New product priorities for Ecodesign for Sustainable Products

A review on the draft study published by the Joint Research Center (JRC)

EuRIC

European Recycling Industries' POSITION PAPER
May 2023

Position of EU Recyclers on new product priorities for Ecodesign for Sustainable Products Regulation

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The European Recycling Industry strongly welcomes the focus placed by the European Commission (EU COM) on sustainable production – for a wide range of products – through the recently published proposal for a regulation on Ecodesing for sustainable products [COM(2022) 142]. This shows the EU COM's commitment to set ambitious measures to boost the circularity of the different end-use and intermediate product groups prioritized by the proposal. This is now more important than ever, especially considering that only around 12% of material resources come from recycled materials (EUROSTAT). This is a testimony that the European economy remains mostly linear and that there is significant room for improvement (JRC, 2023).

EuRIC represents the European recycling industry at an EU level. Gathering most of national recycling federations from EU/EEA Member States, the Confederation represents about 5.500+ recycling companies – from market leaders to SMEs – generating an aggregated annual turnover of about 95 billion € by treating various waste streams (e.g., metals, plastics, textiles, e-waste including batteries, tyres, paper etc.,).

This paper is divided in different streams and want to outline position of the European recycling industry on the ESPR proposal and is meant as a response to the EC open public consultation. EuRIC looks forward to working closely with the EU COM and the co-legislators to ensure the introduction of harmonized rules on the different end-use and intermediate product groups that promote the Union's circular economy targets. The recycling industry stands ready to provide support in the development of delegated acts and implementing provisions.

General Comments

Importance of proper design - Product design plays an instrumental role in bringing together the various steps of a product's lifecycle. Proper design does not only allow for products to be easily repaired and reused, but it also facilitates disassembly and recycling at the end of their useful life, ultimately creating a closed loop of materials where possible.

Amongst the different policy tools that aim at further closing the loop of the different value chains, the most effective one has been found out to be the introduction of recycled content targets. Such targets undoubtedly help to further pull the demand for recycled materials. Recycled content targets also proved to be a strong eco-design driver since to be able to meet them, products must be recyclable in the first instance. In addition, substituting extracted raw materials with recycled raw materials reduces pressure on the environment, including on biodiversity.

Role of the ESPR - The ESPR can play a pivotal role in setting a proper legislative framework where ecodesign requirements will no longer be considered as a niche but as the main practice. Furthermore, the framework has enormous potential in contributing to the EU's strategic autonomy by facilitating the recovery of critical and strategic raw materials which are so far mostly imported from other regions that are or can become unreliable soon. Yet, it is important to bear in mind that for most critical raw materials (CRM), it is not the lack of technology that hampers their recovery but the lack of economic viability. The costs of recovering them is far higher than the price of extracted CRM available on the market. Thus, despite the geopolitical risks of supply disruption, there is no incentive to scale up pilot projects which would go bankrupt immediately.

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Prioritization - Regarding the prioritization of products, EuRIC strongly supports the initial assessment made by the European Commission that led to the identification of 12 end-use and 7 intermediary products that will be suitable for first action under the ESPR, namely:

- End-use products: Textiles and Footwear; Furniture; Ceramic Products; Tyres; Detergents; Bed Mattresses; Lubricants; Paints and Varnishes; Cosmetic Products; Toys; Fishing Nets and Gears; Absorbent Hygiene Products;
- Intermediary products: Iron and Steel; Non-Ferrous Metals; Aluminium; Chemicals; Plastic and Polymers; Paper, Pulp Paper and Boards; Glass;

EuRIC would like to highlight the importance of prioritizing tyres, base metals and textiles in the very first ESPR working plan.

Data gathering – In regard to the JRC study, EuRIC would like to point out that while it is evident that a huge effort has been made in terms of data gathering for the different product groups, some of them require more in depth and complex analysis. This is typically the case for tyres as will be explained later in this document.

Digital product passport – Although not the primary objective of this public consultation EuRIC would like to stress the importance of the correct implementation of the Digital Product Passport (DPP).
EuRIC believes that the DPP must provide clear, structured, and accessible data relevant to the circularity and sustainability of the different end-use/intermediate product groups. It can prove to be very useful, in particular, for streams such as textiles and tyres for which materials recovery have an important margin for improvement. The DPP will not only help consumers make informed choices and public authorities perform better checks and controls but will also provide information about the materials contained in a particular product. Additionally, it will offer information about any repairs that may have taken place, how to extend the lifetime of the product and most importantly useful data for actors dealing with the aforementioned streams at the end of life.

