Platform on Sustainable Finance Draft Report on Activities and Technical Screening Criteria to be Updated or Included in the EU Taxonomy

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Note from the Chair

The Platform on Sustainable Finance entered its second mandate on March 7, 2023. This new mandate focusses on three clear objectives, two of which are especially relevant for this report. The first is to enhance the usability of the Taxonomy by making recommendations to reduce its complexity while improving its effectiveness. Although the Taxonomy remains the cornerstone of the Sustainable Finance Framework, our mandate also considers the broader package of sustainable finance policies. The second objective is to continue expanding the scope of activities covered by the Taxonomy.

As part of this mandate, the Platform carried out a study to better understand how the Taxonomy and the broader framework are being implemented on the ground. The findings were captured in the Compendium of Market Practices, which reflects extensive engagement with stakeholders—especially companies, who were at the centre of our analysis. Two key messages from the industry stood out:

- There is a need to simplify the application of DNSH (Do No Significant Harm) criteria, particularly the compliance assessment.
- Many companies want their activities to be included in the Taxonomy, and there is a strong push to expand its scope.

This reinforces the messages we received in our exchanges with companies and associations over recent months (and years), who continuously asked to extend the number of activities covered by the Taxonomy and to provide more flexibility around DNSH criteria.

The first reporting cycle for companies and financial institutions has brought to light several persistent issues. One of the main challenges relates to DNSH technical criteria. These criteria are crucial for avoiding unintended environmental consequences, preserving the interconnectedness of environmental objectives, and closing loopholes. However, while they are valuable for new projects and investments (where they can be addressed upfront), they can be difficult to assess retrospectively.

To tackle these challenges, the Platform is working on a more nuanced approach. Part of this involves understanding the circumstances under which specific criteria are most challenging to evaluate. For companies, retrospective assessments can be particularly demanding when calculating revenue alignment, as some DNSH criteria would have required upfront consideration at the beginning of an activity.

Public Consultation and Feedback

As part of our review of DNSH criteria from a usability perspective, we are encouraging companies to share their feedback through the Public Consultation. Evidence-based input on specific criteria that are difficult to assess will be instrumental for us, especially when accompanied by concrete examples. Your feedback will be carefully reviewed and considered as we move forward.

The Technical Working Group has integrated usability considerations and usability feedback from targeted stakeholders in their work. We do, however, believe that the usability of the criteria can be further improved. To achieve this, the Technical Working Group, together with the Platform's dedicated group on data and usability (SG1), will use inputs from users and the public consultation to further simplify the criteria and develop guidance for reporting.

Expanding the Taxonomy

Another frequent request we hear is the need to expand the Taxonomy. The Platform shares the view that the Taxonomy should eventually encompass a much larger share of economic activities. However, it is important to acknowledge that drafting robust and credible criteria takes time and significant resources.

This report reflects what the Platform has been able to achieve within the limits of the current mandate. During this period, our priority has been to improve the usability and effectiveness of the Taxonomy and the broader sustainable finance framework. Once the necessary changes have been implemented, the Platform hopes that a future mandate will allow us to focus on incorporating many more activities into the Taxonomy.

Finally, I would like to take this opportunity to thank the many companies, experts, and stakeholders who have supported our work through the Stakeholder Request Mechanism, workshops, meetings, and by sharing their expertise. Your contributions have greatly informed our understanding and guided the development of these criteria.

We look forward to hearing your feedback and continuing our collaborative efforts to strengthen the sustainable finance framework.

Yours sincerely,

Helena Viñes Fiestas

Chair of the Platform on Sustainable Finance

I. Introduction

1. Content of this report

Under its current mandate, the Platform on Sustainable Finance has been tasked by the European Commission with reviewing and potentially recommending revisions to the technical screening criteria of the economic activities included in the Climate Delegated Act (DA) adopted in 2021, with a focus on transitional activities for which the Taxonomy Regulation stipulates a requirement for review every three years. This work integrates requests from the market expressed through the European Commission's Stakeholder Request Mechanism.

In parallel, the Platform is developing technical screening criteria (TSC) for a list of new economic activities. This involves developing technical screening criteria for these activities to make a Substantial Contribution (SC) to at least one of the environmental objectives defined by the Taxonomy Regulation while ensuring they Do-No-Significant-Harm (DNSH) to any environmental objective. All of these activities have also been proposed by companies or industry associations through the Stakeholder Request Mechanism, that is, the Platform's work directly responds to market requests for broadening the market coverage of the Taxonomy.

Additionally, the Platform's mandate includes developing DNSH criteria for activities to be included in Annex II of the Climate DA, as "adapted" activities. This is both for the new activities developed under the current mandate and for activities already included in the Taxonomy Delegated Acts for SC to an environmental objective other than adaptation, for which no such criteria exist yet. The reason for this inclusion is to support climate resilience of the whole economy, and to support environmental transition across the whole economy, as well as to enable a significantly wider range of entities to claim their investments in climate resilience as Taxonomy-aligned, resulting in an overall increase in adaptation finance. To achieve this, a number of additional issues on climate change adaptation are also addressed in this report.

All of the Platform's work under its second mandate is informed by input received from the markets through the EU Taxonomy Stakeholder Request Mechanism. In addition, the Platform's work integrated usability guidance from the Platform's first mandate, updates in legislation, the latest scientific results and changes in technologies available in the market. This applies both to its recommendations for the development of new activities and for the review of activities already included in the Climate Delegated Act.

Reflecting these various elements of the Platform's mandate, the report contains recommendations for the below-listed activities/areas.

Review of criteria and analysis for the Climate Delegated Act

- Usability improvements for the generic climate change adaptation criteria
- Consistency and usability improvements for selected activities under the Climate Change Mitigation and Adaptation objectives, including through harmonising activity titles and descriptions
- Adjustment to scientific results and technological developments of selected substantial contribution and DNSH criteria under the Climate Change Mitigation objective
- general recommendations for updating substantial contribution and DNSH criteria under the Climate Change Mitigation objective
- Mapping of activities with inconsistent or insufficiently considered DNSH criteria

New activities mandated by the European Commission

- Refining substantially contributing to Climate Change Mitigation
- Mining substantially contributing to Climate Change Mitigation
- Close to Market Research, Development and Innovation substantially contributing to all four objectives of the Environmental Delegated Act.
- Digital Solutions and Services substantially contributing to all four objectives of the Environmental Delegated Act.

New activities mandated by the European Commission, but not completed

- Manufacture of emergency aircraft substantially contributing to Climate Change Adaptation
- Maintenance of tunnels and bridges substantially contributing to Transition to Circular Economy
- Manufacture of tyres substantially contributing to Pollution Prevention and Control
- Telecommunication networks substantially contributing to Climate Change Adaptation
- Energy efficiency equipment in industry substantially contributing to Climate Change Mitigation.

The report includes progress reports for each of the above-mentioned activities except for Telecommunication networks where no progress has been made due to a lack of resources in the Platform.

Further recommendations for Climate Change Adaptation

- DNSH criteria for "adapted" activities for
  - the newly proposed activities under the current mandate of the Platform
  - activities already included in existing Delegated Acts but not included in Annex II of the Climate DA
- A Climate Change Adaptation Headline Ambition Statement,
- An analysis of sectors most vulnerable to physical climate risks – to be prioritised for inclusion as "adapted" activities in the future,
- Progress on conceptual approach to nature-based solutions' inclusion enabling Climate Change Adaptation objective

The Platform highly appreciates the contributions of external experts and participants in outreach workshops to this report.

2. Usability of Technical Screening Criteria

Under its second mandate, the Platform prioritized to support the use and implementation of the Taxonomy. In February 2024, the Platform published a report named *A compendium of market practices* assessing the extent to which seven different stakeholder groups, including corporates and financial institutions, make use of the Taxonomy and other tools available in the EU Sustainable Finance Framework.

In addition, the Platform created a "bridge" workstream between the Data and Usability Subgroup and the Technical Working Group called "Usability of Criteria", dedicated to making proposals to the Technical Working Group exclusively on usability of the technical criteria for both substantial contribution and

DNSH. The findings of this workstream are integrated in the current report to the extent possible given the available resources.

In parallel, the Platform considered usability a key aspect when developing the technical screening criteria for the new economic activities included in this report. In all cases, usability of the criteria for different financing types and use by different entities in the investment plans and their reporting has been a consideration.

The "Compendium of Market Practices" report also identified the main challenges companies and other stakeholders encounter when reporting under and using the Taxonomy. The report delved into the specifics of these challenges and concluded usability of the technical screening criteria of DNSH as the main issue.

i. Usability of DNSH criteria

The Platform employed a specific focus on the usability of the DNSH criteria it proposes for new activities. For each new activity proposed in this report, the recommendation contains a dedicated section on how usability has been considered for both substantial contribution and DNSH. To the extent possible, this also involved usability considerations for activities performed outside the EU, within the limits of Art. 19.1(d) of the Taxonomy Regulation. The proposed DNSH criteria for new activities were discussed with relevant stakeholders during targeted outreach workshops.

Similarly, in the review of the Climate Delegated Act any proposals for DNSH criteria were scrutinized for their usability.

Despite this clear focus it should be note that while the report does point to some general cross-cutting usability issues, the Platform was not able to conduct a comprehensive, in-depth analysis of usability issues across the DNSH criteria of all Delegated Acts. The Platform recommends such an analysis in order to help streamline Taxonomy reporting, and acknowledges the breadth and depth of expert involvement it would require.

ii. Clarity and Conciseness of the Technical Screening Criteria

A clear description of the technical screening criteria reduces implementation costs and ensures that criteria be interpreted in the same way by different preparers and auditors, providing comparability of the reporting results. Clarity tends to increase if criteria are made explicit, rather than containing references to regulation, frameworks, general concepts etc. There are, however, a few limits to spelling out criteria explicitly:

1. The more explicit the criteria the longer their descriptions get. Long descriptions may be interpreted by some as adding bureaucratic burden, even if the longer description is intended to make the criteria easier to apply. Hence, there is a trade-off between clarity and brevity.
2. Art 19.1 (d) of the Taxonomy Regulation requires technical screening criteria to "where appropriate, build upon Union labelling and certification schemes, Union methodologies for assessing environmental footprint, and Union statistical classification systems, and take into account any relevant existing Union legislation". References to existing Union legislation etc. should therefore be given priority over spelling out criteria. In order for these references to remain up to date, links, references to pages or citation of relevant parts of the legislation etc. in the definition of the criteria, which might otherwise increase clarity, would also need to be avoided.

iii. Consistency of Technical Screening Criteria

Consistency within the EU Sustainable Finance Framework, in general, and between Taxonomy Delegated Acts, in particular, is important to facilitate compliance with reporting requirements and interpretation of Taxonomy reports. Hence, it is the aim of the Platform to develop criteria which are consistent with earlier work, particularly the technical screening criteria included in existing Taxonomy Delegated Acts.

