

Working Group Decarbonized Chemical Industry

Working Group – alinnea 2026

Introduction and objectives

The decarbonization of industry is one of the central pillars of Europe's climate and economic transition. Moving towards a green and competitive industry requires electrifying processes, reducing emissions, replacing fossil fuels, improving energy efficiency, and adopting circular production models. In this context, the chemical sector holds a strategic position, accounting for 5% of net Greenhouse Gas (GHG) emissions in the European Union. Due to its energy intensity and its cross-cutting role across multiple value chains, its transformation is key both to achieving climate targets and to strengthening European industrial competitiveness.

In Spain, the chemical industry is one of the pillars of the productive system. With 3,112 companies, a turnover of €85.483 billion, and more than 1,092,455 direct, indirect, and induced jobs, it supplies 98% of the country's productive sectors, consolidating itself as one of the main drivers of the national manufacturing structure. Its high productivity and strong export orientation, especially in basic chemicals, account for more than half of the sector's production and foreign trade—reinforce its strategic relevance.

With the aim of supporting this transformation, the European regulatory framework has evolved rapidly. In July 2025, the European Commission presented the Plan to strengthen the EU chemical industry, which recognizes the sector as the “industry of industries” and establishes a comprehensive strategy to strengthen its resilience and competitiveness. Key measures include the creation of the Critical Chemicals Alliance, the strengthening of trade defense instruments, and the revision of state aid linked to the EU Emissions Trading System (ETS), alongside the promotion of electrification, low-carbon hydrogen, and regulatory simplification in line with the Clean Industrial Deal and the Net Zero Industry Act.

To support this transformation, the Strategic Project for Economic Recovery and Transformation (PERTE) for Industrial Decarbonization, endowed with €11.8 billion until 2026 (€3.1 billion in public funds), is the main support instrument. However, the sector's investment needs are estimated at between €65 billion and €75 billion by 2050, allocated to electrification, renewable hydrogen, biomass, and carbon capture and utilization technologies. Hence the need to complement existing resources with other stable mechanisms, which could include the creation of new funds or the deployment of Carbon Contracts for Difference, to close the cost gap of low-carbon technologies and preserve the sector's strategic competitiveness.

Despite these advances, significant technical, technological, regulatory, and financial barriers remain. Industrial electrification faces limitations in infrastructure, price signals, power system flexibility, and access to adequate financing. In this context, alinnea, as a leading think & action tank in climate action in Spain, seeks to contribute to overcoming these barriers by facilitating evidence-based multi-stakeholder dialogues, producing rigorous diagnostics, and developing strategic recommendations to advance towards a competitive and decarbonized chemical industry.

In 2026, alinnea will launch a new Working Group on the Decarbonization of the Chemical Industry, closely linked to the Industrial Decarbonization Working Group initiated in 2025.

Objective

The objective is to develop a shared diagnosis of the technological, financial, and regulatory barriers facing the chemical sector in Spain, identify the priority elements for a national

roadmap aligned with the EU Action Plan, and improve coordination between industry, public administrations, financial actors, trade unions, and civil society, in order to lay the foundations for a long-term decarbonization strategy that strengthens the sector's competitiveness and resilience.

Format

The Working Group will be composed of stakeholders linked to the industrial ecosystem, industrial companies, energy companies, financial institutions, trade union representatives, public administration, environmental organizations, and academia.

The sessions will take place **in person** at different IE University locations in Madrid. Exceptionally, virtual participation will be facilitated if necessary. We will have an initial coffee and a cocktail at the end of each session.

The scheduled dates for each session are detailed below, and any changes will be communicated in due time.

- First meeting: March 24 (9:30–13:30)
- Second meeting: April 14 (9:30–13:30)
- Third meeting: May 26 (9:30–13:30).

The sessions are designed as multi-stakeholder dialogues under Chatham House Rules. This means that participants may share the content and conclusions of the discussions, but may not attribute comments or positions to specific individuals.