In the tyre recycling industry, the idea of a DPP is strongly supported as this industry is already a frontrunner in this regard. Existing technology like Radio Frequency Identification (RFID) is already being used by some manufacturers and it has proven to be a relatively cost-effective way of identifying tyres throughout their lifecycle, including recycling. However, implementation of such a system at end-of-life is still at its infancy and there are many aspects open for discussion (incl. which information and who will have access to it), where collaboration across the value chain is crucial. Also, the level of information required at different steps of the value chain may differ and hence needs to be adapted (e.g., automotive producer, consumer, tyre collector, retreader, recycler etc.,).

Nevertheless, if the information provided by RFID includes chemical composition (grouped in categories: e.g., silicate content, PAH content and other chemicals for which restrictions exist), recyclers may use this information to anticipate the ever-changing regulatory framework restricting substances of concern that are present in products incorporating recycled rubber from end-of-life tyres (ELT). Therefore, a DPP could be an appropriate way to perform segregation of tyres at end-of-life according to chemical composition and final product destination of the recyclates (e.g., applications used in construction, sport grounds, tyre or automotive parts among others). However, whether segregation of tyres is something which might be economically viable and the role EPR schemes may play in this regard, still needs to be assessed. In addition, the DPP and proper labelling can also support tyres' retreading which can thus be reused as well as give an edge to those manufacturers incorporating recycled content, be it for rubber or other materials (e.g., carbon black, steel, textiles …) to support businesses that create value through circular models, sustainable product production and for consumers to make more informed purchasing decisions.

The textiles reuse and recycling industry, in addition to RFID, would also like to support the Near-field communication technology in conjunction with an open database. It is noteworthy to mention that the level of information needed will greatly differ between the textile reuse and textile recycling industry. For example, important information for the reuse industry includes brand name, year of production and certificates, recommended retail price, and for the recycling industry it would include, for instance, material composition and presence of chemicals. EuRIC welcomes the introduction of a DPP for textile products to enhance traceability and transparency in the textiles value chain.

Required link to REACH revision for all streams - If the EU wishes to promote circularity, the most efficient way to achieve this would be to prevent hazardous chemicals at the design stage in products. Such a decision would enable producers to recycle end-of-life products and reuse them again and again.

The complex waste stream "rubber" needs special consideration to increase the number of products incorporating this material. Therefore, an ambitious EPSR proposal for all the shortlisted groups is key to ensure that future products are safer for the environment and more recyclable than they are today.

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Tyres Product Group

Introduction & scope

The ESPR requirements – in the case of tyres - should be applied especially to passenger car tyres, but also extended to tyres from pick-up trucks, lorry/truck tyres, motorbike tyres and off-the-road (OTR) tyres.

Circularity requirements

Life cycle assessments (LCA) are important to make policy decisions. However, the lack of LCA studies should not be used as an excuse to delay incorporation of recycled materials if technical industry specifications are met.

The tyre recycling industry supports the use of the life cycle assessment (LCA), a methodology for assessing environmental impacts associated with all the stages of the life cycle of a commercial product, including recycling. However, there is a lack of comprehensive LCA studies taking into consideration the whole life cycle of tyres, from resource extraction, design, use, recycling and use of recycled content in new products and the life cycle of those products. On top, the lifetime of a tyre is significantly shorter than that of the products made from its mechanically recycled material (a few years vs decades).

On the contrary, there is enough LCA evidence to support the waste hierarchy within the Waste Framework Directive and a prioritization should take place in the following order reduce, reuse/retreading, mechanical recycling, chemical recycling and incineration with energy recovery and incineration without energy recover. Despite illegal landfill of tyres might occur, this is rather marginal in EU as landfilling is forbidden and 95% of the ELTs in EU are collected and treated. Yet, with an enormous untapped potential because for every tyre that is mechanically recycled there is still one tyre that gets incinerated with energy recovery in EU.

