

Transition Pathway for the Chemical Industry

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

Overview



Publication:
27 January 2023

Actionable plan

Based on 8
building blocks
developed by
Industrial Forum



Sustainable
competitiveness



Investment
and funding



Research
and Innovation



Regulation and
Public Governance



Access to energy
and feedstock



Infrastructure



Skills



Social dimension

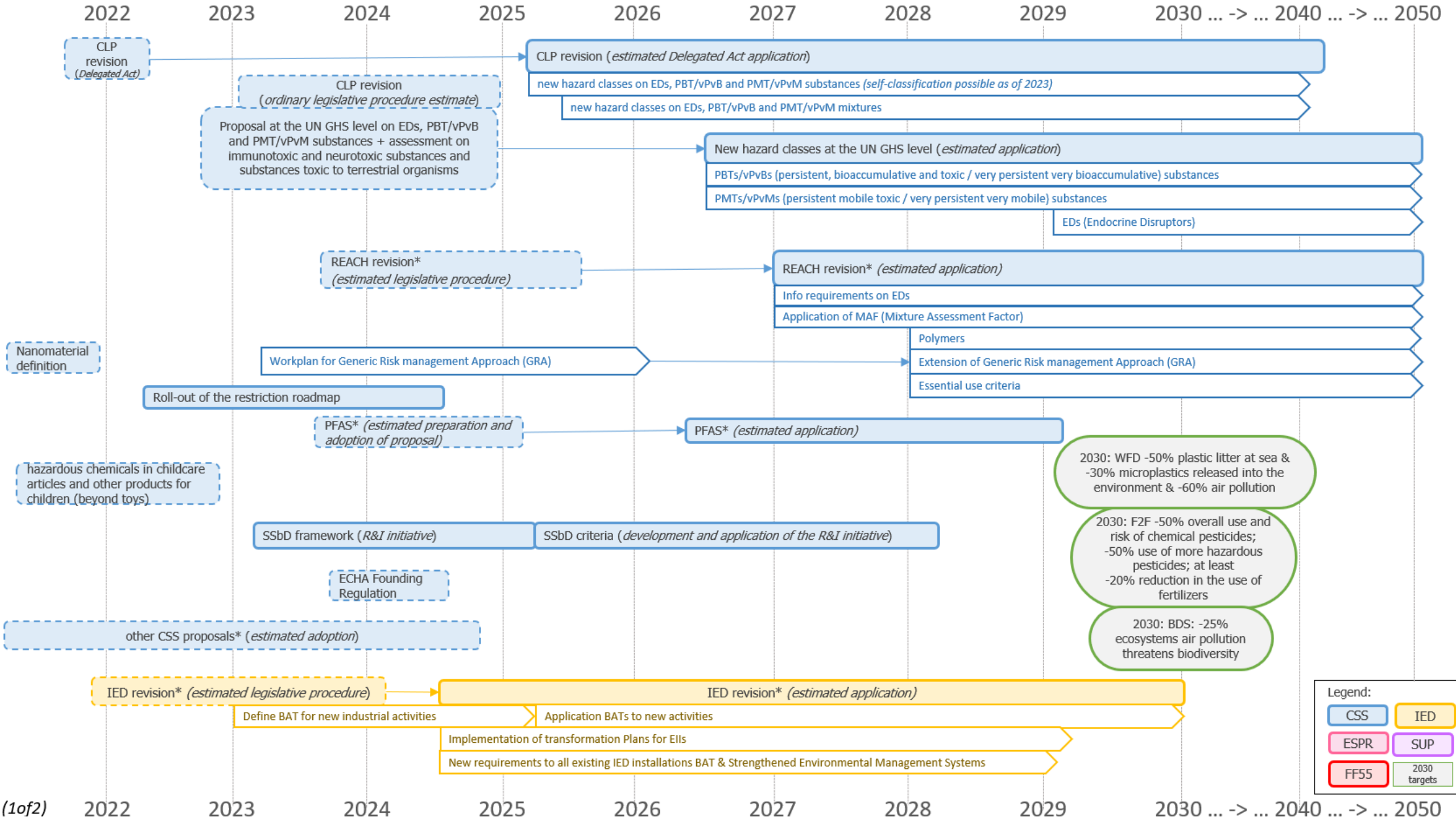
- It identifies ~190 actions needed for the twin transition and increased resilience (grouped by topic)
- It indicated the time for implementation (S-M-L) & the actor responsible (EU/MS/Industry/etc.)