The Platform acknowledges the dynamic nature of the Taxonomy with new scientific and technological developments having to be accounted for. Further, as the deadlines to reach EU environmental objectives move ever closer, the Platform is of the opinion that existing technical screening criteria in the Taxonomy Delegated Acts, which no longer reflect the state of science or technology, should be revised.

Article 19 of the Taxonomy Regulation requires the Commission to regularly review and amend technical screening criteria in line with scientific and technological developments. It stipulates, though, that the technical criteria of transitional activities ought to be reviewed every three years to ensure a continuously credible transition pathway consistent with a climate-neutral economy for these activities.

Consequently, the recommendations for technical screening criteria for new economic activities included in this report may in some cases lead to inconsistencies with existing technical screening criteria of the Taxonomy Delegated Acts. Where this is the case, solutions to address such temporary inconsistencies are identified, typically by advising to update the existing technical screening criteria.

iv. Data and data availability

Beyond clarity, conciseness and consistency of the criteria, the Platform considers availability of data for corporate users to document compliance and allow for third-party verification to be of utmost importance. Consideration on data and data availability were included in the development of all technical screening criteria proposed in this report. The recommendations for each of the economic activities include consideration on data and data availability as part of the rationale. Moreover, where possible, the technical screening criteria proposed in this report are based on quantitative thresholds, rather than process-based, allowing corporate users to simply answer “yes” or “no” as to whether they comply with the proposed criteria. It is, however, not always possible to define technical criteria based on threshold values.

v. International applicability

Technical screening criteria should be implementable outside the Union, i.e. where Union legislation, labelling etc. does not apply. Referring to international frameworks etc. in the criteria is, however, limited by

1. the requirements of Art. 19.1 (d) of the Taxonomy Regulation on the use of Union legislation, frameworks etc., see above.
2. the criteria having to be amended if the referenced international framework changes in a way that does no longer reflect the intended content or ambition level of the criteria.

3. Stakeholder Request Mechanism

During the Platform's mandate, the European Commission launched an EU Taxonomy Stakeholder Request Mechanism (SRM), inviting stakeholders to submit proposals on new activities to be included in the Taxonomy as well as proposals to revise existing activities covered by the Taxonomy.

A total of 646 proposals were submitted through the SRM. Of these, 169 related to new activities. As several submissions were part of campaigns that addressed the same activities, the total number of proposals for new activities for inclusion in the Taxonomy amounted to 102.

Among the activities requested for inclusion in the Taxonomy were Telecommunication Networks, Waste-to-Energy and related activities, Decommissioning of Environmentally Harmful Assets, Manufacture of Energy Efficient Equipment, Mining, Carbon Capture and Use, Carbon Capture and Storage, Agriculture and Agroforestry, Nuclear-related activities, Maintenance of Infrastructure, Manufacture of Chemical Products, Irrigation, and Waste-Water Treatment.

Some of the proposed activities have already been addressed by the Platform during its first mandate but have not been included in a Delegated Act (Agriculture, Chemicals etc.). Others were included in the Platform's second mandate from the beginning (Mining, Maintenance of Bridges and Tunnels). Of the activities suggested for inclusion by the SRM proposals and not covered by the Platform's earlier work or current mandate, the European Commission mandated the Platform to work on technical screening criteria for "Manufacture of Energy Efficient Equipment for Industry".

For activities already included in the Taxonomy, most proposals submitted to the SRM related to the Climate Delegated Act with a total of 341 proposals to revise technical screening criteria of existing activities. 22 submissions related to the Complementary Climate Delegated Act and 151 to the Environmental Delegated Act.

For the Climate Delegated Act, the activities most commented on include Construction of Buildings and Acquisition and Ownership of Buildings, and Appendix C - Generic DNSH criteria for Pollution Prevention and Control. For the Environmental Delegated Act, most comments were submitted on "Manufacture of Electrical and Electronic Equipment" and "Manufacture of Plastic Packaging Goods".

The current Platform's mandate only covers a review of the Climate Delegated Act adopted in 2021. Therefore, this report exclusively addresses SRM feedback on this Climate Delegated Act. Feedback related to existing activities covered either by the Complementary Delegated Act or the Environmental Delegated Act, or by activities added to the Climate Delegated Act in 2023, is not part of the report.

The Platform has reviewed the 341 proposals submitted to the SRM related to activities covered by the Climate Delegated Act of 2021, and integrated the proposals in its work on the activities it focused on. Chapter II on the Climate DA Review includes more information on how this feedback has informed the review of the Climate DA.

4. Type of activities

The Taxonomy Regulation distinguishes between activities whose substantial contribution is made through their own direct impacts (own performance activities) and those whose substantial contribution is made

indirectly through them enabling other activities to make a substantial contribution (enabling activities). The activities proposed in this report include nine enabling activities, namely Mining substantially contributing to Climate Change Mitigation, Close-to-market-Research substantially contributing to the four environmental objectives of the Environmental Delegated Act, and Digital Solutions and Services substantially contributing to the four environmental objectives of the Environmental Delegated Act, as well as one own-performance activity, namely Refining substantially contributing to Climate Change Mitigation. While for Close-to-market Research and Digital Solutions and Services the enabling character will be obvious, the different classification of the Mining vs Refining activity may deserve explanation.

The classification is explained in detail in the rationale of the respective activities. It is based on the relevance of the activities' direct and indirect environmental impacts on the various objectives, the potential for making a substantial contribution by reducing these impacts, and the availability of data to specify impacts and substantial contribution.

Enabling activities differ in structure from own-performance activities in some respects (see also the Enabling Framework published in the Platform's report of November 2022):

1. Their substantial contribution criteria refer to the contribution they make to the environmental performance of the activities they enable (the "target activities") through the products or services they produce. Specifically, the substantial contribution refers to the instrumental role the enabling activity plays in the target activity making a substantial contribution, while also ensuring that the activity does not lead to a lock-in effect.
2. In contrast to the DNSH criteria of own-performance activities, enabling activities have to ensure DNSH in two respects, namely that:
    a. the enabling activity does not lead to the target activity doing significant harm to any of the environmental objectives, and
    b. the enabling activity itself does not do significant harm to any of the environmental objectives.

The former type of DNSH is ensured through the enabling activity's description and substantial contribution criteria. No extra reporting of the entity performing the enabling activity is required. In particular, no reporting on behalf of the company performing the target activity is required.
The latter type of DNSH criteria is included in the enabling activity's DNSH criteria. For technical reasons, for the objective for which the activity enables a substantial contribution the second kind of DNSH is included under the substantial contribution criteria. The substantial contribution of enabling activities therefore includes two kinds of criteria:

1. Criteria that ensure the enabling activity actually enables the substantial contribution of the target activity and does not lead to significant harm done by the target activity.
2. Criteria that, although included under substantial contribution, are DNSH in nature and ensure that the enabling activity itself does not do significant harm to the objective for which it enables a substantial contribution of the target activity.

5. Methodology

The methodology used for developing technical screening criteria follows the guidance by the DG Joint Research Centre (JRC) as outlined in its reports "Substantial contribution to climate change mitigation – a framework to define technical screening criteria for the EU Taxonomy" and "Development of the EU

Sustainable Finance Taxonomy - A framework for defining substantial contribution for environmental objectives 3-6" and applied by the Platform in its first mandate.

Following the JRC methodology, the substantial contribution criteria can be defined based on seven generic approaches:

1. **Impact-based approach:** Criteria set within this approach require a certain level of impact of the activity on the environmental objective considered. The impact of an activity depends on the pressures that the activity exerts (e.g., water abstraction, GHG emissions) but also on the context in which an activity takes place. Activities qualify if they operate above or below a given threshold.
2. **Performance in relation to the environmental target**: Criteria that are set within this approach require a certain level of performance defined in terms of the pressure that the activity exerts on the environment (e.g. GHG emissions, water abstraction, etc.). This pressure is measured with a specific performance metric (direct or proxy) relating to the environmental objective considered. Activities qualify if they achieve a certain level of performance derived from environmental considerations (EU policy, scientific literature).
3. **Best-in-class performance**: Like for the previous approach, the criteria require a certain level of performance of the activity, defined as a pressure, and measured under the relevant metric. Activities qualify if they operate above a threshold based on the performance currently achieved by best performers (e.g. the threshold can be the average level of performance achieved by the top 10% best activity operators in the EU).
4. **Relative improvement:** In this approach, the criteria require a minimum evolution of a metric over time. This can be the performance improvement of an underlying activity or asset, the improvement of the state of the environment. Activities qualify if they are responsible for an improvement by at least a defined relative threshold, for instance, an energy efficiency improvement of at least 20% compared to a previous point in time.
5. **Practice-based:** This qualitative approach relies on a set of precise practices reducing the pressure or improving the state of the environment. These practices describe how the activity must be performed. Activities qualify if they adopt those practices. An example could be the implementation of sustainable farming practices.
6. **Process-based:** The criteria define a number of qualitative process-based steps to determine how to reduce the pressure or enhance the status of the environment. Activities qualify if they follow those steps and implementing the actions resulting from following them.
7. **Nature of the activity**: The criteria define the exact scope and description of the activity. Activities qualify if they fall within this scope/description independent of their performance. Such activities are then automatically eligible without any quantitative or qualitative requirements. These criteria can be used for a whole generic activity or for a part only.

6. Ambition level of the Technical Screening Criteria

Following the methodology laid down by the Platform in its first mandate as defined in the Platform report of March 2022 and based on the Taxonomy Regulation, the criteria proposed in this report are based on scientific evidence, available technologies, market information and data gathered, where available, for the respective activities, and a strong focus on the usability of the criteria (see below).

