

Criticality Within Planetary Boundaries

A Briefer for Civil Society's [Joint Position](#) on Defining Criticality for Chemicals and Production Sites

The chemical industry is not merely an economic actor facing competitiveness challenges. It is a primary driver of multiple intersecting crises, pushing the "novel entities" and many other planetary boundaries (including climate change and biodiversity loss) beyond safe limits simultaneously. These are not separate crises but interconnected systemic failures that require an equally systemic response.

The European Commission's Critical Chemicals Alliance (CCA) is now designing a framework to define which chemicals and production sites are "critical", making them eligible for public and regulatory support. **How "criticality" is defined will determine which production models are locked in, and which transition pathways are foreclosed – it is therefore crucial for whether the chemical industry transitions towards sustainability or entrenches its current model.**

The Problem: A potentially flawed definition with high stakes.

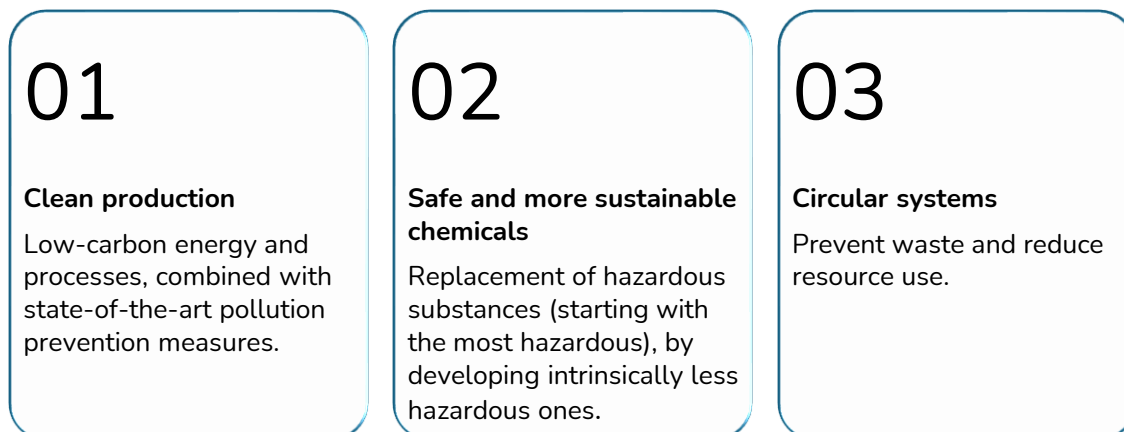
The CCA's emerging framework risks conflating two fundamentally different logics when defining the "essentiality" and "vulnerability" components of criticality, with worrying consequences:

| What the CCA risks doing | What it should do |
|--|--|
| On Essentiality | |
| Defining criticality as what is essential to industry in its current unsustainable status quo, stretching essentiality to cover whatever the European industry currently produces at scale, including substances that sustain overproduction or overconsumption. | Defining criticality as societal essentiality : necessary for health, safety, or the functioning of society, and for which no acceptable alternatives exist, grounded in the European Commission's Essential Use Concept ¹ . |
| On Vulnerability | |
| Invoking vulnerability to shield fossil-dependent production from transition and entrench its currently unsustainable trajectory. | Invoking vulnerability to shield a transformed industry's capacity for delivering on societal essentiality. |
| On assessment: a holistic approach | |
| Criticality cannot be assessed in silos or molecule-by-molecule. It requires two lenses applied simultaneously: <ul style="list-style-type: none">• A value chain lens: evaluating criticality across the full value chain and function context, including downstream products such as textiles and packaging characterised by overconsumption.• A cross-dimensional lens: integrating pollution, climate, and circular economy simultaneously, to ensure advances in one dimension do not undermine another. | |
| Consequence | |
| Looking in the very industrial models contributing to today's environmental and health crises. | Supporting Europe's transition away from those models. |

¹ According to this definition, a use of a chemical or process is essential only if it is (1) necessary for health or safety or critical for the functioning of society, and (2) for which no acceptable alternatives exist. The aim is to accelerate the phase-out of non-essential uses of the most harmful substances, and where they are essential, to provide time for their substitution.

Three Pillars for a Future-Proof Chemical Industry

These pillars reflect commitments that the chemical industry itself co-developed and endorsed through the [EU Chemical Industry Transition Pathway](#). The CCA process must be consistent with those commitments, not a vehicle for retreating from them.



Methodology for Criticality: Proposal of methodological guidelines for a sustainable definition of criticality

The CCA is currently testing a criticality assessment methodology. To prevent risky outcomes from realising, the CCA methodology must:

- **Reorient toward societal value and EU sustainability objectives**, in line with the Essential Use Concept, making them forward-looking, not backward-protecting.
- **Assess resilience at the level of feedstocks and sectors**, including EU dependency on imported fossil and future bio-based feedstocks (not individual molecules or sites).
- **Assess environmental performance and transition alignment** for production sites, using EU benchmarks (ETS benchmarks, plant-level emissions intensity, EU sectoral decarbonisation pathways).
- **Assess processes, not just sites** - the question is not only "which chemicals" but "which types of chemistry", "which use", and "whether acceptable/safer alternatives exist".
- **Define societal value through inclusive and democratic processes**, including civil society representation alongside public authorities (not by industry actors alone).

The solution: Putting Criticality into Action

Definitions and methodologies only matter insofar as they shape real decisions (such as investments and innovation priorities) that ultimately drive the required transition. In practice, a future-proof criticality framework must:

1. **Prevent pollution** by combining upstream process control, chemical safety, production and emissions reduction, and resource efficiency to ensure production remains within environmental limits while supporting essential societal functions;
2. **Reduce consumption and demand** through sufficiency policies targeting overconsumption-driven value chains rather than molecules in isolation;
3. **Transform production** by prioritising safe, low-carbon and high-value chemical functions rather than reinforcing existing fossil-based, high-volume production models;
4. **Deliver on Just Transition**, with mandatory consultation of social partners and attention to workers most directly exposed to the hazardous substances being phased out;
5. **Enforce social and environmental conditionalities for public support** that should become truly enforceable, not declaratory;
6. **Ensure coherence with Green Deal objectives**, so that no substance or site subject to phase-out can be classified as "critical".

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