



## NON-FERROUS METALS INDUSTRY INPUT TO THE UPCOMING ADVANCED MATERIALS ACT

The metals ecosystem is pivotal to Europe's industrial base and plays a critical role in enabling the twin green and digital transitions. Non-ferrous metals (NFM) - from the base metals (aluminium, copper, lead, nickel, tin, zinc) through technology metals (e.g. cobalt, lithium, germanium, vanadium, molybdenum, gallium, bismuth) to precious metals (e.g. gold, silver, palladium, platinum, rhodium) form the foundation of high-tech and clean technologies, e-mobility and the green and digital transitions. NFM are also indispensable alloying elements for a wide range of industrially important alloys including all types of steel. The key characteristics of the EU metals sectors, the challenges faced (including innovation needs) are covered in detail in the Transition Pathway for the European Metals Sectors<sup>1</sup> published by the Commission in March 2025.

For centuries metals have been an indispensable part of the materials innovation toolbox, and this will not change moving forward. Metals will continue to play a key part in future innovation towards the twin transition. Modern society is totally dependent on the uses of metals and metal compounds. Put simply, there is **no twin transition without metals**.

NFM and metal compounds are key inputs into advanced materials (AdMat) value chains. European Metals (formerly Eurometaux) represent the producers, users and recyclers of NFM in the EU. Many European Metals members are engaged in the production and recycling of input materials for AdMat, some are also developing and manufacturing AdMat themselves.

Metals have special and unique properties compared to other classes of material. For example, metals are inherently circular and can be recycled many times without loss of properties. Metals are naturally occurring, are “permanent” and cannot be destroyed. For these reasons, it is important that all lifecycle stages of AdMat are in scope of innovation.

The Advanced Materials (AdMat) innovation agenda has three overarching objectives:

1. speed up materials innovation that supports the Green Deal twin transition, and;
2. move towards circular materials that are safe and sustainable-by-design (SSbD), and;
3. substitute / avoid uses of critical raw materials (CRMs)

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<sup>1</sup> [Transition pathway for the European metals sectors – Internal Market, Industry, Entrepreneurship and SMEs](#)



European Metals fully support the Commission's aspirations on AdMat. From the metals sector perspective however, these three objectives have the potential to be contradictory because #2 and #3 could exclude many metals from innovation activities – metals that have hazardous properties but are used safely; and metals that are considered to be “critical” or “strategic”.

To speed up AdMat innovation while excluding large parts of the periodic table of the elements looks unrealistic. What follows is further explanation and suggestions on how to move forward, with reasoning.

### Our high-level recommendations:

- **Materials specificities** – acknowledge and take advantage of the special and unique properties of metals, alloys and metal compounds, as compared to other classes of material
- **Safe and Sustainable-by-Design (SSbD)** – ensure a pragmatic implementation of SSbD that does not hamper innovation through e.g., excessive burden; excluding hazardous substances that are used safely
- **“Whole lifecycle” approach** – take a holistic view of the lifecycle of Advanced Materials, which properly encompasses innovation needs in all stages and not only the “use” phase
- **Regulatory alignment** – ensure alignment across relevant and related initiatives that are applicable to the Advanced Materials value chain

## 1. MATERIALS SPECIFICITIES

The AdMat innovation agenda is to a large degree a “one size fits all” approach with little recognition of the key characteristics of different classes of materials e.g., metals and alloys, organics and plastics, natural materials. This approach will fall short of its ambition because it neither takes advantage of key characteristics of each material class, nor does it highlight Specific innovation challenges and opportunities within each class.

### Our recommendations:

- Acknowledge “metals specificities” - the differences between metals, alloys and metal compounds, as compared to other classes of material
- Allow flexibility in innovation strategy for different classes of AdMat to take full advantage of unique benefits and also, tackle key challenges for each class of material
- Regard all developments of AdMat equally, whether they be new emerging manufactured materials (high tech materials) or materials that are manufactured / developed from traditional materials (low tech materials)



## 2. SAFE AND SUSTAINABLE-BY-DESIGN

European Metals have closely followed the development of the SSbD assessment framework since 2021 and supports the aspirations of SSbD – to direct innovation on chemicals and materials such that they continually become “safer and more sustainable”. The concept is challenging because it requires the integration of safety-based and life cycle-based considerations, to ensure sustainability along the entire value chain. This requires a transformational change for the whole value chain – as well as a clear and workable process and framework. SSbD also needs a culture and mindset shift in order to be successful, to create a “pull” from all parts of the downstream value chain, as well as a “push” from upstream. The original SSbD framework from 2022 was overly burdensome and focussed strongly on the inherent hazard properties of chemicals and materials. The revised framework from December 2025 is still under evaluation by European Metals and is a clear improvement. It still, however, has the potential to exclude hazardous substances from innovation activities, depending on how it is applied and how hazardous properties are handled. Many of the metals and metal compounds of industrial importance today have certain hazardous properties but are used safely to deliver special and unique functionalities. To target more rapid innovation without the possibility of using these elements will be extremely challenging and overly restrictive for innovation to flourish.

The revised SSbD framework is simplified compared to the original but is generic and stills looks difficult and burdensome for industry to apply routinely, in particular for SMEs which may well not have the necessary expertise in house. It does not deal well with inherently circular materials such as metals. The framework encourages greater engagement of all actors in the value chain but still does not address how sensitive / confidential information could be shared.

