APAG
Oleochemicals Europe

Position Paper

October 2026

Enabling the bioeconomy transition: The role of mass balance

Scaling of Europe's bioeconomy will require the progressive integration of renewable and circular feedstocks into complex and interconnected industrial value chains. As EU policymakers consider how the use of these feedstocks should be accounted for, verified and communicated, robust chain-of-custody approaches are becoming increasingly relevant to the policy debate.

In the oleochemical sector, dedicated bio-based production processes coexist with integrated facilities that process different feedstocks. Within these complex systems, chain-of-custody models provide a framework for tracing and communicating specified characteristics associated with circular inputs. Mass balance can support this transition by enabling certified renewable and circular feedstocks to be introduced into existing production systems and their specified characteristics to be attributed to eligible outputs in accordance with transparent and verifiable rules.

APAG – Oleochemicals Europe, calls for clear and harmonised EU rules that are consistent with internationally recognised standards and credible certification schemes. These rules should ensure transparency, methodological robustness and a level playing field across sectors. Overly restrictive or fragmented approaches could discourage investment, limit the scaling of renewable and circular feedstocks and slow Europe's transition towards a competitive, climate-neutral and circular economy.

APAG recommends to:

- Ensure clear communication towards actors along the value chain, regulators, NGOs and key stakeholders
- Use claims that are accurate and verifiable
- Apply mass balance within clearly defined system boundaries and process routes that are physically and chemically eligible
- Ensure consistency with existing and evolving certification schemes and international standards
- Establish consistent and harmonised rules to ensure a level playing field across sectors and value chains

The policy challenge: Scaling sustainable feedstocks in complex systems

As longstanding pillar of the European bioeconomy, the oleochemical sector contributes to reducing dependence on fossil resources while supporting the development of more circular and resource-efficient value chains. It plays a key role in supplying sustainable building blocks for a wide range of downstream applications, including personal care, home care, lubricants and industrial products.

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EU Transparency Register n°64879142323-90

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The transition to a competitive and resilient European bioeconomy requires the integration of renewable and circular feedstocks[1], however, the oleochemical industry operates within complex, integrated chemical value chains, where dedicated biomass processes coexist with conventional chemical processes. This dual structure reflects a complexity that is growing in the chemical sector where renewable feedstocks are used in parallel in both historical renewable production units and existing systems in transition toward renewable feedstock. In this context, challenges are faced when ensuring sustainability claims are accurate, verifiable and comparable across sectors.

A tool for support

Robust and credible tracking systems are essential to support the uptake of sustainable feedstocks since they provide frameworks to account for and communicate the contribution of sustainable feedstocks across complex value chains. The integration of chain-of-custody and mass balance approaches in LCA/PCF methodologies is also being currently considered by international bodies, European institutions, and Cefic.

When appropriately designed and implemented, these approaches play a critical role in enabling the transition towards a circular and bio-based economy by addressing structural challenges linked to scaling renewable and circular feedstocks, particularly where physical segregation is not technically or economically feasible. They offer a pragmatic mechanism to integrate sustainable feedstocks into existing production systems, without requiring fundamental redesign of infrastructure. In particular, they can:

- **Facilitate market uptake of sustainable feedstocks** by allowing companies to signal and value their use, even within integrated production systems
- **Enable scalability** across large and interconnected industrial systems
- **Contribute to global emission reduction** by optimising the use of bio-based and circular feedstocks

Moreover, they can enhance efficiency and resource optimisation in the chemical sector. By allowing more flexible use of feedstocks across integrated production systems, it reduces the need for parallel supply chains, avoiding unnecessary duplication processes. The allocation of renewable inputs within existing infrastructures supports the efficient use of resources, minimises operational constraints and facilitates the optimisation of production pathways, including the reduction of material losses and associated emissions.

Key Considerations

- **What is chain-of-custody?**

Chain-of-custody (CoC) is the overarching framework used to track and communicate sustainability characteristics from feedstock through to final products. It helps ensure transparency, traceability and the avoidance of double counting. It aims to provide transparency on how specified characteristics, such as bio-based- where renewable feedstocks are physically present in the product (which can be fully or partially bio-based)[2] - or bio-attributed content - where sustainability characteristics associated with renewable feedstocks are allocated to a product in accordance with recognised chain-of-custody rules - are traced and communicated along the value chain.

[1] Renewable feedstocks are natural raw materials that replenish quickly on a human timescale, while circular feedstocks are recycled or recovered end-of-life materials reintroduced into production

[2] APAG (2026) The EU Biotech Act II: enabling bio-based chemicals

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- **What is mass balance?**

Mass balance is a CoC model recognised by ISO and certification schemes such as ISCC, ISCC+, RedCert, RSB. It tracks the amount of sustainable or recycled feedstock entering a supply chain and allocates those sustainability claims to the final products, according to the selected implementation method.