The ambition level of the criteria takes into consideration the dynamic nature of the Taxonomy, accounting for recent scientific developments, legislative processes, newly available technologies, strategies and targets related to the EU's environmental objectives, and market practices. The ambition level is guided by "Headline Ambition Statements" and the Union's climate targets, where the Headline Ambition Statements are based on goals and targets for each objective in existing European Union commitments to ensure that the Taxonomy ambition level is in full alignment with other EU policy areas and international commitments. These statements have already been defined in the Platform's November 2022 report for the four environmental objectives other than climate. This report adds the Headline Ambition Statement for Climate Change Adaptation.

7. Adapted activities

As a general principle, to achieve a fully resilient economy as foreseen in the EU Strategy on adaptation to climate change, all activities in the economy need to become "adapted"[1] or resilient to physical climate change impacts in their own operations and value chains. This is also in the own interest of the entities carrying out the activities, as it ensures long-term viability and continuation of their business model. To encourage economy-wide resilience and enable access to adaptation finance to fund adaptation measures, activities are being included in the Adaptation Annex of the Climate Delegated Act (Annex II) as "adapted" with generic "adapted" activity substantial contribution criteria. (Note that "adapted" activities can only claim CapEx and OpEx investments specifically targeted at the implementation of adaptation measures to increase resilience as "Taxonomy-aligned", no other CapEx or OpEx, and no turnover).

These "adapted" activities, however, also need to comply with the Do-No-Significant-Harm principle and therefore require customized DNSH criteria to guard against significant harm to all Taxonomy environmental objectives, as foreseen in the Taxonomy Regulation

In the Climate Delegated Act of 2021, all activities included in the Mitigation Annex (Annex I) had also been included in the Adaptation Annex as "adapted". However, this had not yet been done for all activities included in the Environmental Delegated Act, and in the additions made to the Climate Delegated Act in June 2023. Therefore, adding these activities was a priority task for the Platform under its second mandate. Most of the DNSH for these activities are already defined in the Climate and Environmental Delegated Acts, except for the substantial contribution objective under which the activity was originally included in the respective Delegated Act. This report contains proposals for many of these missing DNSH criteria, which will now enable the activities to be included in the Taxonomy and facilitate their access to sustainable finance for adaptation measures.

For adding the activity to the Adaptation Annex the following rules apply:

Activity title	Same activity title used as for the original activity proposed in the Environmental Delegated Act or the amendments to the Climate Delegated Act.

[1] For definitions see Chapter II "Clarifications of terminology and requirements details"

Activity description	Same activity description used as for the original activity proposed in the Environmental Delegated Act or the amendments to the Climate Delegated Act.
Substantial contribution criteria	The generic criteria for climate change adaptation (points 1-4) are used for all currently proposed activities.
DNSH criteria	All DNSH criteria proposed under the original activity in the Environmental Delegated Act or the amendments to the Climate Delegated Act are used (apart from DNSH for climate change adaptation, which is not required in this case). The DNSH criterion for the environmental objective for which the activity's substantial contribution was originally developed is proposed in this report.

8. Future prioritised activities

All economic activities which the Platform has proposed technical screening criteria for in this report are directly mandated by the European Commission. The European Commission's mandate also included the activities that could not be completed under the current mandate because of a lack of time and resources (Manufacture of emergency aircrafts, Maintenance of tunnels and bridges, Manufacture of tyres, Telecommunication, Manufacture of energy efficiency equipment in industry).

In addition, the Platform points to a number of new activities which, based on the Platform's assessment, should be included in the Taxonomy as a matter of priority. To prioritise these activities, the Platform drew inspiration from several sources.

First, the Platform assessed proposals on new activities submitted through the EU Taxonomy Stakeholder Request Mechanism. Second, the Platform assessed the initial list of priority activities which informed the work of the Platform during its first mandate. Third, the Platform recalled the recommendations on new activities from the Technical Expert Group, whose work preceded the Platform. Fourth, the Platform sought inspiration from international taxonomies, and developed own proposals for new activities to be included in the Taxonomy.

This inclusive process resulted in a list of *candidate activities*. To further narrow down the list of activities prioritized for inclusion in the Taxonomy, the Platform developed selection criteria to guide the final prioritization of candidate economic activities to be included in the Taxonomy in future. These selection criteria parameters include:

- Environmental objective (under- or overrepresented objective in the Taxonomy)
- Impact on environmental objective
- Sector (under- or overrepresented in the Taxonomy)
- Type of activity (own-performance or enabling)
- Missing supply chain activity
- Data availability
- Legal basis for inclusion
- Scope (broad vs. granular)

- Investment volume

These selection criteria were applied to the candidate activities. The exercise resulted in the below list of *prioritised* activities which the Platform recommends for future inclusion in the Taxonomy. However, as a result of limited resources and a focus on a number of new activities as mandated by the European Commission, it should be noted that the Platform has not had time to develop recommendations for these priority activities. Instead, the Platform recommends them to be included in future work of the European Commission and the Platform under its next mandate.

List of prioritised activities

- Fundamental research for all six environmental objectives: Fundamental research is the basis for future innovations and requires substantial investment volumes.
- Equipment increasing water use efficiency: Water use efficiency is a major concern for all water-intensive industries as the physical impacts of climate change are increasing.
- Nature-based solutions enabling climate change adaptation: Nature-based solutions can provide multiple benefits for climate change mitigation and adaptation, sustainable use and protection of water and marine resources, pollution prevention and control, and biodiversity and ecosystems, and can be substantially more efficient than technical solutions (see also chapter V).
- Manufacturing of sustainable bio products and solutions. Bio-products and solutions can enable, among others, climate change mitigation and adaptation, sustainable use of natural resources and restoration of vital nature systems.
- Mining and refining of additional critical raw materials: Under its current mandate the Platform was only able to cover a limited number of critical raw materials.
- Remining of mining waste to concentrates and refining from those concentrates: Remining reduces the need of primary material and can thus reduce environmental impacts and increase European production.
- Recycling of raw materials: Recycling reduces the need of primary material and can thus reduce environmental impacts and increase sustainable production.
- Decommissioning of mines: Optimizing the end-of-life of mines involves major potential for reducing environmental impacts.
- Applied research and Digital Solutions and Services that enable activities not currently covered by Taxonomy Delegated Acts: Under its current mandate, the Platform was only able to develop criteria for a limited number of target activities enabled by applied research and digitalized data and services.
- Inclusion of further “Adapted” Activities: To increase resilience of society and economy, all activities need to adapt to climate change. This should cover the activities, which are already included under all other objectives, as well as those identified in the Platform’s Especially Vulnerable Sector identification included in this report. For the inclusion of "adapted" activities, the generic adaptation substantial contribution criteria are used, therefore the main work focus needs to be on the development of the required DNSH criteria.

Scope of the consultation

In this public consultation, the Platform invites comments on the usability of the criteria as well as their scientific and technical basis. It also welcomes the identification of inconsistencies with EU legislation, strategies, international treaties, and agreements. To be considered for the Platform's work on finalising the technical screening criteria, comments must be substantiated by evidence and references to scientific, technical, or legal documents.

II. Review of the Climate Delegated Act

We would like to flag that the pdf files of the Consolidated Climate Delegated Act do not contain an updated table of contents. This may cause a significant usability issue for those who work with the files to identify their Taxonomy eligibility/alignment, as many users use the table of contents for their first high-level eligibility screening. General comment valid for entire Climate DA

1. Review of Annex I – Climate Change Mitigation

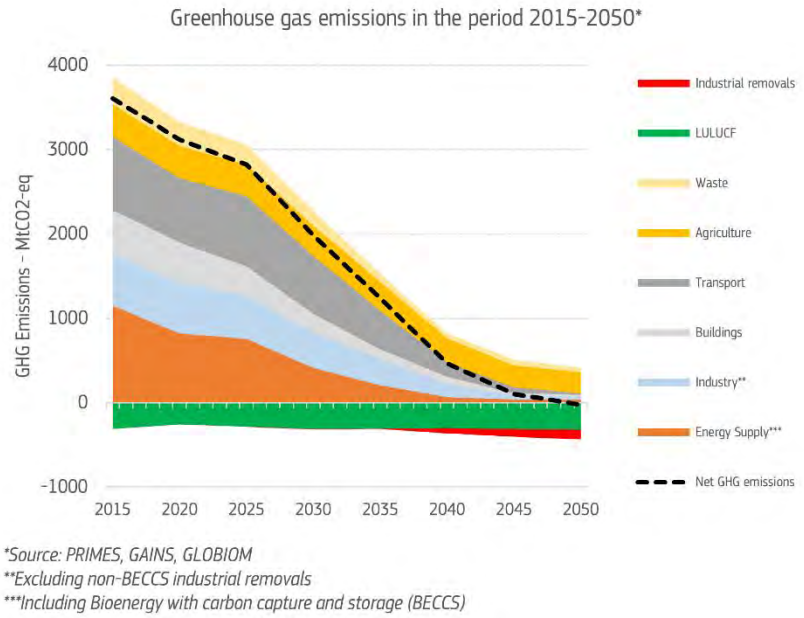
i. Energy-related Thresholds

Rationale

In its final report, the TEG recommended that the substantial contribution to climate change mitigation threshold should be set at „[a]n overarching, technology-agnostic emissions intensity threshold of 100g CO2e / kWh […] for electricity generation, heat production and the co-generation of heat and electricity. This threshold will be reduced every five years in line with political targets set out to achieve net-zero emissions by 2050." (TEG 2020b, p. 205). In its argument for excluding solid fossil fuels from the Taxonomy, the TEG expressed that a <100g CO2e / kWh threshold for substantial contribution is expected to be reduced „in five-year increments to 0 g CO2e/kWh by 2050" (TEG 2020a, p. 21).

The current review of the Climate DA, as the first of the five-year increments, poses the opportunity to start the process of reducing thresholds to meet climate neutrality by 2050. In order to stay in line with the political targets towards climate neutrality, a recommendation to reduce the substantial contribution as well as the DNSH thresholds is necessary. By 2030, the EU wants to reduce its net greenhouse gas emissions by at least 55 per cent relative to 1990. For 2040, the European Commission has recently proposed a new goal of 90 per cent reduction relative to 1990 (European Commission 2024). In 2022, the EU achieved a total reduction of 32,5 per cent in greenhouse gas emissions relative to 1990 (European Commission 2023a, p. 3).