In brief the following aspects should be considered for tyres:

- **Chemical content:** It needs to be highlighted that although tyres meet current REACH requitements, microplastic released from tyres are the biggest source and both the environment and human health are constantly exposed to these microplastic during the use phase. Products and applications using recycled rubber have stricter requirements than tyres for REACH compliance. For this reason, information about chemicals along the whole tyre value chain will have a huge impact for this product, where the non-toxicity of the chemicals in the manufacturing of tyres is of utmost importance. On top, due to technical limitations for high close-loop targets (max. 10% for rubber), the tyre recycling industry needs to create open circular solutions using rubber from ELT and, despite the many applications where rubber could be put at use, these solutions remain limited because of the lack of a holistic REACH-compliancy approach across the whole value chain.

  For instance, the presence of Polycyclic aromatic hydrocarbons (PAH) should be prohibited at the tyre level at concentration higher than 1 mg/kg (0,0001% by weight of this component for the rubber fraction) of any of the 8 PAHs[1].

[1] Benzo[a]pyrene (BaP) – CAS No 50-32-8, Benzo[e]pyrene (BeP) – CAS No 192-97-2, Benzo[a]anthracene (BaA) – CAS No 56-55-3, Chrysen (CHR) - CAS No 218-01-9, Benzo[b]fluoranthene (BbFA) – CAS No 205-99-2, Benzo[j]fluoranthene (BjFA) – CAS No 205-82-3, Benzo[k]fluoranthene (BkFA) – CAS No 207-08-9 and Dibenzo[a,h]anthracene (DBAhA] – CAS No 53-70-3

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Although, extender oils used in tyre production are REACH-restricted according to entry 50 of ANNEX XVII[2]. PAHs are still found as extractable impurities in carbon black (variable levels depending on the type of carbon black manufacture). Different processes are currently used to manufacture carbon black leading to different physical chemical properties (primary particle size, surface area, polycyclic aromatic hydrocarbons levels). These differences have an impact on the toxicity and uses. Especially, the presence of PAHs in the carbon black, not yet REACH-regulated, negatively impacts the use of the recycled rubber from end-of-life tyres (ELT) and hampers the circular economy of this material, independently of whether the tyre is recyclable.

- **Durability:** all tyres put on the EU market for passenger cars and commercial vehicles should be designed to be retreadable. This should also apply to non-EU imported tyres. Furthermore, the viability of a retreadable business model is closely related to tyre dimensions. In the passenger car sector, there are currently several hundred passenger car tyre dimensions, this number of dimensions must be urgently reduced. The permitted deviation, for example, in the diameter of a tyre, as well as in the tread width can currently amount to several centimeters. This negatively impacts on tyre reuse due to their uncompetitive cost vis-a-vis new tyres.

- **Recyclability:** all tyres should be able to be mechanically recycled under the current state-of-the art technologies. Attention should be paid to tyres containing sealants to make them puncture-free or foams for noise-reducing purposes as those tyres are impossible to sort from normal tyres at end-of-life and can simply not be recycled. Furthermore, when these ELT make it into the recycling stream, they contaminate the recycled material and cause fires at recycling facilities. This issue should be investigated from the fee modulation perspective to incentivize ecodesign and prevent these tyres from making it into recycling facilities.

- **Recycled content:** currently, there is no obligation for the automotive industry, the biggest consumer of rubber, to uptake recycled rubber. Despite it is a technological challenge which needs to be acknowledged because rubber is not plastic, it is proven that under the current start-of-the-art technology a maximum of 10% of recycled rubber for tyres and 20% of recycled rubber for car frame original equipment manufacturer (OEM) applications can be achieved. Due to the technical limitations of closed-loop, mandatory recycled content and green public procurement should be expanded to other products capable of using recycled rubber in an environmental-sound manner in comparison to other alternatives (e.g., rubberized asphalt) and should foremost support and incentivize existing streams and foster innovation and investments in these areas.

Strategic autonomy

Circularity and strategic autonomy in the EU go hand in hand with reducing dependency from raw materials. It is often forgotten that tyres are not only natural rubber (17%) coming from Asia and until 2023 a critical raw material, but also synthetic rubber (24%) sourced from Russia, steel (12%), textiles (4%). The costs of extracting all raw materials (not only natural rubber) should be taken into consideration and this is also not properly factored in the ESPR prioritization exercise from the JRC.

