

WORKSHOP: FutureCHEM Europe 2026
Preliminary summary

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INTRODUCTION

The European chemical industry faces significant challenges in reducing its dependence on fossil resources while maintaining competitiveness, strengthening strategic autonomy, and developing resilient value chains. The transition requires access to affordable low-carbon energy, sustainable alternative feedstocks, and technologies that can replace fossil-based production processes. At the same time, global competition, geopolitical uncertainties, and changing market conditions create additional pressure on European chemical producers. Addressing these interconnected challenges requires coordinated efforts across industry, research, and policymaking, as well as long-term strategic choices and substantial investments.

FutureCHEM Europe 2026, held on 1–2 October 2026 in Helsinki, brought together representatives from industry, academia, and other stakeholders to discuss the future of the European chemical industry. The event was jointly organised by LUT University and Karlsruhe Institute of Technology (KIT). The programme combined expert presentations and interactive workshops addressing energy and raw material security, renewable carbon sources, industrial competitiveness, and the transformation of chemical production. The aim was to exchange perspectives on the challenges facing the industry and explore possible pathways towards a competitive and less fossil-dependent European chemical sector.

The workshop focused on two tasks: The first involved identifying and assessing risks related to energy and raw material dependencies, together with mitigation measures and responsible actors, and the second focused on developing a vision and roadmap for a competitive net-zero European chemical industry in 2050. While participants broadly shared the ambition of reducing fossil dependence and strengthening industrial competitiveness, perspectives on feasible actions, achievable outcomes, technologies, and policy measures varied considerably across industry, academia, and policymakers. These differences highlight the need for continued dialogue and collaboration to build a shared understanding of transition pathways and the measures required to advance them.

This report presents a preliminary summary of the workshop outcomes, highlighting the identified risks, proposed mitigation measures, future visions, and key actions needed to support the transformation of the European chemical industry. The findings reflect the perspectives and priorities expressed by workshop participants and provide an initial overview of the challenges, opportunities, and potential transition pathways discussed. The report is structured around the two workshop tasks and serves as a basis for further analysis, discussion, and collaboration among industry, research organisations, and policymakers.





RISK ASSESSMENT AND MITIGATION

The workshop identified energy availability, feedstock access, competitiveness, and policy uncertainty as key risks for industrial defossilisation. Infrastructure resilience, technology maturity, value chain dependencies, and workforce capabilities were considered as important factors influencing Europe's ability to maintain competitiveness while transitioning to a fossil-free chemical industry. While these risks are significant, several mitigation measures were proposed to strengthen resilience and support the transition.

ENERGY AND INFRASTRUCTURE	FEEDSTOCKS AND RESOURCES	COMPETITIVENESS AND VALUE CHAINS
Identified risks • Increasing demand for renewable electricity, hydrogen, and system flexibility • Grid constraints, intermittency, and competition for electricity **Mitigation actions** • Accelerate grid investments, energy storage deployment, and infrastructure planning	**Identified risks** • Competition for biomass, carbon sources, and critical raw materials • Concerns regarding sustainability and biodiversity **Mitigation actions** • Improve circularity and recycling, diversify feedstock sources, and strengthen strategic partnerships	**Identified risks** • Higher production costs and global competitive pressures • Fragmented value chains and uncertain market demand **Mitigation actions** • Create market incentives, certification schemes, and stronger value chain collaboration

TECHNOLOGY, POLICY AND SOCIETY
Identified risks • Regulatory uncertainty and technology scale-up • Skills availability and public acceptance **Mitigation actions** • Stable policies, demonstration projects, workforce development, and stakeholder engagement

VISION CREATION

The workshop envisioned a globally competitive, climate-neutral European chemical industry that combines economic prosperity with environmental sustainability. The vision emphasises strategic resilience through diversified energy and feedstock supply, circular use of carbon and materials, strong innovation capacity, and supportive policy frameworks. A successful transition was seen as requiring both technological leadership and societal acceptance.

CLIMATE-NEUTRAL AND CIRCULAR INDUSTRY	RESILIENT AND SECURE VALUE CHAINS	COMPETITIVE AND INNOVATIVE EUROPE
• Net-zero emissions across chemical value chains • Extensive use of renewable and recycled carbon • Circular material and carbon flows • High resource efficiency and waste minimisation	• Reduced dependence on fossil resources • Diversified energy and feedstock supply • Strong European industrial ecosystems and clusters • Strategic international partnerships where needed	• Global leadership in sustainable chemical technologies • High-value products and advanced manufacturing • Strong R&D, innovation, and commercialisation capacity • Skilled workforce and attractive investment environment

ENABLING CONDITIONS
• Stable and supportive policy environment • Market recognition for sustainable products • Broad stakeholder collaboration • Public acceptance and societal benefits from industrial transformation



ROADMAP CONSTRUCTION

The workshop identified the current decade as the critical period for establishing the enabling conditions of the transition. Most proposed actions focused on scaling technologies, building infrastructure, creating markets, and improving collaboration before 2040, while the 2040-2050 period was primarily associated with maintaining and optimising a mature net-zero chemical system.

2026-2030 BUILD FOUNDATIONS	**2030-2040** SCALE AND TRANSFORM	**2040-2050** ACHIEVE THE VISION
• Scale demonstration and first commercial plants • Expand electricity, hydrogen and CO_2 infrastructure planning • Develop certification systems and market incentives • Accelerate permitting and industrial investments	• Deploy low-carbon technologies at industrial scale • Increase use of renewable, recycled and circular feedstocks • Develop integrated European energy, carbon and raw material networks • Strengthen industrial symbioses and cross-sector value chains	• Continue innovation and technology improvements • Achieve climate neutrality and strengthened resilience by completing the phase-out fossil fuels • Monitor and, if needed, adjust policy guidelines for better alignment

BEFORE 2030 ENABLE THE TRANSITION
• Establish stable and predictable policy frameworks • Create demand for sustainable chemical products • Reduce investment barriers and de-risk new technologies • Strengthen cooperation across industry, research, and policymakers





SUMMARY

The transition to a climate-neutral European chemical industry is not only a technology challenge but a competitiveness challenge. The workshop viewed competitiveness, resilience, and sustainability as equally important objectives for the future European chemical industry. Achieving a net-zero industry will require secure access to energy, feedstocks, technologies, skills, and infrastructure, supported by stable policies and stronger value chain cooperation. The workshop highlighted that the most critical actions must occur before 2040, while coordinated action across industry, policymakers, research organisations, infrastructure providers, and value chain partners are needed to ensure that climate neutrality strengthens rather than weakens the long-term competitiveness and resilience of the European chemical industry.

Secure the transition	Vision for 2050	Priorities for action
• Ensure affordable and reliable access to renewable energy • Secure sustainable carbon sources and critical raw materials • Strengthen infrastructure and supply security • Reduce investment risks through predictable policy frameworks	• Climate-neutral and resource-efficient chemical industry • Diverse carbon and material flows across value chains • Globally competitive producer of high-value products • Strong European industrial ecosystems supported by skilled workforce	• Scale technologies from demonstration to commercial deployment • Expand electricity, hydrogen, CO_2, and logistics infrastructure • Create markets and demand for sustainable chemical products • Strengthen collaboration across industry, research, policymakers, and value chains