Figure 1 Greenhouse gas emissions 2015-2050



Source: European Commission 2024

A reduction of thresholds should therefore be in line with the general goal of net zero emissions by 2050 and reflect that the majority of CO2e emission reductions needs to be put forward until 2040.

SRM input and prioritization

The SRM has received comments for all activities in chapter II of the Climate DA Annex I, either as input for single activities or as a collective input for several activities. While the Platform appreciates the diverse input through the SRM, resource and time constraints made it not possible to review all activities for which we received input from the SRM. The Platform had to make decisions to focus our work and thus prioritize activities for this review. The Platform would like to underline, however, that this did not make the input less important. Our prioritization for activities to review mirrors those activities for which we received the most comments, e.g. geothermal and hydropower activities, transmission and distribution networks for renewable and low-carbon gases, as well as manufacture of biogas and biofuels. Other activities that received several inputs, e.g. district heating and installation and operation of electric heat pumps are regarded as priority activities by the Platform for the next review. They play an increasingly strong role in the production and distribution of heat and thus for achieving net-zero by 2050. In order to provide a meaningful, substantive review that addressed pressing issues in the energy sector, the Platform prioritized the review of g CO2e/kWh thresholds in the energy sector (substantial contribution and DNSH) as well as the bioenergy activities. The input from the SRM for the activities that fall under these categories has been analysed for this review. In addition to the SRM input, the Platform has organized targeted stakeholder workshops in November to gather feedback on priortized workstreams, as well as market and technology developments in the energy sector between the first SRM cut-off date in December 2023 and November 2024.

General technical feasibility of lower CO2e thresholds

Reflecting the recommendations from the TEG (TEG 2020a, 2020b) and the current Climate DA (European Commission 2021a), reducing CO2e thresholds in the energy sector should generally be technically feasible. The majority of Taxonomy-aligned energy utilities currently covered by the Climate DA is expected to be already significantly below the 100g CO2e/kWh life cycle emission threshold for substantial contribution (see table 1 for an overview). The majority of energy installations that are currently Taxonomy-aligned should therefore continue to be Taxonomy-aligned if lower thresholds were to be applied. Only a small group of existing energy installations could potentially have more difficulties of complying with lower thresholds (depending on where the threshold lies) (see section 5 for a discussion of potentially affected energy utilities).

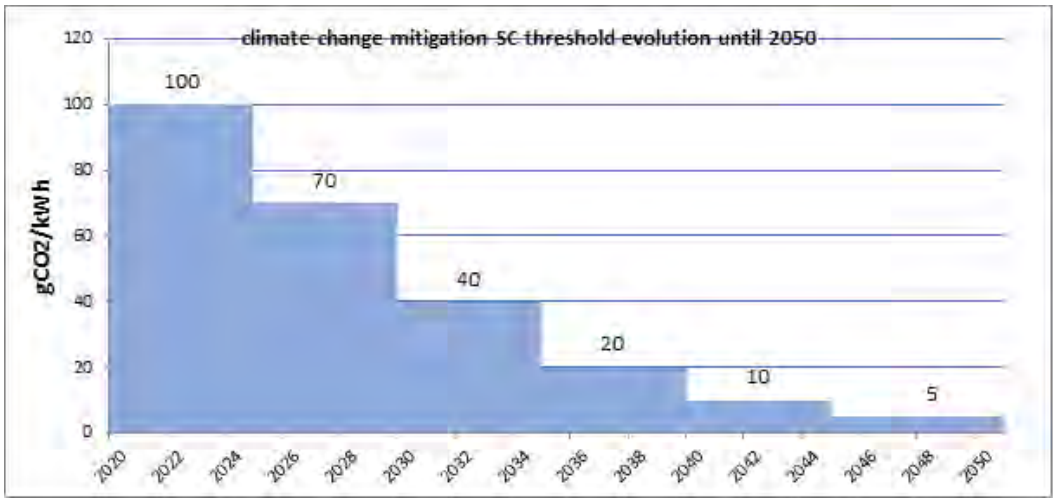
Potential thresholds

For substantial contribution, a threshold needs to be found that matches the political goals for CO2e emission reductions and is technically and politically feasible, with the majority of CO2e reductions in the energy sector achieved until 2040. An average reduction every five years until 2050 would result in 20% reduction steps or a 80g CO2e/kWh threshold for substantial contribution by 2025. In light of the Commission's recent proposal to reduce emissions by 90 per cent until 2040, a stronger reduction by 2025 should be discussed. Front-loading the emission reduction efforts would also do justice to the fact that reducing emissions becomes harder the closer we get to net-zero. Hence, we would split mitigation efforts more equally, instead of splitting mitigation amounts.

Original calculation by the TEG

In their calculation for the 100g CO2e threshold, the TEG already projected stronger reduction steps over the first years. Based on ETS GHG emission reduction targets of -43% by 2030 and -72% by 2040 (in comparison to 2005), it calculated the following reduction steps:

Figure 2: TEG calculation of CO2e thresholds



Source: TEG

Based on their calculations, CO2e threshold reductions for substantial contribution would need to be front-loaded, with the majority of the reduction taking place until 2035, in order to meet the target of net-zero by 2050. The TEG calculation is explained in textbox 1. This calculation, however, was done prior to the EU's strengthening of its climate goals, in particular its goal to reduce net GHG emissions by 55% until 2030 (compared to 1990) and the recent proposal to reduce net GHG emissions by 90% until 2040 (compared to 1990). These readjustments of the EU's overall Climate Targets is likely to suggest even sharper falling curves.

Textbox 1: Methodology to calculate CO2e thresholds

The calculation of the CO2e / kWh threshold for substantial is based on the political targets for future allowed emissions from the power sector, divided by the expected evolution of electricity demand.

The calculation assumes an average lifespan of 40 years for energy utilities.

The threshold was originally determined as follows:

- Historical power sector emissions and electricity demand data for EU28 are sourced from Eurostat.
- Future emissions are in line with EU political commitments for the ETS sector (-43% by 2030), then linearly decline to zero by 2050. Future electricity demand (net generation) is assumed to grow as per the EU 2016 PRIMES Reference Scenario.
- Dividing the projected power sector emissions by the projected electricity demand results in policy-consistent projected annual values for emissions factors of the EU power sector.
- A given power generator is considered aligned with these policy targets if its emissions are below the average of these annual emissions factors over its lifetime.
- To determine a single technology-neutral threshold covering all technologies, the methodology considers the average annual emissions factors over a period of 40 years2 from the time of commissioning.
- The above calculation results in a threshold that varies by year of commissioning. To avoid updating it annually, and to provide some stability and certainty for investors, the threshold value is fixed for a period of 5 years3 from 2020, and will be revised in 2025. It is set at the minimum value of calculated annual threshold values over this 5-year period.
- This calculation, rounded to the nearest 5g, results in a threshold value of 100 gCO2e/kWh for the power sector.

Source: TEG Taxonomy WG Energy subgroup, January 2020

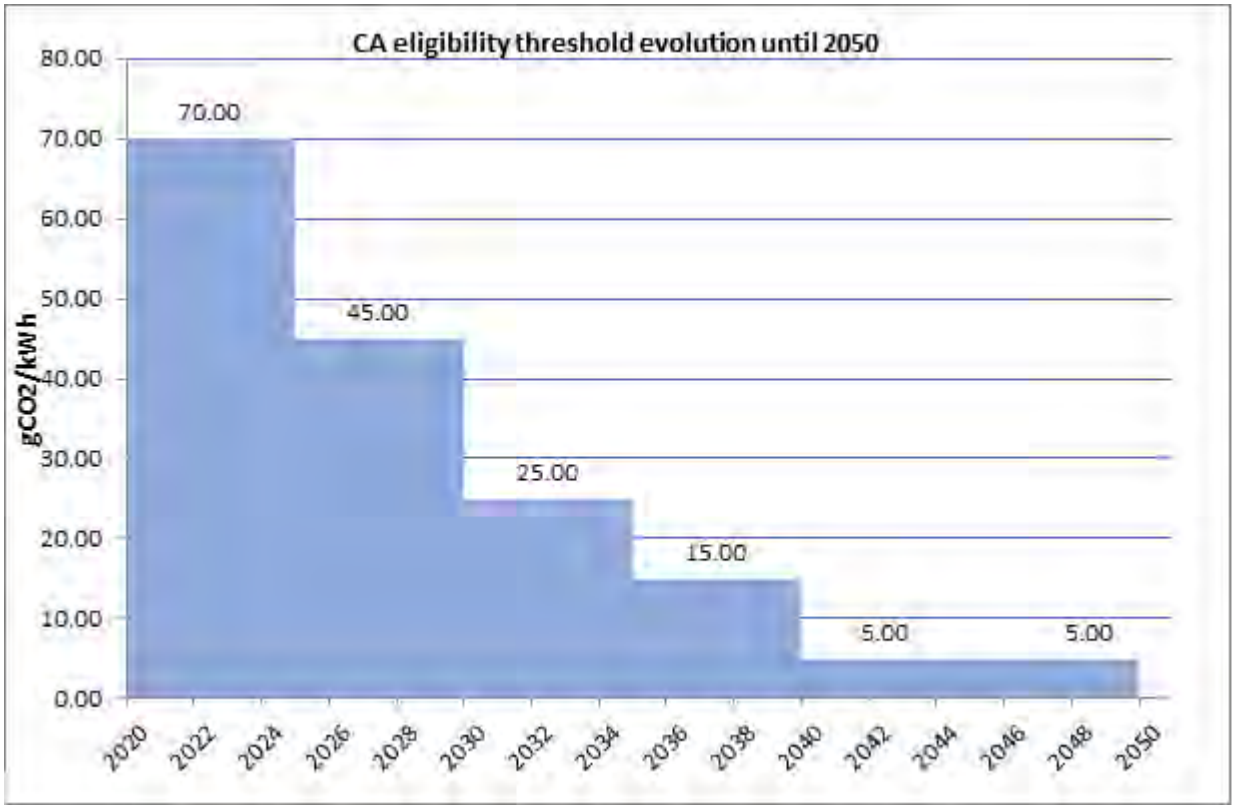
The first TEG calculation uses relative ETS target emissions compared to 2005 (2010: -21%; 2020: -43%; 2040: -72%, 2050: -100%, see also textbox 1). These targets, however, have since been adjusted in line with the fit for 55 package. The new ETS reduction target related to 2005 emission levels is set to -62% by 2030 (Umweltbundesamt, 2023). In addition, the calculation was changed to include EU27 data in order to reflect the UK's exit from the EU and to include the most recent published data on final electricity consumption by

2 Power plants can have typical lifetimes of between 15 and over 100 years, depending on technology, operating mode and maintenance profile. 40 years is the maximum period over which the large majority of power plants can reasonably be expected to operate and emit GHGs without some form of repowering.