Participation in the Working Group does not necessarily imply endorsement or commitment to the proposals that may be included in the recommendations report to be developed as a result of these dialogues.

Content of the sessions

The following are the topics of interest identified by alinnea as a working basis. However, the specific content of each session may be adjusted depending on the issues identified by the participants of the group, as deemed appropriate.

1. First dialogue: Pathways for the decarbonization of the chemical industry: Challenges and opportunities

This first dialogue will analyze the role of the chemical industry as a strategic sector for the Spanish and European economy, in a context marked by the need for strategic autonomy and strengthening European competitiveness. It will examine the paradigm shifts towards a decarbonized and competitive industrial model, ensuring the continuity of the sector in Europe while preserving its productive capacity, its contribution to strategic value chains, and its role as a driver of innovation, employment, and sustainable industrial development. It will also explore the structural challenges and transformation opportunities of the Spanish

chemical industry in the new European context of energy transition and geopolitical reconfiguration.

- **The chemical industry as a strategic sector in the European and national framework.**
The positioning of the sector will be addressed in the context of the Transition Pathway for Chemicals, the Clean Industrial Deal, and the Action Plan for the Chemical Industry. The chemical industry, as the “industry of industries”, plays an essential role in critical value chains—energy, mobility, construction, agri-food, and health—for Europe’s economy, employment, and the fight against climate change. Its transformation determines the competitiveness of the entire industrial fabric.
- **The decarbonization roadmap of the chemical sector.**
Possible transformation pathways towards climate neutrality in the sector will be analyzed, including process electrification, use of renewable hydrogen, carbon capture and utilization, energy efficiency, and advanced circularity, among others. The level of ambition expected timelines, and the main structural conditions that may facilitate or hinder implementation will be assessed.
- **The global environment and competitive pressure.**
The European chemical industry operates in an environment marked by international competition, especially from regions with lower regulatory and energy costs. The risk of relocation in relation to the decarbonization process and the differential impact on subsectors such as petrochemicals, fertilizers, plastics, or pharmaceuticals will be discussed.
- **The social and territorial dimension of the transition.**
The transformation of the sector towards decarbonization raises challenges in terms of employment, skills, and territorial impact. It will analyze how to ensure a just transition that preserves productive capacity and quality industrial employment in Spain’s chemical hubs.
- **Expert view and perspective of industrial subsectors.**
The sector’s roadmap will be contrasted with the perspective of independent experts and key downstream industries. Is the chemical industry an essential enabler for the decarbonization of other sectors? Are there tensions between climate ambition and systemic competitiveness?

2. Second dialogue: Energy and technology as enabling conditions for transformation

Are the decarbonization objectives of the Spanish chemical industry technically and energetically viable in the 2030–2050 horizon?

This second dialogue will analyze the material conditions that make the sector’s transformation possible: access to competitive energy, the deployment of new technologies, and chemical recycling. Beyond the strategic diagnosis, it will address the technical and structural factors that determine the real decarbonization capacity of the chemical industry in Spain.

It will examine to what extent the technologies envisaged in the sectoral roadmap can be implemented in an environment of high energy costs and strong international competition, as well as the need for coordinated planning between industry and the energy system.

- **Energy costs and industrial competitiveness.**

The chemical industry is energy-intensive and relies heavily on energy raw materials. The discussion will analyze the energy price differential compared to other regions, the impact of grid charges and regulatory costs, and the stability of electricity and gas supply. It will explore whether the current design of the energy market allows for maintaining competitive production capacity in electro-intensive sectors, proposing possible alternatives to reduce this barrier.

- **Electrification of industrial processes.**

Electrification is presented as one of the main decarbonization levers, especially in thermal processes and steam production. The discussion will analyze technical limitations, the need for grid reinforcement, and the availability of sufficient renewable electricity at competitive prices. The dialogue will aim to identify solutions (regulatory, financial, technological, or otherwise) to accelerate electrification in the sector.