Role and target substances of concern

The JRC draft study touches upon key matters such as natural rubber criticality, retreading, recyclability, recycled content. However, several very important issues are missed. This includes, especially under the ESPR framework, the link to REACH (including substances of concern in tyres) and, more importantly, the link to the circular economy of the rubber contained in tyres. If the tyre industry wants to improve the

[2] From 1 January 2010, extender oils shall not be placed on the market, or used for the production of tyres or parts of tyres if they contain: — more than 1 mg/kg (0,0001 % by weight) BaP, or, — more than 10 mg/kg (0,001 % by weight) of the sum of all listed PAHs.

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circularity of their products and contribute significantly to the circular economy; rubber also needs to find a market in other applications than the tyre sector (e.g., construction, leisure, agriculture …).

When it comes to defining circularity requirements for tyres, we agree that tyres must be able to be recycled under the current state-of-the art technologies, and recyclability is an aspect well-mentioned in the JRC draft report. However, we should keep in mind that the close loop for tyres is limited.

Therefore, if we want to have a competitive Europe and be efficient in the use of resources, we do need to think where rubber -the major component of tyres- will be put at use in other applications and link those possible uses to tyre design if required. In essence, the selection of the current raw materials in rubber should be linked to the future applications in which these recovered raw materials will be used. We are not talking about compromising tyre safety to create a rubber hose with recycled content, but work on the concept of greener tyres for a better environment in the first place and the possibility of more recycling by substituting substances of concern with non-toxic alternatives.
Concerning the chemical content of recycled rubber, it is important to have in mind that tyre recyclers have a strict selection for tyre intake and do not perform any chemical modification of the materials present in ELTs. Recyclers mainly perform a separation into three main components: rubber granulates and powders, steel and textile fibres. Therefore, the chemical composition in the rubber granulate from the end-of-life tyre stream is the same as the rubber in the original tyre. The versatile properties of rubber are re-used in new applications, not related to tyres.

In a circular economy context, we part from a tyre, a product meeting REACH specifications which is made from rubber among many other raw materials. Rubber is not plastic, once rubber is going through a chemical process called vulcanization, it is hardened and less susceptible to deformation. This process is necessary to achieve improved elasticity, resilience, tensile strength, viscosity, hardness and weather resistance.

Because of this chemical process, rubber recycling presents a bigger technical challenge than plastic and closed loop, although possible to a certain extent (see section 3 defining circularity requirements), remains a technical challenge. Therefore, to use very efficiently the many valuable raw materials contained in tyres, recyclers do apply an open loop approach. Rubber granulates and powders obtained from processed ELT, from which steel and textile have been removed and employed in other industries, are used in many different applications across different sectors (automotive, construction, sports and leisure, agriculture …). These applications (e.g., moulded objects like rail construction, noise and vibration reduction, animal welfare …, asphalt roads, running tracks …) make good use of the properties of improved elasticity, resilience, tensile strength, viscosity, hardness, weather and wear resistance.

Rubber from ELT substitutes for the use of raw materials in new products and this represents an efficient use of the resources extracted to make tyres, while at the same time benefiting the environment. However, the REACH-compliance of recycled rubber in the new products needs to be reassessed because REACH deals with the regulations that were created to improve the environment and protect human health, and those are product specific.
Therefore, due to the constraints for big closed-loop ambitions of mechanically recycled rubber due to both technical restraints and lack of policy measures (e.g., mandatory recycled content, green public procurement…), alternative markets for recycled rubber remain limited. Especially, for articles supplied to the general public where REACH is more restrictive than for tyres (e.g., PAHs)

With the chemical strategy for sustainability (CSS), raw materials extracted from recycling need to grant the same level of protection to the environment as those coming from virgin sources. In the case of rubber, it needs to be emphasized that tyre recyclers using mechanical technologies do not conduct any chemical transformation of the rubber. The competitive disadvantage against virgin rubber in other

applications than the tyre industry, comes from the fact that recycled rubber contains those additives used by the tyre manufacturers. These additives are REACH compliant when used for tyres. Surprisingly, when these tyres are recycled, and the rubber is substituting for virgin rubber in other applications, these additives present in recycled rubber might render the recycled product not REACH-compliant (e.g., PAHs present in the carbon black), because is sourced from ELT.