3 A 5-year period is consistent with the typical development time for most generation projects (3 to 5 years).

sector from the impact assessment of the Commission's 2040 climate goal proposal (European Commission 2024b)4. Where newer emission and electricity demand data from Eurostat was available, the data has been updated. Based on these updates, the thresholds would be lower:

Figure 3: Updated TEG model



Source: Authors' calculations based on TEG model and updated data

Based on the TEG's original calculation, the new ETS 1 target for 2040 would lead to frontloading gCO2e/kWh thresholds for substantial contribution (approximately around 41,19g CO2e/kWh in 2025 and 23,06g CO2e/kWh in 2040). A calculation based on the PRIMES Reference Scenario of 2016, which was originally used by the TEG, led to higher values (45,78g CO2e/kWh in 2025, rounded up to 50g CO2e/kWh, and 26,71g CO2e/kWh in 2030, rounded up to 30g CO2e/kWh). The calculation uses the most recent published data on final electricity consumption by sector from the impact assessment of the Commission's 2040 climate goal proposal (S2).

Examples from further EU legislation

Recent EU regulation points toward lower CO2e thresholds for substantial contribution. The regulation concerning green hydrogen and its derivates offers important insights. Delegated Act 2023/1185 supplementing Directive (EU) 2018/2001 (RED II) offers a methodology to calculate greenhouse gas savings from renewable fuels of non-biological origin (RFNBO) and recycled carbonaceous fuels. It addresses life cycle

4 We have run the calculation with all four scenarios (S1, S2, S3, LIFE) put forward in the impact assessment. While the results differ to some degree, the threshold outcome is the same irrespective of the scenario used.

emissions and stipulates that greenhouse gas savings achieved through the use of recycled carbon fuels must be at least 70 % compared to the emissions that would otherwise have been generated by the replaced fuels. In two cases, the legislation allows the usage of grid power: 1. If the mains power is >90% renewable. 2. If the grid power used is lower than 18g-CO2e/MJ (European Commission 2023b). This methodology leads to a threshold of 64,8g CO2e/kWh.

Examples from other Taxonomy-related approaches

Aside from possible examples for potential thresholds already included EU legislation (see above), existing market recommendations can shed some light onto potential CO2e thresholds. In its recent Electrical Utilities Criteria for Climate Bonds Certification (March 2024), the Climate Bonds Initiative (CBI) has published CO2e thresholds that differentiate between existing and new low-carbon capacities (Climate Bonds Initiative, 2024). They propose keeping the Scope 1 threshold for existing low-carbon capacities (hydropower and geothermal energy capacities) at 100g CO2e/kWh. For existing bioenergy and BECCS capacities in electricity production, a scope 3-threshold of 100g CO2e/kWh is set. Wind and solar are eligible due to a lack of direct emissions (Climate Bonds Initiative 2024, p. 19). In order to account for non-combustion emissions, CBI requires life-cycle analysis "to account for the non-combustion emissions: scope 1 for hydropower and geothermal, as well as scope 3 for processing and transporting biomass for electricity production. These emissions are calculated by considering the amount of carbon dioxide equivalent (CO2e) emissions released during the LCA per unit of electricity generated" (Climate Bonds Initiative 2024, p. 19). For certain new low-carbon energy capacities, CBI sets significantly lower thresholds. New hydropower and geothermal utilities must comply with scope-1 thresholds of 50g CO2e/kWh. New bioenergy activities have to comply with a 50g CO2e/kWh scope-3 threshold in electricity production (Climate Bonds Initiative 2024, p. 21).

Providing separate thresholds for existing and new energy utilities in the EU Taxonomy should generally be possible. However, in light of the EU Taxonomy's general objective of technical neutrality (no discrimination between technologies if they have the same impact on environmental goals), such an approach might come with additional challenges in the EU Taxonomy framework. What is more, defining cut-off dates, as well as requirements for OpEx, CapEx, and turnover might come with additional difficulties.

Potentially affected energy utilities

A central question in lowering CO2e thresholds for substantial contribution and DNSH in the EU Taxonomy is, how many energy utilities, which are currently Taxonomy aligned, would be affected by lower thresholds. To gain additional insights, we have reviewed research on life cycle emissions for different energy sources. As part of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), Bruckner et al. (2014) have provided a detailed assessment of existing energy systems (see also table 2 and Schlömer et al. 2014, 1335). Their assessment provides comparative lifecycle greenhouse gas emissions from electricity supplied by commercially available technologies (see figure 2). What is more, Bruckner et al. (2014) also provide data on direct emissions vís-a-vís lifecycle emissions (see figure 3).

The overview provided by Bruckner et al. (2014) highlights that the following energy utilities (which currently are included in the EU Taxonomy), might potentially struggle achieving Taxonomy alignment for substantial contribution, depending on the recommended reduction of the thresholds:

1. Hydropower has very site-specific emission intensity. According to the review of Bruckner et al. (2014, 540), life-cycle emissions from construction and operation of hydropower utilities can reach 40 gCO2e/kWh (studies reviewed in SRREN), while some studies highlight an emission intensity of 3-7 gCO2e/kWh. Biogenic CH4 emissions result from the degradation of organic carbon material in reservoirs. Based on a meta study of 80 reservoirs, Bruckner et al. identify that CH4 emissions are log-normally distributed and the majority of measurements were below 20 gCO2e/kWh (Brucker et al. 2014, 540). A small number of large reservoirs with low power intensity (W/m2) however were responsible for 2 kgCO2e/kWh. According to Bruckner et al., "[t]he global average emission rate was estimated to be 70 gCO2eq / kWh" (Bruckner et al. 2014, 540)-. They furthermore argue that emission intensity if highly site-specific. Hence, average emission rates might not be suitable to draw up estimates of individual sites (Brucker et al. 2014, 540). Newer data by the United Nations Economic Commission for Europe (UNECE) calculated the life cycle emissions for a 360-MW plant in Europe to be at 10,7g CO2e/kWh (UNECE 2022, p. 42-3).

2. For geothermal energy, Bruckner et al. report a much weaker empirical basis. Based on SRREN, 6-79g CO2e/kWh can be assumed (Bruckner et al. 2014, 540). These ranges reflect "differences in local resource conditions, technology, and methodological choices of the assessment. The lower end of estimates often reflects incomplete systems while the higher end reflects poor local conditions or outdated technology." (Bruckner et al. 2014, 540).

3. Biomass technologies show median CO2e/kWh values that are above the 100g CO2e threshold (which does not apply to bioenergy activities in the EU Taxonomy). Infrastructure and supply as well as biogenic CO2e emissions are highlighted as playing substantive roles in the emission intensity of biomass from forest wood[5] as well as dedicated & residual crops[6]. Biogas from corn and manure has a median emission intensity above 250g CO2e/kWh according to Bruckner et al. (2014, see figure 2). These values, according to Bruckner et al. are based on a literature review from 2010-2012 and include a range of electric conversion efficiencies of 30-50% (2014, 540). According to Bruckner et al., soil organic carbon can influence the GHG balance of bioenergy systems significantly, particularly for dedicated & residual crops. These effects are, however, not included in their review (Bruckner et al. 2014, 540). Bruckner et al. describe that BECCS (Bioenergy with Carbon Capture Systems) are a possibility to combine energy supply with large-scale net negative emission. However, the review points out that there is limited evidence and medium agreement (Bruckner et al. 2024, 517). According to the Working Group I's contribution to the Sixth Assessment Report of the IPCC, "[s]equestration potentials from BECCS depend strongly on the feedstock, climate, and management practices" (IPCC 2021, 763). While some forms of BECCS might lead to net negative emissions (e.g. replacing marginal land with woody bioenergy plants), others could result in reduced sink capacities (e.g. replacing carbon-rich ecosystems with herbaceous bioenergy plants) (IPCC 2021, 763). The IPCC furthermore points out that "wood-based BECCS may not be carbon negative in the first decades,

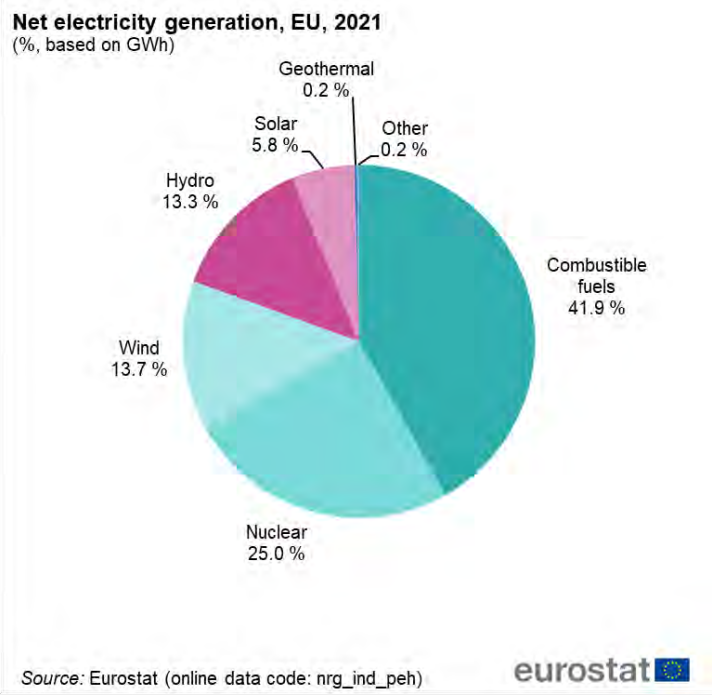
5 Biomass-forest wood' refers to sustainably harvested forest biomass from long-rotation species in various climate regions. The range in 'Biomass-forest wood' is representative of various forests and climates, e. g., aspen forest in Wisconsin (US), mixed forest in Pacific Northwest (US), pine forest in Saskatchewan (Canada), and spruce forest in Southeast Norway." (Bruckner et al. 2014, 540)

6 "The category 'Biomass-dedicated and crop residues' includes perennial grasses like switchgrass and miscanthus, short-rotation species like willow and eucalyptus, and agricultural byproducts like wheat straw and corn stover." (Bruckner et al. 2014, 540)

initially emitting more CO2 than sequestering" (IPCC 2021, 763) and might come with trade-offs for other environmental aspects (water resources, biodiversity) (IPCC 2021, 763).