### Our recommendations:

- Take a pragmatic approach within SSbD to hazardous substances that are used safely in AdMat value chains (with minimised exposure to humans and the environment)
- Ensure that the inherent circularity is properly accounted for when assessing overall contribution to sustainability
- Create platforms for the secure sharing of sensitive and confidential information between innovation actors
- Monitor the uptake of SSbD in AdMat innovation and facilitate sharing of learnings and best practice
- Ensure the published guidance is suitable for SSbD application in AdMat innovation

## 3. “WHOLE LIFECYCLE” APPROACH

The AdMat innovation agenda has so far had a strong focus on the use phase of AdMat. Greater circularity is also a clearly stated objective, although this came later in the process. All lifecycle stages of AdMat should be in scope with respect to innovation needs.



To take a holistic view of innovation opportunities is particularly important for metals due to their inherent circularity. Furthermore, this can also address strategic dependencies on Critical Raw Materials (CRMs), most of which are metals. CRMs are used because they bring technical functions that are not currently replaceable. There are two ways to address excessive dependence on these materials: i) increase domestic supply (primary and secondary), as covered by the Critical Raw Materials Act (CRMA); and, ii) reduce demand by substitution or thrifting. The AdMat agenda has a strong emphasis on the latter, to be achieved by innovating new materials free of or lean in CRMs. This is unrealistic – most CRMs have a long history of use precisely because today they have no suitable substitutes despite decades of innovation activity to develop such alternatives. In particular, when combining the avoidance of CRMs with the objective of new SSbD materials, much of the periodic table of the elements is excluded, which again is an innovation suppressor.

For metals, alloys and metal compounds there are innovation gaps between the CRMA and the AdMat innovation agenda, which can be filled by taking a whole lifecycle approach to AdMat. For some established uses of metals, there is the need for new and improved methods of sorting and recovery, to reduce / avoid cross contamination. For other new and growing uses e.g., batteries, permanent magnets there is the need for new and efficient recycling methods. Innovation on increased secondary supply has the potential to decrease dependence on *imported* CRMs and is in line with strategic autonomy and circularity objectives.

Other innovation needs for metals exist in other AdMat lifecycle stages, that are in line with EU objectives on strategic autonomy, decarbonisation and circularity. Primary production of metals is energy intensive and presents innovation opportunities on more efficient methods, further electrification, and direct reduction of ores e.g., using green hydrogen.

There is also the opportunity to use advanced methods such as advanced computing, AI and big data to speed up the development of new alloys that are resistant to impurities from recycled streams.

### Our recommendations:

- Ensure that the scope of AdMat innovation includes all lifecycle stages in addition to the use phase
- Address criticality of CRMs through innovation on new and improved recycling methodologies, in addition to substitution in AdMat uses
- Broaden the scope of AdMat to include: input metals produced using new, low carbon primary methods, and alloys specifically designed to be more circular through tolerance of impurities

## 4. REGULATORY ALIGNMENT

The success of the AdMat innovation agenda also depends on the coherence between the Advanced Materials Act and EU's various regulatory frameworks across the raw materials, chemicals, product and waste legislations.



Misalignments and conflicts between these frameworks will hamper innovation through reducing access to parts of the periodic table of elements, and hindering innovation activities of stakeholders through excessive (regulatory and non-regulatory) burden and creation or non-removal of roadblocks such as extended permitting procedures.

The metals value chain is already subject to a wide range of regulations which are relevant for European Metals and its members. European Metals follow these developments and provides input on behalf of the members. Several recent position papers exist, dealing with topics that are relevant to but different from the AdMat innovation agenda. The scope of this paper and the recommendations within is innovation, which is quite different to the scope other position papers authored by European Metals and published [here](#). Rather than repeat points from other relevant papers we instead list those papers here for your detailed examination and active consideration.

### Our relevant position papers:

- Eurometaux Call for an Industrial Accelerator Act to support the European Non-Ferrous Metals Industry<sup>2</sup>; Dec 2025
- Position on the ResourceEU Proposal<sup>3</sup>; Dec 2025 – on access to CRMs
- Circular Economy Act<sup>4</sup> – our input; Nov 2025 – on increasing circularity of metals
- Position Paper on the Simplification of REACH<sup>5</sup>; May 2025 – on aligning chemicals management objectives with other high level EU goals on climate, circularity, criticality
- Critical Raw Materials procurement, recycling & re-use<sup>6</sup>– Eurometaux comments; May 2025 – on access to CRMs
- A European Metals Action Plan Fit for the Energy and Digital Transitions and Europe’s Defence<sup>7</sup>; Jan 2025 – on EU strategic autonomy, and improving competitiveness of the EU metals sector

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<sup>2</sup> [Eurometaux Call for an Industrial Accelerator Act to support the European Non-Ferrous Metals Industry](#)

<sup>3</sup> [European Metals’s Position on the ResourceEU Proposal - European Metals](#)

<sup>4</sup> [Circular Economy Act – our input - European Metals](#)

<sup>5</sup> [Position Paper on the Simplification of REACH](#)

<sup>6</sup> [Critical Raw Materials procurement, recycling & re-use](#)

<sup>7</sup> [European Metals Action Plan Fit for the Energy and Digital Transitions and Europe’s Defence](#)