Science-based evidence has proven that the toxicological effects of chemicals in rubber articles do not depend on the quantity of chemicals present in the article, but on the quantities that migrate from the contact area of the article to the human body through the skin and to the environment. However, measuring total chemical content is still used to establish the risk through legislation, with stricter legislation in terms of total content, less tyres are being recycled and more incineration and exports of ELT are taking place. Therefore, a migration approach determining risk should be prioritized over the hazard approach based on total content.

Chemicals present in (recycled) rubber granulate are firmly bound and their migration should not be assessed under unrealistic conditions. For example, within the framework of the EU Commission 's review of current PAH limits, hazard-related, migration- and emission-based measurement methods must be implemented at the EU level to avoid jeopardizing the environmental benefits of tyre recycling and foster a linear economy and incineration, together with other low-energy efficiency processes that only return a small fraction in comparison with the properties of recycled rubber- either as chemicals or sole energy.

A migration approach for restriction instead of total chemical content is a way forward for a science-based circular economy and support end-markets for recycled rubber (e.g., tiles, skin-contact articles …).

Nevertheless, as the argumentation above on migration is rather a sensitive one among policy-makers, without high close loop targets for recycled content in tyres, EuRIC is of the strong opinion that early - and strict - screening of the substances meant to be used in tyres and linked to the circular economy of rubber in subsequent applications is of paramount importance. So, those substances of concern that are not essential for tyre safety and performance should be restricted (e.g., PAHs in carbon black).
In the end, be it for tyres or other streams, one of the main issues posing problems for the environment -both during product use phase and after recycling- already occur at design. PAHs, for example, is something you don't need to have in your tyres. Heavy metals like Pb or Cd, can also be avoided at tyre design. A quinone 6PPD, very famous for causing death and sensitivity in different salmon populations in North America can also be avoided as already done by some tyre manufacturers.

Again, mechanical tyre recyclers do not perform any chemical modification of the tyre and it is intrinsically the same as the original product placed on the market through other REACH compliancy regulations, it is imperative to create a link between ESPR and future REACH revisions.

So, that already at tyre product level:

- required hazard information of substances in the lowest tonnage range is available directly from tyre manufactures by a link to the digital product passport
- Risks assessments are required for non-threshold substances used in tyres
- Safety assessments already at tyre level do take combination/cocktail effects of the many different chemicals present

Therefore, an increased communication in the supply chain where:

- Recyclers should be considered as downstream users of the materials contained in tyres

- EU-policies protect EU tyre manufacturers and non-EU tyre manufactures cannot freely use non-regulated substances in EU to produce tyres imported to EU
- The concept of non-essential use of chemicals in tyres could at least be determined by the fact that a chemical is not present in a tyre with the same function

These requirements can become an essential enabler of the circular economy, as material cycles using virgin/recycled rubber will be clean(er) from the start and worker exposure to SVHCs in the waste sector as well as the potential contamination of recycled materials or the need for resource-intensive decontamination processes would be prevented.

In addition, the evaluation of carbon black expected by 2025 in the Community rolling action plan (CoRAP) needs to be prioritized to avoid PAHs in tyre-recycled materials.

Policy coherence

In terms of policy coherence with product-specific and horizontal legislation, the environmental performance of tyres is largely covered under several legislations (e.g., Commission proposal for Euro 7). However, no legislation in place really puts focus on tyre recycling.

Recycled rubber should be included in the revision of the ELVD and 3R approval, at same time that tyre production and recycling, and applications containing recycled rubber are linked to the new revision of REACH.

Furthermore, the circular economy of tyres demands a Waste Shipment Regulation that prevents the exports of unprocessed end-of-life tyres (ELT) out of the EU. Otherwise, unless European policies begin to promote tyre recycling, tyres might find a linear economy being incinerated with or without energy recovery out of the EU. Exports out of the EU should on the contrary be permitted to processed ELT in the form of rubber granulates or powders achieving the required quality to be used in new applications, substituting other raw materials (incl. carbon black, steel and textiles outputs).

To scale the circular economy of tyres, accelerated work on an EU-wide end-of-waste for rubber granulates and powders coming from ELT is necessary. EoW already exists in different Member States creating an uneven level playing field.
EU harmonized EoW criteria will firstly ensure that trade across European borders happens normally in equal conditions and with equivalent opportunities across borders. It will also reduce the administrative burdens associated with trading raw materials from recycling. Secondly, and even more important, it would ensure that the material is accountable for safety and quality criteria. Many regulations, like the Declarations of Performance for construction products, or the REACH restriction of chemical substances only apply once the material has ceased to be waste. This will be not only an environmental gain but also a market penetration asset.