Based on these results, lower CO2e thresholds potentially do not have strong impacts on bioenergy/biomass activities, as CO2e thresholds currently do not directly apply for these activities. In case this might change, Taxonomy alignment would likely depend on the sources of biomass. Geothermal utilities might potentially be affected by lower thresholds, depending on site-specific environments. For geothermal activities, additional data would be useful. In terms of EU electricity production, however, geothermal utilities produced 0,2 per cent of the EU's net electricity production in 2021 (Eurostat, 2021). Hydropower utility emissions are, as shown above, also strongly dependent on site-specific characteristics. While construction and operation of hydropower, according to the data above, can reach 40 gCO2e/kWh, some hydropower utilities, due to low power intensity or high levels or organic carbon material degradation might have higher levels. Hydropower, depending in the specific sites, might thus be well equipped to align with lower CO2e thresholds. In 2021, hydropower was responsible for 13,3 per cent of the EU's net electricity production. Hence, lower CO2e thresholds might have a stronger effect on the share of Taxonomy-aligned utilities of the EU's net electricity production.

Figure 4: Net electricity generation, EU, 2021



Source: Eurostat, 2021

Figure 5: Comparative lifecycle greenhouse gas emissions from electricity supplied by commercially available technologies

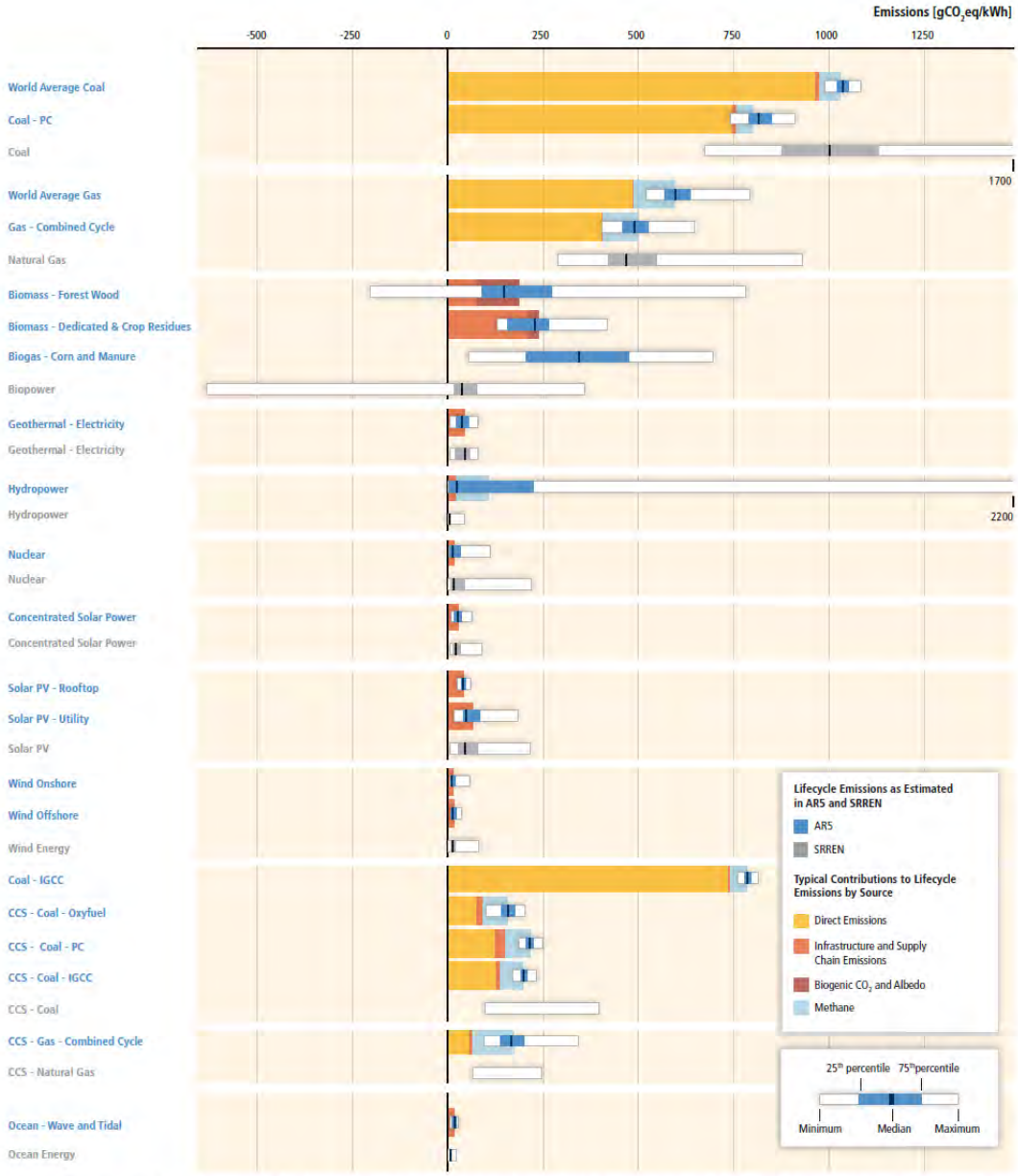


Figure 7.6 | Comparative lifecycle greenhouse gas emissions from electricity supplied by commercially available technologies (fossil fuels, renewable, and nuclear power) and projected emissions of future commercial plants of currently pre-commercial technologies (advanced fossil systems with CCS and ocean energy). The figure shows distributions of lifecycle emissions (harmonization of literature values for WGIII AR5 and the full range of published values for SRREN for comparison) and typical contributions to lifecycle emissions by source (cf. the notes below). Note that percentiles were displayed for RE and traditional coal and gas in the SRREN, but not for coal CCS and gas CCS. In the latter cases, the entire range is therefore shown. For fossil technologies, fugitive emissions of methane from the fuel chain are the largest indirect contribution and hence shown separately. For hydropower, the variation in biogenic methane emissions from project to project are the main cause of the large range. See also Annex II and Annex III.

Abbreviations: AR5—IPCC WG III Fifth Assessment Report, CCS—CO_2 capture and storage, IGCC—integrated coal gasification combined cycle, PC—pulverized hard coal, PV—photovoltaic, SRREN—IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Sources: SRREN (IPCC, 2011a), Wind (Arvesen and Hertwich, 2012), PV (Kim et al., 2012; Hsu et al., 2012), CSP (Burkhardt et al., 2012), ocean and wave (Walker and Howell, 2011; Kelly et al., 2012), geothermal power (Sathaye et al., 2011), hydropower (Sathaye et al., 2011; Hertwich, 2013), nuclear power (Warner and Heath, 2012), bioenergy (Cherubini et al., 2012).

Notes: Harmonized values have been used where available and the mean values of the typical contributions are shown for the set of those cases where the data base allowed the separation. For world average coal and gas, the uncertainty range represents the uncertainty in the mean; the range of the underlying distribution is much larger. For the fossil fuel technologies, all fugitive methane emissions were calculated based on the range provided by (Burnham et al., 2012), infrastructure and supplies are based on (Singh et al., 2011), and direct emissions are based on (Singh et al., 2011; Corsten et al., 2013). For bioenergy, ranges include global climate impacts of CO_2 emissions from combustion of regenerative biomass (i.e., biogenic CO_2) and the associated changes in surface albedo following ecosystem disturbances, quantified according to the IPCC framework for emission metrics (see the 4th IPCC Assessment Report, (Forster et al., 2007)) and using global warming potentials (GWP) with TH = 100 years as characterization factors (Cherubini et al., 2012; Section 11.13.4). These impacts are site-specific and generally more significant for long rotation species. The category 'Biogas' includes cases where manure, dedicated crops (e.g., maize), or a mixture of both are used as feedstocks. In addition to the variability in the substrates, the large range in the results reflects different degrees of CH_4 emissions from leakage and digestate storage, with the latter that can be reduced in closed storage systems (Boulamanti et al., 2013). No contribution analysis was available for this category. For methodological issues, see Annex II.6 and Section 11.13.4, for a discussion of the data sources see Annex II.9.3. The numbers are presented in Table A.III.2.

