Transition Pathway for the Chemical Industry

A blueprint for sustainable chemicals in a circular economy – GLOBLE-EU; 24 May 2023; Brussels (BE) & online
Overview

- It identifies ~190 actions needed for the twin transition and increased resilience (grouped by topic)
- It indicated the time for implementation (S-M-L) & the actor responsible (EU/MS/Industry/etc.)
### 3. The content: the CHEM-TP topics

<table>
<thead>
<tr>
<th>Building Blocks</th>
<th>Topics</th>
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</table>
| **Sustainable Competitiveness** | Topic 1: International Competitiveness  
Topic 2: Reduction of unsustainable dependencies and supply chains vulnerabilities  
Topic 3: Safety and Sustainability  
Topic 4: Innovation and growth of SMEs  
Topic 5: New synergies |
| **Investments and Funding** | Topic 6: Fund for Green Investments  
Topic 7: Access to Funding |
| **R&I, Techniques and Technological Solutions** | Topic 8: Better conceptualisation of new techniques and technical solutions (TRL 1 to 5)  
Topic 9: Developing new techniques and technological solutions (TRL 6 to 7)  
Topic 10: Deployment of new techniques and technological solutions (TRL 8 to 9) |
| **Regulation and Public Governance (Legislation)** | Topic 11: More effective and predictable regulation  
Topic 12: Vertically and horizontally coherent legislation  
Topic 13: Effective and efficient enforcement |
| **Access to energy and feedstock** | Topic 14: Anticipate long-term needs for Energy and Resource Supply  
Topic 15: Economically viable purchase of clean energy  
Topic 16: Feedstock Substitution  
Topic 17: Process and resource efficiency |
| **Infrastructure** | Topic 18: Large-scale electricity and hydrogen infrastructure  
Topic 19: Development of new sustainable production facilities  
Topic 20: Sustainable transport of raw materials and chemical products  
Topic 21: Deployment of digital technologies  
Topic 22: Circularity: recycling and reuse infrastructure |
| **Skills** | Topic 23: Education (reskilling/upskilling the workforce)  
Topic 24: Sufficient supply of jobs at technical level |
| **Social Dimension** | Topic 25: Impact on workforce and consumers  
Topic 26: Improve gender diversity and equality in the sector |
A three-parts roadmap

1. An **action-oriented component** grouping the topics under three cross-cutting themes: collaboration for innovation; clean energy supply; and feedstock diversification.

2. A **technology component** identifying electrification, hydrogen, biomass, waste, Carbon Capture and Utilization (CCU) & Carbon Capture and Storage (CCS), as well as process efficiency as key technological contributors to the transition pathway.

3. A **regulatory component** that collects the existing legislation, including major research and innovation (R&I) initiatives, influencing digital and sustainable development of the chemical industry.
Transition Initiatives

• **Concrete and measurable Actions** undertaken by the EU/MS/Industry/NGOs/Academia and all interested parties to contribute to the twin transition of the Chemical Industry

• **Call for transition initiatives** After June 2023

Stakeholders' participation

• **Collaboration** is needed to exchange information and set priorities on the concrete actions to be taken for the twin transition.

• **Meetings with stakeholders**: 3 plenary meetings in 2023; dedicated task forces and bilateral meetings

Monitoring and Evaluation

• **Setting KPIs** to monitor and assess the actions taken for the twin transition of the Chemical Industry

• **Annual progress report**: Q1 2024
GROW-CHEMTP@ec.europa.eu

https://europa.eu/!jGHjmp

Transition Pathway for the Chemical Industry
Action-oriented roadmap (1)

**SHORT-TERM**

2.1. Gather Supply Chain Information
2.2. Increase collaboration within sub-sectors

**MEDIUM-TERM**

3.2. Improve collaboration in value chains
4.3. Strengthen initiatives with SMEs under the European Innovation Council (EIC)

5.1. Facilitate exchange of information
5.2. Increase collaboration to de-risk investments

5.3. Support the development of partnerships for innovation

**LONG-TERM**

2.3. Make the most of existing international partnerships, including FTAs

7.2. Provide a coordinated platform for funding

9.1. Foster collaboration and partnerships (R&I)

20.1. Increase the availability and capacity of multi-modal terminals that are close to industrial clusters
21.2. Deploy technologies to improve chemical manufacturing processes and data gathering
22.2. Improve the management of logistics for waste feedstock

25.1. Regional cohesion
Action-oriented roadmap (2)

**SHORT-TERM**

- 10.1. Permitting and commercialisation
- 14.1. Anticipate long-term needs for the supply of energy and feedstock resource
- 15.2. Ensure the competitive supply of clean energy
- 15.3. Improve Power-Purchase Agreements
- 18.1. Enable free flow of energy between countries
- 19.2. Accelerate and improve permitting

