Background

BIR, the Bureau of International Recycling, is the world federation which has been supporting the interests of the recycling industry on an international scale since 1948. As the largest international recycling federation, we represent over 30,000 companies across 70 countries, through 37 national associations and over 1000 direct corporate members. BIR covers eight material streams including ferrous and non-ferrous metals, paper, textiles, plastics and tyres/rubber, as well as electrical/electronic equipment.

BIR’s mission is to promote materials recycling, free and fair trade of recyclables in a sustainable and competitive world economy, the environmentally sound management of resources, and the use of recycled materials worldwide. In this respect, BIR would like to convey its key messages in relation to the growing interest in chemical recycling.

Our position

Summary:

As recycling technology advances, it brings both new opportunities and challenges for achieving a greener environment and a circular economy, where we try to reuse materials as much as possible. Chemical recycling needs careful consideration and well-informed, market-based policies to ensure that it complements rather than competes with traditional recycling methods. This position paper highlights the need for clear definitions (I.), rigorous impact assessments (II.), elimination of hazardous chemicals in products (III.), and innovation in recycling technologies (IV.). These steps, together with a verified recycled content (V.) and investments in innovation (VI.), are crucial to ensure that chemical recycling can effectively complement mechanical recycling in managing end-of-life materials, particularly plastics. Chemical recycling should therefore be used only for hard-to-recycle, end-of-life plastics, recognizing that mechanical recycling remains the preferred method on a large scale.

I. Need for harmonized definitions and well-informed, market-based policies

Given the many uncertainties when it comes to the impacts of chemical recycling since it remains a nascent technology, it is essential to exercise caution and establish an appropriate policy framework together with the introduction of a harmonized definition of chemical recycling that excludes fuel production. Plastics recycling involves the process of transforming end-of-life plastics into marketable commodities that are used in manufacturing. When materials are instead utilized for energy, fuel production, or backfilling operations, those processes do not qualify as recycling. Policies that intend to encourage recycling should be careful to exclude plastics-to-fuel conversion and plastics-to-energy as these processes are not considered recycling.
Policies should ensure independent evaluation of the recycling outputs, specifically their chemical composition. Before promoting chemical recycling technologies, a detailed assessment of their environmental and health impacts (e.g. of hazardous substances) at industrial level is vital.

II. Chemical recycling as a complement to mechanical recycling

The type of the materials should determine the type of recycling used for end-of-life products. **Chemical recycling should be used only for materials that mechanical recycling cannot efficiently or economically process.** Once uncertainties are addressed, non-mechanical recycling may help manage materials that mechanical recycling cannot process, such as degraded durable plastics and certain plastic films, by breaking down plastics into their original components. However, it should not be used for plastics destined for mechanical recycling facilities as its high energy usage makes it unsustainable and could also act against the efforts made in waste prevention and reuse. When no mechanical recycling technology is available, chemical recycling must demonstrate a lower carbon footprint than producing new resins. **BIR also opposes the labelling of non-mechanical recycling as "advanced recycling" as it misleadingly implies a technological hierarchy that places non-mechanical processes above mechanical recycling methods.**

III. Addressing climate impacts

Some chemical recycling processes that are currently available produce more greenhouse gas (GHG) emissions than primary production using fossil fuels during the production process. For instance, pyrolysis, a common technology used in chemical recycling, results in significantly higher GHG emissions and material losses compared to mechanical recycling. Therefore, a strong method to calculate the climate impacts of chemical recycling must be developed. This should cover all emissions from the process, as well as overall energy usage and incineration of recovered hazardous waste. Furthermore, incentivizing mechanical recycling, which is generally considered the lower carbon option, would enable it to compete with lower-priced primary plastics and make the process more attractive for investment.

IV. Designing for mechanical recycling and removing hazardous substances

BIR strongly supports product design for recycling; therefore, the presence of chemical recycling in the marketplace must not eliminate the need for such design. Policies should focus on eliminating hard-to-recycle plastics and incentivize the design of plastics for reuse or mechanical recycling, given its technological maturity and lower environmental impact. **Materials destined for recycling must not contain harmful chemicals** to prevent increased exposure to hazardous substances and to avoid any substances or materials that could hinder the recycling process, such as adhesives. Especially difficult-to-recycle products, such as multilayers (laminated plastics), will need to be made from materials that are non-toxic and redesigned for increased recyclability. **Multilayer plastics with a very heterogeneous composition make recycling impossible or commercially unviable.** Therefore, sustainable designs for such layered materials should be a key part of the strategy to reduce plastic packaging waste. Design for recycling enables material recovery and thereby reduces the need for new resources.
V. Recycled content needs proper verification

A method that determines the recycled content in plastics based on traceability throughout the supply chain is essential to prevent carbon leaching (e.g. production of fuels instead of new materials) and greenwashing. The claimed recycled content is often not reflecting the actual percentage of each kind of plastic in products. It is therefore necessary that physical connection between the input and output material is maintained, accurately reported to competent authorities and verified before claiming on products. Chemical recyclers should refrain from misusing mass balance accounting principles to fulfil the recycled content objectives.

VI. Emphasis on innovation while recognizing potential limitations

The global recycling industry is constantly innovating, but policy-makers must recognize current limitations to certain types of non-mechanical processes, such as chemical recycling, when implementing broad-range policies. At present, chemical recycling processes are extremely energy-intensive such that one of the only economically feasible ways is to buy waste of negative value. Investing long term in the innovation and improvement of recycling methods and technologies is vital for creating recycling processes that are more sustainable, capable of processing a broader variety of materials, and less reliant on non-renewable resources. However, new emerging technologies and innovative approaches in chemical recycling need to be evaluated on a case-by-case basis owing to ongoing challenges such as toxic byproducts and limitations on applicable waste streams. Therefore, prior to offering incentives for any new technology, like chemical recycling, there must be evidence of its effectiveness in addressing concerns related to contaminated and deteriorated plastics, including additives in plastics and hazardous materials in tyres and textiles.

BIR is prepared to collaborate with policy-makers and authorities to boost recycling rates and contribute to greater circularity. The most pressing challenge is currently the ongoing negotiation processes of developing a global plastic pollution treaty aimed at ending plastic pollution. BIR is actively engaged in these discussions, advocating for recycling as a part of the solution. We emphasize that if strategies such as chemical recycling are to be part of the treaty, they must be approached with caution.