Source: Bruckner et al. 2014, 539-540

Figure 6: Emissions from technologies

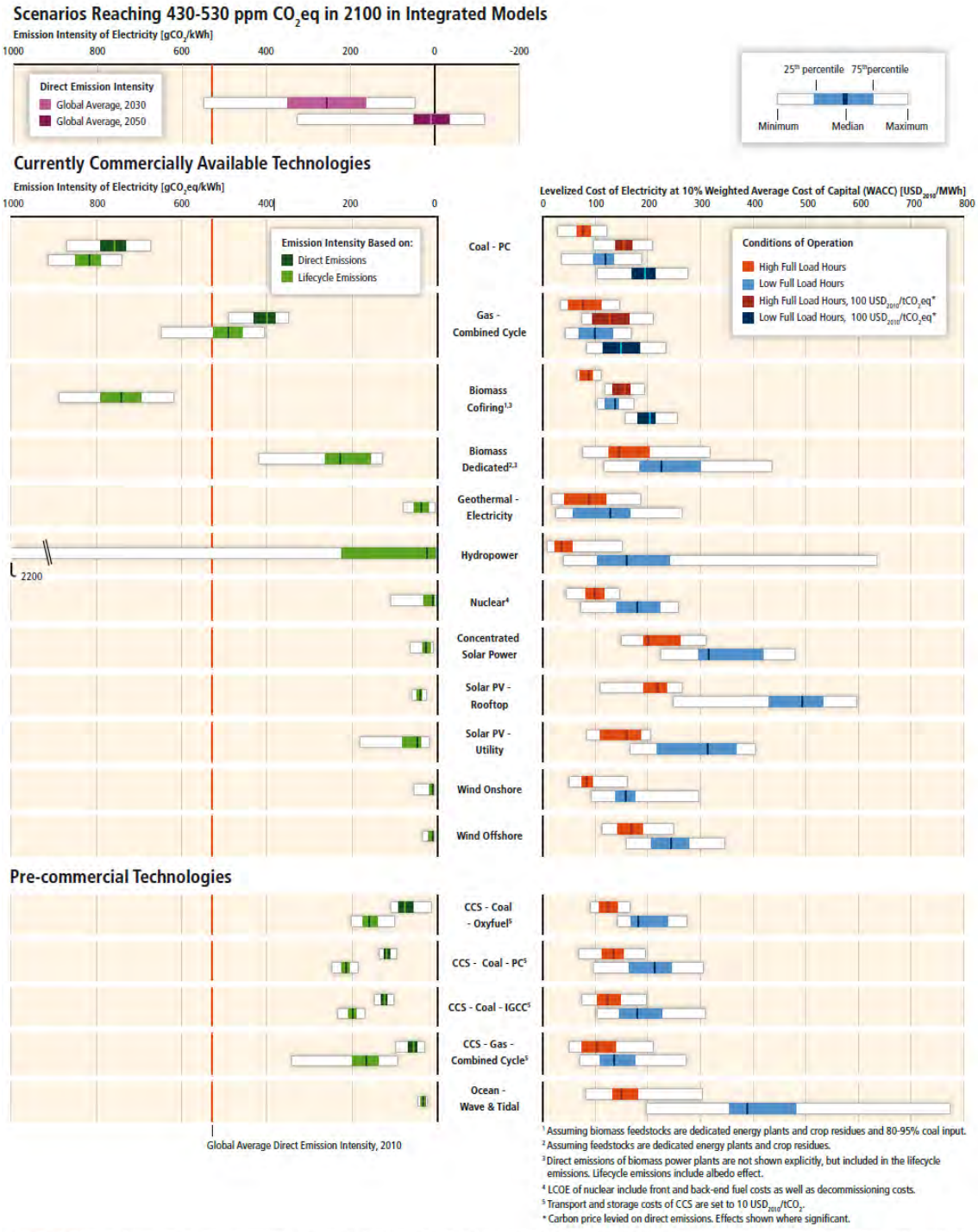


Figure 7.7 | Specific direct and lifecycle emissions (gCO_2eq/kWh) and levelized cost of electricity (LCOE in USD_{2010}/MWh) for various power-generating technologies (cf. Figure 7.6 for lifecycle; Annex III, Section A.III.2 for data and assumptions and Annex II, Section A.II.3.1 and Section A.II.9.3 for methodological issues). The upper left graph shows global averages of specific direct CO_2 emissions (gCO_2/kWh) of power generation in 2030 and 2050 for the set of 430–530 ppm scenarios that are contained in the AR5 database (cf. Annex II, Section A.II.10). The global average of specific direct CO_2 emissions (gCO_2/kWh) of power generation in 2010 is shown as a vertical line (IEA, 2013a).

Note: The inter-comparability of LCOE is limited. For details on general methodological issues and interpretation see Annexes as mentioned above.

Source: Bruckner et al. 2014, 541-2.

Table 1: Emissions of selected supply technologies (gCO2eq/kWh)

Table A.III.2 | Emissions of selected electricity supply technologies (gCO_2eq/kWh)[i]

Options	Direct emissions	Infrastructure & supply chain emissions	Biogenic CO_2 emissions and albedo effect	Methane emissions	Lifecycle emissions (incl. albedo effect)
	Min/Median/Max	Typical values			Min/Median/Max
Currently Commercially Available Technologies					
Coal—PC	670/760/870	*9.6*	*0*	*47*	**740/820/910**
Gas—Combined Cycle	350/370/490	*1.6*	*0*	*91*	**410/490/650**
Biomass—cofiring	n.a.[ii]	–	–	–	**620/740/890**[iii]
Biomass—dedicated	n.a.[ii]	*210*	*27*	*0*	**130/230/420**[iv]
Geothermal	0	*45*	*0*	*0*	**6.0/38/79**
Hydropower	0	*19*	*0*	*88*	**1.0/24/2200**
Nuclear	0	*18*	*0*	*0*	**3.7/12/110**
Concentrated Solar Power	0	*29*	*0*	*0*	**8.8/27/63**
Solar PV—rooftop	0	*42*	*0*	*0*	**26/41/60**
Solar PV—utility	0	*66*	*0*	*0*	**18/48/180**
Wind onshore	0	*15*	*0*	*0*	**7.0/11/56**
Wind offshore	0	*17*	*0*	*0*	**8.0/12/35**
Pre-commercial Technologies					
CCS—Coal—Oxyfuel	14/76/110	*17*	*0*	*67*	**100/160/200**
CCS—Coal—PC	95/120/140	*28*	*0*	*68*	**190/220/250**
CCS—Coal—IGCC	100/120/150	*9.9*	*0*	*62*	**170/200/230**
CCS—Gas—Combined Cycle	30/57/98	*8.9*	*0*	*110*	**94/170/340**
Ocean	0	*17*	*0*	*0*	**5.6/17/28**

Notes:

[i] For a comprehensive discussion of methodological issues and underlying literature sources see Annex II, Section A.II.9.3. Note that input data are included in normal font type, output data resulting from data conversions are bolded, and intermediate outputs are italicized.

[ii] Direct emissions from biomass combustion at the power plant are positive and significant, but should be seen in connection with the CO_2 absorbed by growing plants. They can be derived from the chemical carbon content of biomass and the power plant efficiency. For a comprehensive discussion see Chapter 11, Section 11.13. For co-firing, carbon content of coal and relative fuel shares need to be considered.

[iii] Indirect emissions for co-firing are based on relative fuel shares of biomass from dedicated energy crops and residues (5-20%) and coal (80-95%).

[iv] Lifecycle emissions from biomass are for dedicated energy crops and crop residues. Lifecycle emissions of electricity based on other types of biomass are given in Chapter 7, Figure 7.6. For a comprehensive discussion see Chapter 11, Section 11.13.4. For a description of methodological issues see Annex II of this report.

Source: Schlömer et al. 2014, 1335

Based on several data sources, we can assume the following life cycle emissions for the energy activities included in the Climate Delegated Act:

Table 2: Indirect emissions electricity production by source

Source of electricity	**Emissions**	**Source**	**Potentially affected activities**
Biomass	median: 230 gCO2eq/kWh; max: 420 gCO2eq/kWh	IPCC Fifth Assessment Report (2014)	4.8; 4.13; 4.19; 4.20; 4.23; 4.24
Geothermal	median: 38 gCO2eq/kWh; max: 79 gCO2eq/kWh (lifecycle and upstream emissions are equivalent for geothermal)	IPCC Fifth Assessment Report (2014)	4.6, 4.18; 4.22;

Hydropower	10.5 gCO2eq/kWh (UNECE 2022) (biogenic emissions not included) Min: 1.0, Median: 24, Max: 79 (gCO2e/kWh, IPCC 2014)	UNECE 2022 report, IPCC Fifth Assessment Report (2014)	4.5
Solar	Solar upstream emissions 49.1 gCO2eq/kWh (90th percentile, worst case), according to INCER-ACV-Tool. 37 to 53 gCO2eq/kWh, according to UNECE 2022 report. Solar PV (rooftop, gCO2e/kWh): Min 26, Median 41, Max 60 (IPCC 2014) Solar PV (utility, gCO2e/kWh): Min: 18, Median: 48, Max: 180 (IPCC 2014) Concentrated Solar Power (gCO2e/kWh): Min 8.8; Median: 28; Max 63 (IPCC 2014)	INCER-ACV-Tool; UNECE 2022 report, IPCC Fifth Assessment Report (2014)	4.1; 4.2; 4.17; 4.21;
Wind	UNECE Report: Onshore: 12 gCO2eq/kWh; Offfshore: 14 gCO2eq/kWh IPCC Report (gC02e/kWh) Onshore: Min: 7, Median: 11, Max: 56 Offshore: Min: 8, Median: 12, Max: 37	UNECE 2022 report, IPCC Fifth Assessment Report (2014)	4.3;

Sources: Authors'

These median emission values underline that, while there are geographical and site-specific factors to keep in mind, it can be expected that lower thresholds do not necessarily lead to issues with compliance to substantial contribution.

DNSH criteria for climate change mitigation

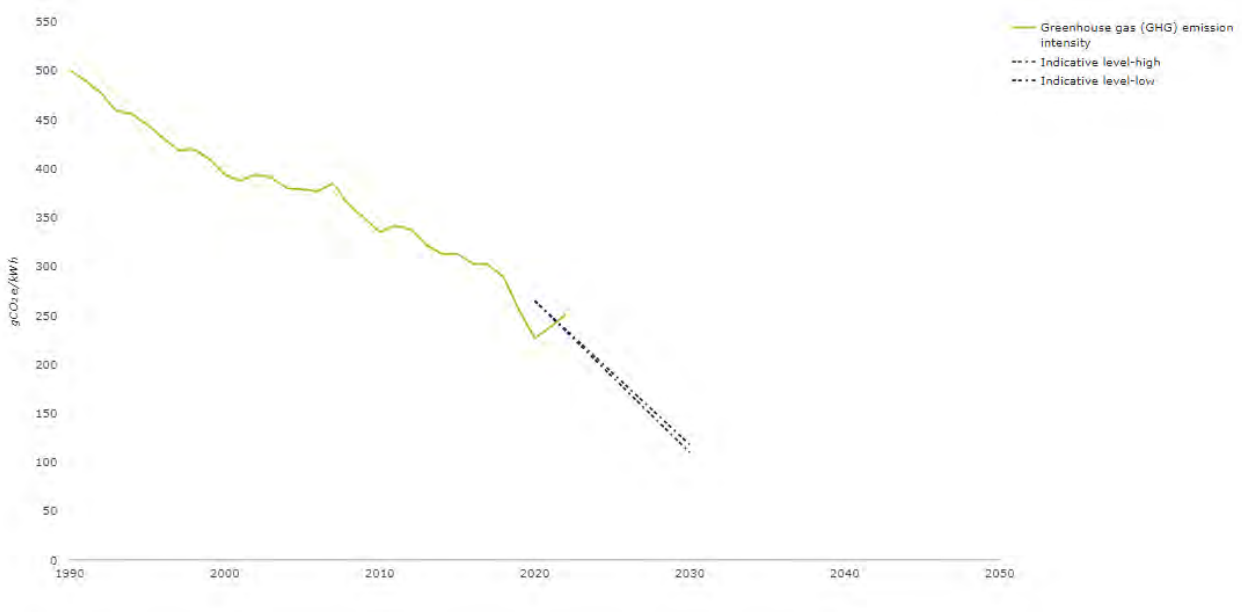
The DNSH criteria for climate change mitigation put forward a threshold of 270g CO2e/kWh in direct emissions. In its impact assessment report of the Climate Delegated Act, the European Commission put forward their rationale of setting a general DNSH threshold of 270g CO2e/kWh in the energy sector. According to the European Commission, "many activities in this macro sector are not in a position to significantly emit GHG by technology and thus require no specific criteria. For other activities, in light of the systemic importance of decarbonising the energy sector, it is considered that an approach similar to manufacturing is warranted, setting the threshold for significantly harming climate mitigation at the current average emissions.