Textiles Product Group

Introduction & scope

Textiles have on average the fourth highest life cycle impact on the environment and climate change, after food, housing, and mobility (EEA 2019). Moving towards a circular textile production which includes textiles that can be used longer and are easier to be recycled can significantly decrease those impacts.

The purpose, use and design of textiles vary greatly between the various product categories which is why it is important to have a broad and detailed range of product categories included in the scope of potential delegated acts for textiles. Therefore, we support the inclusion of the previously identified textile product groups: (1) apparel, (2) home/interior textiles (e.g., bed linen, towels, tablecloths), and (3) footwear.

Circularity Requirements

As laid down in the EU Strategy for Sustainable and Circular Textiles, extending the life of textile products by using eco-design criteria is the most effective way of significantly reducing their impact on the climate and the environment. EuRIC therefore calls for:

- Setting durability requirements for all textiles,
- Setting recyclability requirements for all textiles,
- Incorporating recycled fibre-to-fibre content into all new textiles.

- **Durability requirements:** Extending the lifetime of a textile is of utmost importance to reduce its environmental impact. For EuRIC, durability means that a textile lasts longer without major deterioration and minimum maintenance while keeping its original function. Naturally, durability expectations vary per individual item; outdoor wear is expected to last for over five years while underwear is expected to last around three years (WRAP Sustainable Clothing Guide 2017). Durability furthermore depends on the design, product and manufacturing choices and the use phase of the textile.

- **Recyclability requirements:** Another important aspect of sustainable textile design is its recyclability. It is largely determined by the used recycling technology (e.g., mechanical, chemical or thermal recycling), the fibres and chemicals used during the production process and the subsequent sorting process. The introduction of recyclability requirements for textiles should be considered under readily available current technology, even though it is expected that innovative fibre-to-fibre technologies will substantially expand their capacities in the coming years (McKinsey &Company 2021).

- **Recycled fibre-to-fibre content incorporation:** Lastly, EuRIC advocates for the introduction of mandatory recycled content targets for textiles whereby recycled content means that a certain percentage of a recycled textile fibre from post-consumer textiles is put into a new textile and should be differentiated from the incorporation of other recycled materials (e.g. rPET) into a new textile. Setting minimum fibre-to-fibre recycled content targets could stimulate the development of sorting and recycling technologies (OVAM 2021), and has an overall large potential for great environmental improvement.

EuRIC strongly advocates for balancing the various ecodesign principles in a proportionate way as certain trade-offs will occur. For example, the inclusion of recycled content or the design for recyclability may hinder the design for durability and vice versa. Nevertheless, introducing codesign principles such as design for durability and recyclability as well as the inclusion of post-consumer recycled content is of utmost importance to move away from a linear economy for textiles. As highlighted in a recently published study commissioned by EuRIC Textiles, reuse followed by recycling have a much smaller environmental footprint than producing new textile items and therefore remain the best environmental options to treat the large amounts of textile waste.

Policy coherence

In terms of policy coherence there is currently no specific legislation in place that puts a focus on textiles reuse and recycling. The EU Strategy for Circular and Sustainable Textiles which was published in March 2022 aims to change that by putting many ambitious actions forward including mandatory performance requirements for the environmental sustainability of textile products and a Digital Product Passport for textiles with information requirements on environmental sustainability.

Metals Intermediate Product Group

Introduction & scope

Metals are the backbone of clean energy infrastructure and technologies, but their mining and processing generates significant carbon emissions (CO_2), posing a significant burden to our terrestrial sphere. Mining activities – of ores and concentrates - have been repeatedly associated with loss of biodiversity, soil erosion and contamination of surface water, groundwater and soil. It is also noteworthy to mention that in many countries, mining companies are expected to adhere to rehabilitation and ensure that the area mined is eventually transformed back into its original state. However, violations of such rules are quite common.