- **Renewable hydrogen as a strategic vector.**

In subsectors such as fertilizers or petrochemicals, replacing grey hydrogen with renewable hydrogen is a key condition for climate neutrality. The discussion will address technological maturity, current costs, infrastructure availability, and the alignment between industrial planning and the deployment of hydrogen hubs.

- **Carbon capture, use and storage (CCUS).**

For process emissions that are difficult to eliminate, carbon capture and storage is considered a complementary solution. Its level of technological development, the need for shared infrastructure, and its role within the sector's strategy will be analyzed.

- **Chemical recycling and advanced circularity.**

The chemical industry plays a central role in the circular economy through chemical recycling and the valorization of complex waste. The discussion will address the maturity of these technologies, their regulatory recognition, and their capacity to reduce emissions and dependence on primary raw materials.

3. Third dialogue: Financing, state aid framework as transformation levers and trade

¿Qué instrumentos económicos y regulatorios permiten hacer viable la transición de la industria química sin comprometer su competitividad y su base productiva en España?

What economic and regulatory instruments make it possible to achieve the transition of the chemical industry without compromising its competitiveness and productive base in Spain?

This third dialogue will address the financial and public policy conditions necessary for the sector's decarbonization roadmap to materialize. The planned industrial transformation requires large-scale investments, with high capital costs and long return periods, in a context of energy volatility and global competition.

The role of European and national financing instruments, the state aid framework, economic mechanisms designed to reduce investment risk, prevent relocation processes, and trade policy tools aimed at avoiding market distortions will be analyzed.

- **European State aid framework and industrial policy.**
The scope allowed by the current State Aid Framework for the Clean Industrial Deal (CISAF), ETS guidelines, and compensations for indirect costs to support energy- and carbon-intensive sectors will be examined. It will be discussed whether the current framework is sufficiently flexible and competitive compared to international models such as the United States.
- **Carbon Contracts for Difference (CCfD).**
CCfDs are presented as one of the proposals to reduce uncertainty associated with carbon pricing and to facilitate investments in electrification, hydrogen, or carbon capture. Their design, compatibility with European regulation, and possible application in the Spanish context will be analyzed.
- **European funds and strategic projects.**
The role of the Innovation Fund, IPCEIs, and other European instruments in financing disruptive technologies will be reviewed. The real capacity of the Spanish chemical sector to access these funds and possible administrative or regulatory barriers will be discussed.
- **National instruments and institutional coordination.**
The experience of the PERTE for Industrial Decarbonization and other national mechanisms such as the España Crece Fund will be analyzed, identifying access barriers, processing times, and levels of budget execution. It will be discussed how to improve coordination between administrative levels and regulatory predictability.
- **Private financing and investment criteria.**
The transition requires mobilizing private capital under competitive conditions. The role of commercial banking, ICO, and EIB will be addressed, as well as the influence of the green taxonomy on financing energy-intensive industrial projects.
- **Conditionality and just transition. Impact of decarbonization on employment and territories.**
The balance between public support and corporate commitments regarding job preservation, territorial investment, and environmental sustainability will be

discussed, ensuring that financial instruments promote an inclusive and lasting transformation.

- **Trade policy and protection against market distortions.**

The European chemical industry operates in an environment of strong international competition, with evidence of global overcapacity and dumping practices in certain segments. The role of trade defense instruments, the effectiveness and impact of the CBAM, and the need to ensure a level playing field that prevents carbon leakage and deindustrialization will be analyzed. It will be discussed how to integrate trade policy into the industrial transition strategy.

Results

The final outcome will compile the main conclusions and lessons learned from the dialogue sessions, consolidating a set of strategic recommendations that will contribute to the debate around the European Commission's strategy, the development of the Industry Law, and the implementation of the PNIEC.

This report will be publicly presented and will be accompanied by a specific advocacy plan to disseminate its results to those entities, organizations, and stakeholders interested in the decarbonization of the chemical sector, particularly regarding the identified bottlenecks and proposed recommendations.