Different approaches exist to calculate, allocate and track specified characteristics such as bio-based or recycled content, across complex value chains. For instance, some certification schemes use the term "credit mass balance" when referring to mass balance systems were specified characteristics are represented as credits in well-defined system boundaries and can be attributed to selective outputs in established allocation rules[3]. This terminology is particularly relevant to the free attribution and credit transfer approaches discussed in this paper.

APAG has analysed the different methods used to implement mass balance systems. Among these, free attribution and credit transfer have received particular attention due to their role in supporting the uptake of renewable and circular feedstocks. These two approaches differ in how specified characteristics are allocated and communicated, both seeking to enable the recognition of sustainable feedstocks within complex value chains.

In this position paper, APAG is not prescribing a single preferred approach, but rather presents their key features, limitations and provides recommendations for each one of them.

Free attribution

According to the ISCC, free attribution is a mass balance implementation approach. Here, specified characteristics originating from certified inputs (e.g., bio-based feedstock) can be flexibly attributed, within defined production systems, to one or more outputs of a production process. This term is also referred to as "non-proportional attribution" by ISO standards.

- **Example:** A factory processes 1,000 kg of bio-based feedstock alongside 9,000 kg of fossil-based to produce several products. Under the free attribution approach, the circular characteristics associated with the 1,000 kg of bio-based feedstock allow the corresponding amount of final product to be marketed as 100% bio-attributed even if the molecules physically present in the final product is not fully bio-based.

However, in this system, specified characteristics attributed to the final output cannot exceed those generated by the certified feedstock entering the system, meaning if 1,000 kg of certified bio-based feedstock enters the production system the producer cannot attribute more than the equivalent of 1,000 kg of attributed content across its outputs.

This approach offers flexibility in complex industrial processes and can support the development of high-value applications for sustainable materials without requiring separate production lines. Nonetheless,

[3] ISO 2205-2:2025

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APAG considers that free attribution should be applied where it is physically and chemically eligible between input and output, taking into account the technical characteristics of the system. Including:

- **Well defined system boundaries, allocation rules and verification methods** to ensure traceability, avoid double counting.
- **Be consistent** with recognised standards and certification practices
- **Accurate and verifiable claims** that clearly explain the nature, scope and limits of the attributed sustainability credits
- **Use of free attribution as a conversion tool for the industry** to support the progressive integration of renewable feedstocks into industrial processes.

Credit transfer

ISO recognised the credit method as a mass balance tracking approach, while ISCC, ISCC+, RedCert, RSB further operationalises this framework through implementation options such as free attribution and credit transfer. Credit transfer, is a multi-site mass balance option that allows a company to transfer biomass-derived credits digitally between certified sites, rather than physically moving certified material from one site to another.

- **Example:** A facility located in country "A" processes bio-based feedstocks and generates credits. It transfers these credits to another company or location within the network, allowing the receiving facility to claim the sustainability benefits for its products without needing a physical shipment of the material.

Here, specified characteristics attributes may be decoupled from physical material flows and transferred between sites of the same company, allowing a company to claim the use of sustainable inputs based on equivalent credits generated elsewhere. This approach may provide additional flexibility in complex and geographically dispersed supply chains.

While credit transfer may support efficiency and scalability in some supply chains, the need for clearly defined limits and safeguards to avoid unintended effects was highlighted. For instance, the perception that sustainability efforts in one location are being attributed to production sites elsewhere. This may reduce the trust in claims by key actors across the value chain. However, if appropriately regulated and transparently applied, credit transfer can contribute to improving efficiency and optimise value chains.

APAG therefore recommends:

- **Clearly defined rules** on where and how credits can be generated and used
- **Transparency** on the geographical and organisational scope of the credit transfer
- **Robust safeguards to prevent double counting or misinterpretation**

Risk management and safeguards

The distinction made above between free attribution within a production system and credit transfer between sites is critical to ensuring transparency and consistent communication. The two approaches differ in how specified characteristics are linked to physical material flows, production sites, and system

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boundaries. Claims should therefore clearly explain which approach has been used and the scope within which the relevant credits have been generated and attributed, particularly among key players along the value chain.

Since mass balance is a reliable methodology that can support transparency and consistency, its credibility depends on how it is applied in practice. As with any approach, risks may arise if system boundaries, allocation rules or methodological assumptions are unclear or inconsistently implemented. These are not specific to mass balance approaches or to the oleochemical sector but may be particularly relevant for approaches where the link between inputs and outputs may be less directly visible.

Hence, clear and consistent use of this terminology is essential for transparent communication with customers, regulators and other stakeholders, helping to avoid misunderstandings and maintain confidence in these approaches. Therefore, to enable the bioeconomy transition, APAG stresses the need to:

- Ensure clear communication towards actors along the value chain, regulators, NGOs and key stakeholders
- Use claims that are accurate and verifiable
- Apply mass balance within clearly defined system boundaries and process routes that are physically and chemically eligible
- Ensure consistency with existing and evolving certification schemes and international standards
- Establish consistent and harmonised rules to ensure a level playing field across sectors and value chains

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