The production of base metals in a sustainable manner is now more important than ever, especially since their demand is forecasted to increase at an exponential rate, in the coming decades. A study carried out by KU Leuven (2022), shows that this is particularly the case of metal such as aluminium, copper, nickel, cobalt for which the expected demand is expected to reach 18Mt, 5Mt and 0.6Mt respectively by 2030 (**Figure 1-4**). Regarding steel, demand in 2021 grew by a staggering 15% from the 2020 levels (132.2 Mt).The associated emission from the production of the above-mentioned metals is equivalent to 18t CO2/ton for aluminium, 4.8t CO2/ton for copper, 18t to 70 CO2/t for nickel and 38t CO2/t on average for cobalt (Worldsteel Association, 2023).

Greening the production processes could, therefore, significantly contribute to the ambitious but necessary targets of the EU Green Deal and new Circular Economy Action Plan (CEAP). This is also linked and connected with the recently announced Fit for 55 package which refers to the EU's target of reducing net greenhouse gas emissions by at least 55% by 2030, which in turn will contribute to making the EU climate neutral by 2050.

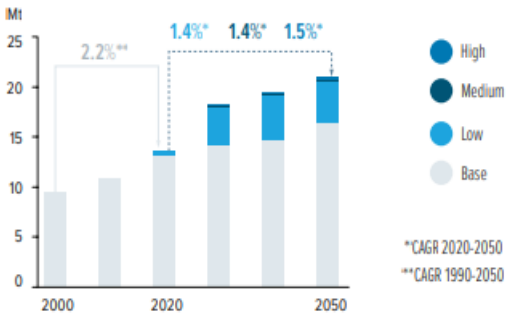

Figure 1. Aluminium European total demand by domestic clean energy technology production (KU Leuven)

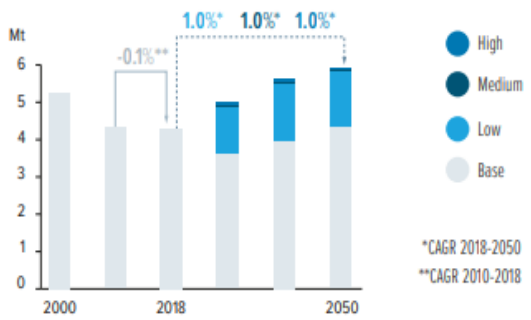

Figure 2. Copper European total demand by domestic clean energy technology production (KU Leuven)

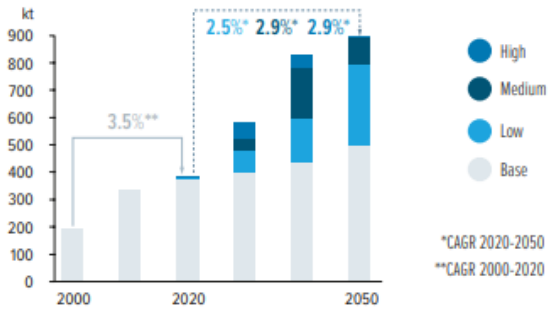

Figure 3. Nickel European total demand by domestic clean energy technology production (KU Leuven)

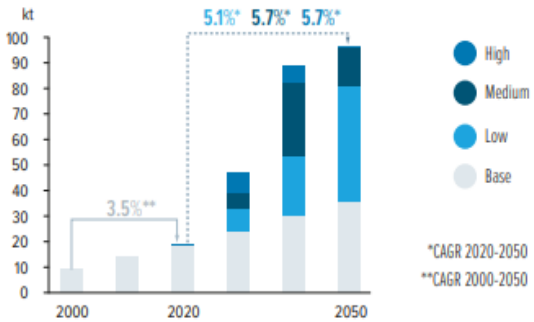

Figure 4. Cobalt European total demand by domestic clean energy technology production (KU Leuven)

Therefore, EuRIC strongly welcomes the scope and conclusions presented by the JRC is its preliminary study on the product priorities with regards to the prioritisation of the intermediate product group. More precisely, EuRIC supports the shortlisted products of the above-mentioned group, which was based on environmental, market and policy considerations and agrees with the score attributed to iron and steel (31), non-ferrous metal products (27) and aluminium (26). This undoubtedly shows that they have high impact and improvement potential in many environmental areas (e.g., water, air, waste, climate change and energy use etc.,).