3. The content: the CHEM-TP topics

Building Blocks	Topics
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.



2022 2023 2024 2025 2026 2027 2028 2029 2030 ... -> ... 2040 ... -> ... 2050

ESPR (estimated legislative process) → ESPR - Eco-design for Sustainable Products Regulation (estimated application)

new eco-design and energy labelling working plans → Labelling and eco-design requirements + green claims (tbc)

Disclosure information on discard unsold consumer goods (large businesses only)

Product specific secondary legislation

Provide information on the environmental sustainability of products

Digital product passports

Fit For 55 package*:
 • CBAM
 • EED
 • RED
 • LULUCF

Fit For 55 package estimated application → 2030 CL: -55% GHG emissions (vs. 1990)

CBAM (pilot as of October 2023)

EED – Energy Efficiency Directive & RED – Renewable Energy Directive

LULUCF (new rules)

SCC - Sustainable Carbon Cycle

SCC - Sustainable Carbon Cycles (tbc)

Reporting on CO₂ tons capture → 2030 SCC: 5Mt of CO₂/year removed from atmosphere and permanently stored

2030 SCC: >20% carbon used in chemical and plastic products from sustainable non-fossil sources (indicative)

CSRD – Corporate Sustainability Reporting Directive (first Delegated Act estimate)

2025 Recycled plastic target: 25% for PET bottles

Taxonomy Regulation – Environmental Delegated Act

TR(art. 18) procedures to ensure alignment with OECD Guidelines for Multinational Enterprises and UN Guiding Principles on Business and Human Rights

SFDR - Sustainable Finance Disclosure Regulation (implementation)

Level 1 SFDR obligation

regulatory technical standards (RTS) for climate

2030 recycled plastic target: 30% for all drinking bottles

DD – Due Diligence (estimated legislative procedure)

obligations of due diligence and establishment of rules on liability for violations of the due diligence obligation

Legend:

CSS	IED
ESPR	SUP
FF55	2030 targets

2022 2023 2024 2025 2026 2027 2028 2029 2030 ... -> ... 2040 ... -> ... 2050

Transition Pathway co-implementation process



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

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<https://europa.eu/!jGHjimp>