**MEDIUM-TERM**

- 2.4. Increase resource efficiency
- 6.3. Manage and convert existing assets
- 18.2. Develop a separate hydrogen infrastructure at EU level

**LONG-TERM**

- 20.1. Increase the availability and capacity of multi-modal terminals that are close to industrial clusters
- 20.2. Improve use of rail transport
- 23.1 Develop skills with a sustainability focus
### Action-oriented roadmap (3)

<table>
<thead>
<tr>
<th>SHORT-TERM</th>
<th>MEDIUM-TERM</th>
<th>LONG-TERM</th>
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<tbody>
<tr>
<td>1.2 Promote the market for sustainable products</td>
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<td>3.3 Support product design and re-design</td>
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<td>4.4. Support compliance with legislation and funding for new technologies</td>
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<td>6.1. EU Taxonomy to support the CSS</td>
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<td>7.1. Strengthen communication channels for European funding</td>
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<td>8.1. Promote safety and sustainability assessment approaches</td>
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<td>8.3. Develop industrial technology roadmap</td>
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<td>9.2. Support for development</td>
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<tr>
<td>10.1. Permitting and commercialisation</td>
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<tr>
<td>11.1. Definitions and concepts</td>
<td>11.2. Methods</td>
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<tr>
<td>16.1. Identify and develop new and sustainable sources of feedstock</td>
<td>16.2; 16.3; 16.4. Biomass, Waste, CO2 as alternative feedstock</td>
<td>19.1. Develop recycling facilities and bio-refineries</td>
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<td>22.1. Set a regulatory framework for the transport of waste</td>
<td>22.2. Improve the management of logistics for waste feedstock</td>
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<td>23.2. Adapt secondary, post-secondary and university education</td>
<td>24.2. Increase attractiveness of the sector</td>
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<td>25.2. Safety and social security of workers</td>
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## Technology Roadmap

### EU Initiatives supporting Technological Transition (SET Action Plan)

#### A) ELECTRIFICATION
- 6.2. Develop hub structures
- 8.3. Development of an industrial technology roadmap
- 14. Anticipate I+I needs for the supply of energy and feedstock resource
- 15.1. Channel investments for clean energy
- 15.2. Ensure competitive supply of clean energy
- 15.3. Improve Power-Purchase Agreements
- 18.1. Enable the free flow of energy between countries
- 20.1. Increase availability and capacity of multi-modal terminals close to industrial clusters
- 20.2. Improve use of rail transport

#### B) HYDROGEN
- 6.2. Develop hub structures
- 6.3. Manage and convert existing assets
- 15.1. Channel investments for clean energy
- 15.2. Ensure the competitive supply of hydrogen at EU level
- 18.2. Develop a separate hydrogen infrastructure at EU level

#### C) BIOMASS
- 4.3. Strengthen initiatives with SMEs under the EIC
- 6.1. Promote safety and sustainability assessment approaches
- 9.1. Foster collaboration and partnerships
- 16.2. Biomass as an alternative feedstock
- 19.1. Develop recycling facilities and bio-refineries (and exploit synergies with the chemical industry)

#### D) WASTE
- 3.2. Improve collaboration in value chains
- 3.3. Support product design and re-design
- 8.1. Promote safety and sustainability assessment approaches
- 11.1. Definitions and concepts
- 11.2. Methods
- 16.3. Waste as an alternative feedstock
- 22.1. Set a regulatory framework for the transport of waste
- 22.2. Improve the management of logistics for waste feedstock

#### E) CCU & CCS
- 6.3. Manage and convert existing assets
- 9.2. Support for development
- 16.4. CO₂ as an alternative feedstock
- 22.2. Improve the management of logistics for waste feedstock

#### F) PROCESS EFFICIENCY
- 3.2. Improve collaboration in value chains
- 3.3. Support product design and re-design
- 5.1. Facilitate exchange of information (new synergies)
- 5.3. Support the development of Partnerships for Innovation
- 6.3. Manage and convert existing assets
- 17. Process efficiency
- 19.1. Develop recycling facilities and bio-refineries (and exploit synergies with the chemical industry)
- 20.1. Increase the availability and capacity of multi-modal terminals that are close to industrial clusters
- 21.2. Deploy technologies to improve chemical manufacturing processes and data gathering
- 23.2. Safety and social security of workers

### Actions (as presented in Building Blocks – Part II)

#### EU Initiatives
- • REPowerEU
- • EU Renewable Directive
- • TEN-E Regulation
- • Proposal for a directive on Energy Efficiency
- • European Clean Hydrogen Alliance
- • Hydrogen and decarbonised gas market package
- • Revision of the Renewable Energy Directive
- • INCITE (Industrial Emissions Directive)
- • Hub4Circularity
- • Waste Framework Directive
- • Landfill Directive
- • Hub4Circularity
- • Sustainable Carbon Cycle
- • REPowerEU
- • Industrial Symbiosis
- • Revision of the Industrial Emission Directive