe
  • Topic 10.1: European capacities for citizen deliberation and participation for the Green Deal
  • Topic 10.2: Behavioural, social and cultural change for the Green Deal
  • Topic 10.3: Enabling citizens to act on climate change and environmental protection through education, citizen science, observation initiatives, and civic involvement

Area 11: International cooperation
  • Topic 11.1: Accelerating the green transition and energy access Partnership with Africa
Recovery plan at cluster level

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Examples of connection at regional level

- Analysis and redesign of industrial value chain toward circular economy

Program for accelerating the green transition of SMEs of plastics and composites

**National program**

**Regional plan**

** ACCORD VOLONTAIRE EN FAVEUR DE L’ÉCONOMIE CIRCULAIRE EN AUVERGNE-RHONE-ALPES**

- **FILIERE PLASTURGIE ET COMPOSITES**
  - Jul 2020 – Jul 2022