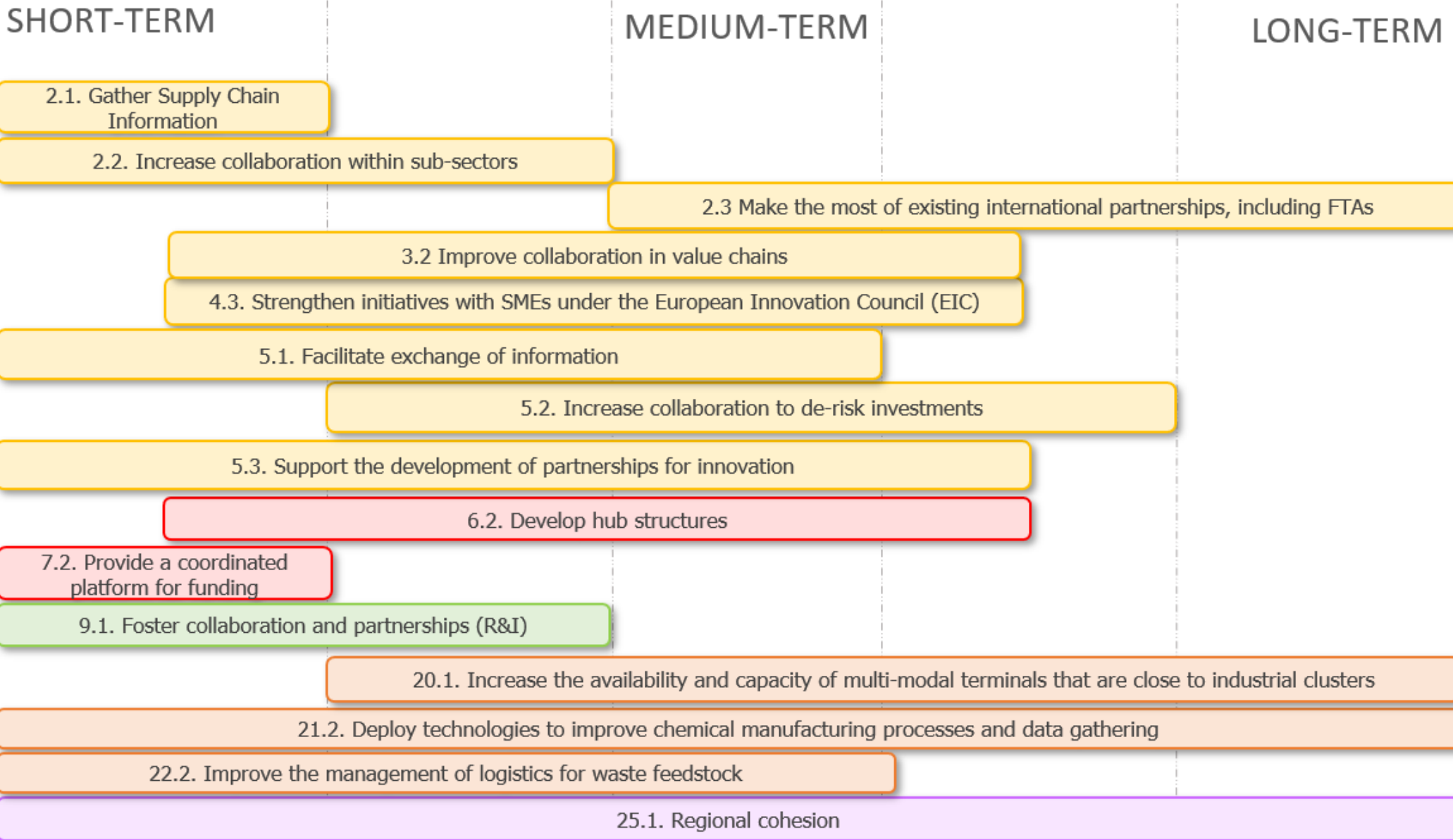


Transition Pathway for the Chemical Industry



Action-oriented roadmap (1)

SUSTAINABLE COMPETITIVENESS	ACCESS TO ENERGY AND FEEDSTOCK
INVESTMENTS AND FUNDINGS	INFRASTRUCTURE
(SUPPORT TO) R&I, TECHNIQUES AND TECHNOLOGICAL SOLUTIONS	SKILLS
REGULATION AND PUBLIC GOVERNANCE (LEGISLATION)	SOCIAL DIMENSION