Circularity requirements

Metals are a central element to achieve the EU's goals, as they are almost endlessly recyclable, and metals coming from recycling do not face downcycling or quality related issues. Their continuous introduction into new lifecycles help to secure Europe's access to metals which is considered to be a key building block for a competitive and sustainable EU economy. In that regard, EuRIC would like to express its strong support on the list of potential measures identified and in particular on the ones related to:

- **Minimum recycled content per unit/tonne of product:** Flat steel, long steel, steel alloys are used depending on the end applications. Thus, steel products used for the automotive, construction or electronic industry differ depending on the properties expected. It is, therefore, relevant to differentiate the recycled content targets:
  - At intermediate product level, in line with the taxonomy, to increase the uptake of recycled steel scrap in steelmaking, be it EAF or BOF. This will in turn contribute to increase resource-efficiency and reduced emissions since the substitution or diminution of iron ore with recycled steel scrap, significantly reduces GHG emissions. It should be noted that, today, it is the most mature and affordable way to reduce carbon emissions in steel making.
  - At product level, either in the forthcoming delegated acts to update or to alternatively lay down new eco-design criteria, since it is at product level that is possible to accurately assess the type(s) of steel used and thus the relevance of setting recycled content as well as the targets themselves.

Regarding setting targets at intermediate product level, such targets must be based on the targets already set for recycled content in EAF the Delegated Act on Climate Change Mitigation :

- Steel in electric arc furnaces producing EAF carbon steel or EAF high alloy steel, as defined in Commission Delegated Regulation (EU) 2019/331 and where the steel scrap input relative to product output is not lower than:
  (i) 70 % for the production of high alloy steel;
  (ii) 90 % for the production of carbon steel.

Targets for recycled content in BOF

Steel used in (the converter of) the blast oxygen furnace shall have a steel scrap input relative to product output of not lower than 25%.

- **Information requirements on the percentage of recycled content per ton of input material:** A simple comparison between the input and output material could be used to show compliance with the minimum recycled content targets.
- **Maximum energy consumed during manufacturing:** To produce steel, now facilities use one of two processes: the basic oxygen furnace (BOF) or the electric arc furnace (EAF). With the first path - alternatively also known as 'iron ore to steel route', hot metal is mostly produced from iron oxide ores in blast furnaces, and more rarely in smelting reduction plants, and is processed to make crude steel in oxygen converters. Sponge iron produced from iron ore in direct reduction plants is

converted to crude steel in electric arc furnaces. With the second path – alternatively also known as the 'scrap-based route', scrap is used as base feedstock.

It is known that to meet the increasing demand of steel in the EU – due to population growth and the transition to renewable energy – both processes are needed. However, taking into consideration the efforts the EU is making to move towards a more circular and climate-neutral economy, it is clear that more research and financial support is needed in the area of optimising the use of scrap (e.g., more investments directed into increasing EAF steelmaking, financial support to recyclers etc.,).

Furthermore, significant energy savings are also encountered in the production of non-ferrous metals using scrap. For example, recycling aluminium and copper save 95% and 85%, respectively, of the energy needed for primary production.

Contribution to strategic autonomy

Critical raw materials (CRMs) are crucial for producing a broad range of goods and technologies. The transition towards digital, highly energy-efficient and climate-neutral European economies will lead to a significantly higher demand for CRMs. For this reason, it is extremely important for the EU to reduce its dependency on the import of those materials. In that regard, EuRIC is pleased to see that in terms of strategic autonomy iron and steel received the maximum score (5), followed by non-ferrous metal products (4) and aluminium (3). This confirms the fact that recycling measures will be especially important in emerging economies as greater amounts of steel and non-ferrous metal-containing products begin to reach the end of their lifetimes. Therefore, although EuRIC is aware that this is not the primary objective of the ESPR, it would like to state that an increased output from recycling facilities will require proper collection and avoiding that products containing metals enter illegal streams at the end of life.

The ferrous and non-ferrous metals recycling Branches of EuRIC look forward to work on enhancing the circularity of iron and steel, non-ferrous metal products and aluminium as part of the first Ecodesign for Sustainable Products Regulation working plan.

Policy coherence

Considering that this Regulation provides for the setting of ecodesign requirements for a large range of products, it is of an utmost importance to ensure coherence in terms of the requirements set under the ESPR and other product specific legislation. To help to prevent confusion EuRIC believes that for the intermediate products steel, non-ferrous metal products and aluminium ecodesign requirements should be set at the product specific legislation – when it of course exists.

For more information about metal recycling: EuRIC Metal Recycling Fact Sheet

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