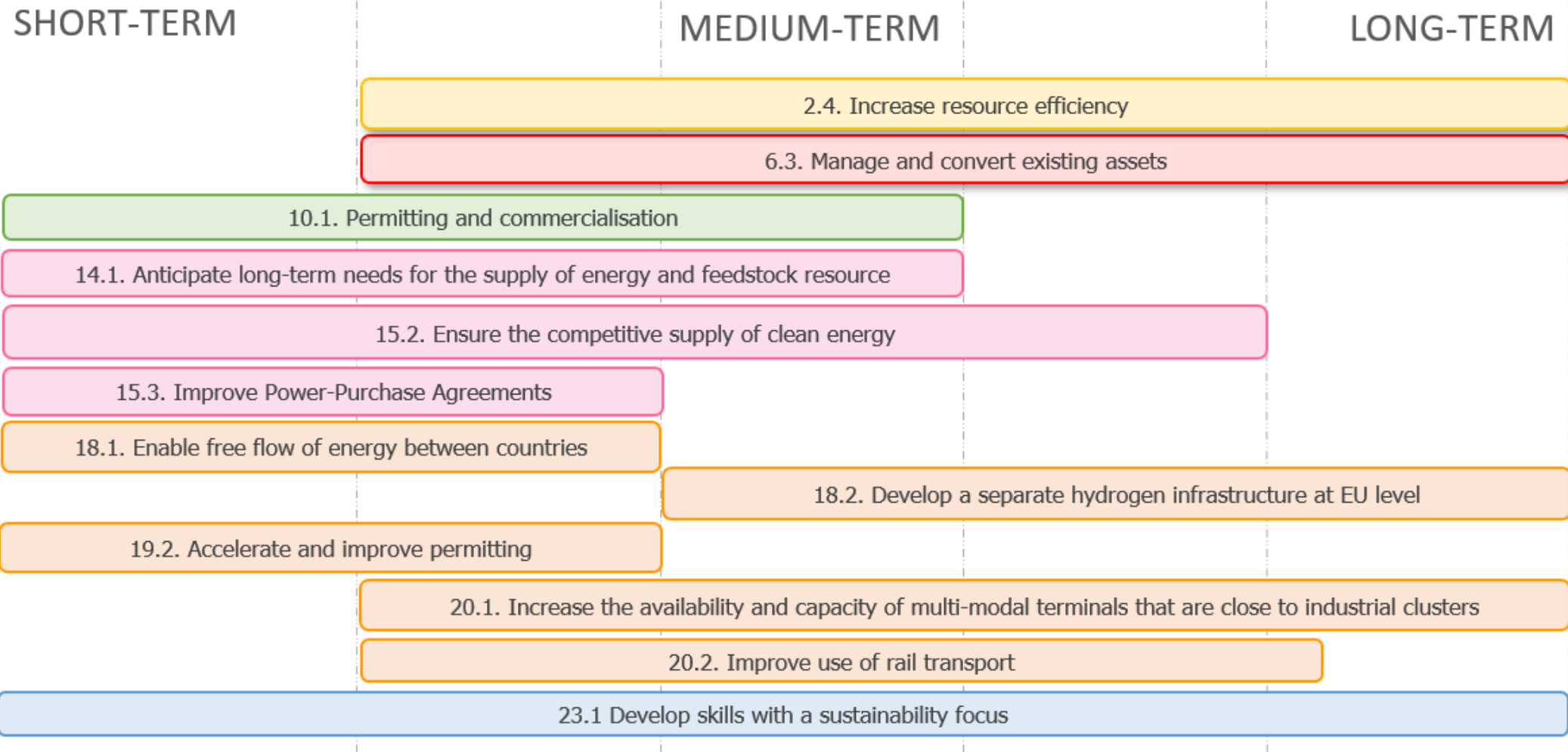
COLLABORATION FOR INNOVATION

Action-oriented roadmap (2)

SUSTAINABLE COMPETITIVENESS	ACCESS TO ENERGY AND FEEDSTOCK
INVESTMENTS AND FUNDINGS	INFRASTRUCTURE
(SUPPORT TO) R&I, TECHNIQUES AND TECHNOLOGICAL SOLUTIONS	SKILLS
REGULATION AND PUBLIC GOVERNANCE (LEGISLATION)	SOCIAL DIMENSION



CLEAN ENERGY SUPPLY



Action-oriented roadmap (3)



FEEDSTOCK
SUBSTITUTION

SHORT-TERM

MEDIUM-TERM

LONG-TERM

1.2 Promote the market for sustainable products

3.3 Support product design and re-design

4.4. Support compliance with legislation and funding for new technologies

6.1. EU Taxonomy to support the CSS

7.1. Strengthen communication channels for European funding

8.1. Promote safety and sustainability assessment approaches

8.3. Develop industrial technology roadmap

9.2. Support for development

10.1. Permitting and commercialisation

11.1. Definitions and concepts

11.2. Methods

16.1. Identify and develop new and sustainable sources of feedstock

16.2; 16.3; 16.4. Biomass, Waste, CO2 as alternative feedstock

19.1. Develop recycling facilities and bio-refineries

22.1. Set a regulatory framework for the transport of waste







22.2. Improve the management of logistics for waste feedstock

23.2. Adapt secondary, post-secondary and university education

24.2. Increase attractiveness of the sector

25.2. Safety and social security of workers

Technology roadmap

EU Initiatives supporting Technological Transition (SET Action Plan)	Actions (as presented in Building Blocks – Part II)	EU Initiatives
 A) ELECTRIFICATION	6.2. Develop hub structures 8.3. Development of an industrial technology roadmap 14. Anticipate I-t 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	<ul style="list-style-type: none"> REPowerEU EU Renewable Directive TEN-E Regulation Proposal for a directive on Energy Efficiency
 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 clean energy 18.2. Develop a separate hydrogen infrastructure at EU level	<ul style="list-style-type: none"> European Clean Hydrogen Alliance Hydrogen and decarbonised gas market package
 C) BIOMASS	4.3. Strengthen initiatives with SMEs under the EIC 8.1. 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)	<ul style="list-style-type: none"> Revision of the Renewable Energy Directive INCITE (Industrial Emissions Directive)
 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	<ul style="list-style-type: none"> Hubs4Circularity Waste Framework Directive Landfill Directive
 E) CCU & CCS	6.3. Manage and convert existing assets 9.2. Support for development 16.4. CO ₂ as an alternative feedstock 22.2. Improve the management of logistics for waste feedstock	<ul style="list-style-type: none"> Hubs4Circularity Sustainable Carbon Cycle
 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 25.2. Safety and social security of workers	<ul style="list-style-type: none"> REPowerEU Industrial Symbiosis Revision of the Industrial Emission Directive