The TEG recommendations are supported to use the IEA regional average as the reference (262g)" (European Commission 2021b, p. 222*)*

In addition, the impact assessment report states that "services do not consider it appropriate to consider any increase that are below this threshold in emissions due to implementation of adaptation solutions as significantly harming mitigation" (European Commission 2021b, p. 222). In light of the impact assessment's argument for using the then current average emissions, the developments in and projections of EU average direct emissions should therefore be taken into account.

Data[7] from the EEA, built on the official national GHG emission inventories and the complete energy balance – electricity data reported by countries to the EEA and Eurostat, respectively, suggests that the current EU average for direct emissions is below the 270g CO2e/kWh threshold (EEA, 2023a), indicating a lower threshold to raise the level of ambition and facilitate the emission reduction goals for 2030, 2040, and 2050:

Figure 7: Greenhouse gas emission intensity of electricity generation

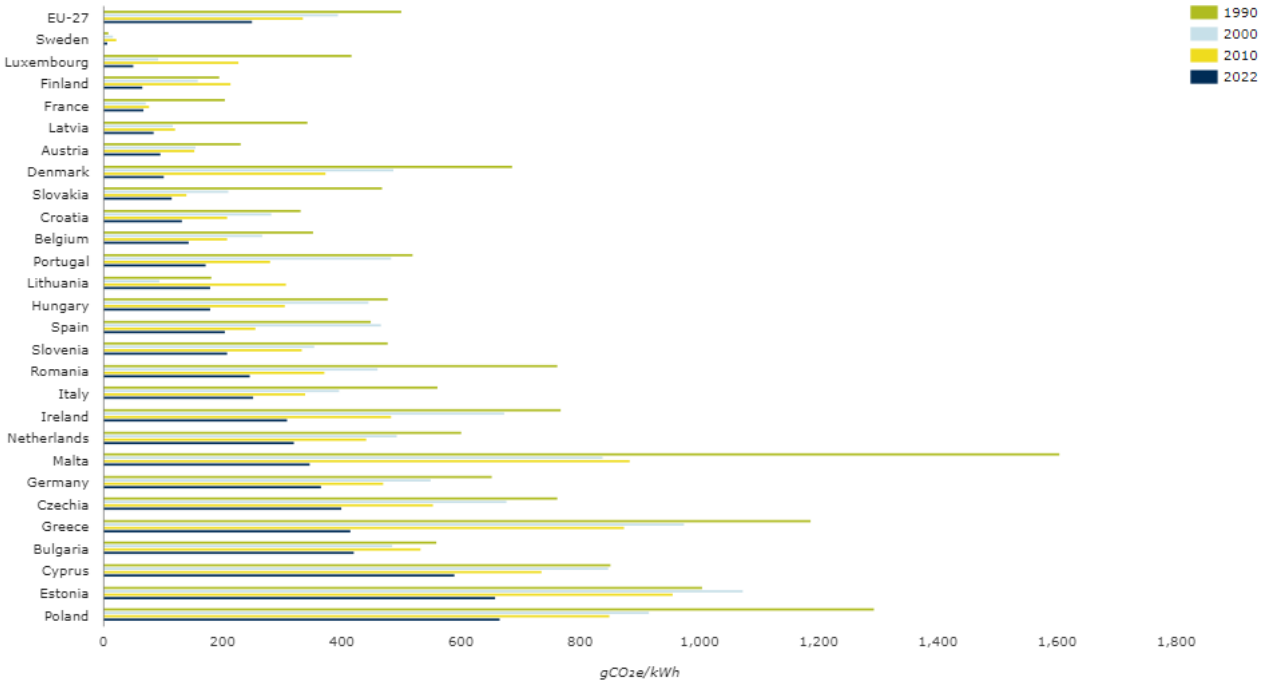


Source: EEA 2023b

While the EU average is a strong indicator, it does only provide minimal information concerning the spread of GHG emission intensity of electricity generation across the member states. According to EEA data, GHG emissions vary between the member states:

Figure 8: Greenhouse gas emission intensity of electricity generation

7 Information about the methodology can be found here: https://www.eea.europa.eu/en/analysis/indicators/greenhouse-gas-emission-intensity-of-1?activeAccordion=546a7c35-9188-4d23-94ee-005d97c26f2b



Source: EEA 2023b

According to figure 3, the EU average of GHG emission intensity of electricity generation is characterised by strong outliers. In order to account for the strong variance between member state GHG emission intensity of electricity generation, using the median could be useful. **The median of EU-27 GHG emission intensity of electricity generation for 2022 results in 205g CO2e/kWh.** Another possibility could be to exclude the strongest outliers (first three and last three) before calculating the average.

Another aspect to consider for a revision of CO2e thresholds, particularly of the DNSH thresholds is the indicative EU average in the future. **The EEA considers the EU-27 GHG emission intensity level in 2030 to be between 110 (indicative level-low) and 118 (indicative level-high) gCO2e/kWh (EEA 2023b).** The trajectories put forward by the EEA follow indicative intensity levels in line with a net reduction in GHG of 55% by 2030. According to the EEA they are "consistent with scenario ranges in the staff working document accompanying the 'Fit for 55' policy package" (EEA 2023a; see also European Commission 2021c). The values have been modelled with PRIMES and indicate how close to/far away current emission intensity is from where a 55 per cent reduction of GHG emission compared to 1990 are.

Based on the assessment of direct emission for selected energy supply technologies (see table 1), it can be expected that lower thresholds do not necessarily lead to issues with compliance to DNSH in the energy sector.

Overview of discussed thresholds

In this paper, we reflected on potentially lower g CO2e/kWh thresholds for substantial contribution and DNSH in the energy sector. The reflection of potential emission trajectories for the energy sector, EU climate targets, as well as potential substantial contribution thresholds for 2025, highlights that lower thresholds are not only feasible, but are also necessary to achieve the targets set out in EU legislation. As put forward in the table

below, the majority of the potential thresholds reflected in this paper point towards front-loading the reduction in 2025.

Table 3: Potential thresholds

Substantial Contribution Thresholds for 2025	**Source**	**Comments**
70g CO2e/kWh	TEG calculation	Based on previous ETS targets, which have since been revised
41,19g CO2e/kWh (45g CO2e/kWh if rounding is used as in the original TEG calculation)	Updated TEG calculation	Based on revised ETS targets and updated emission and energy demand data, adjusted to EU27.
64,8 CO2e/kWh	EU legislation concerning green hydrogen	
100g CO2e/kWh (existing) 50g CO2e/kWh (new)	CBI	CBI differentiates between scope 1 and scope 3 emission targets for different energy activities.

Source: Platform

The most ambitious threshold would come from an updated TEG calculation that includes the revised ETS targets and uses the newest available PRIMES reference scenario from 2020, which would be at 45g CO2e/kWh (life cycle emissions).

For DNSH thresholds, we have reflected EEA data on GHG emissions intensity of electricity generation, which was central in developing DNSH thresholds for climate change mitigation in the Climate DA. Based on this data, we were able to point out two key aspects:

1. Using the EU-27 average for GHG emissions intensity does lead to a distorted value, due to strong outliers with considerably higher and lower values for GHG emissions intensity. Using the median, which is also often used for BREF data, offers a way to account for such outliers and thus put forward a more realistic DNSH threshold.
2. Based on EU legislation, in particular the Fit for 55 package, the EEA projects the EU-27 average to be between 108 (indicated low level) and 118 (indicated high level). A median value would be necessary here as well to account for strong outliers.

Table 4: Potential DNSH thresholds

Potential DNSH Threshold	**Year**	**Based on**	**Comments**

205	2022	EEA data	**EU-27 median** based on GHG emission intensity data from electricity production
110-118	2030	EEA projection	EEA projection, **EU-27 average**

Source: Platform

Potential ways forward

Based on the reflection of potential thresholds, **differentiating between new and existing energy utilities for substantial contribution** might be a potential option. Such an approach would keep in mind the investment cycles for and lifespan of energy utilities and provide investment security for existing energy utilities, given that they comply with the Taxonomy criteria in the Climate DA. In addition, differentiating between existing and new energy utilities would also provide the opportunity to raise the level of ambition significantly for investments in new energy utilities. Given the potential lifespan of energy utilities (20-30 years, given the type of energy source), a higher level of ambition for new instalments is needed in order to comply with the EU's climate targets.

However, in order to differentiate between new and existing energy utilities for substantial contribution, central topics need to be addressed, e.g.

- Until when does an energy instalment count as existing?
- At which stage of the planning process does the criteria for new instalments apply?
- Which parts of CapEx are considered and until when?
- Is there a cut-off date for existing energy instalments (e.g. is Taxonomy-alignment for existing instalments with the old threshold only possible until a specific year)?

Such an approach would thus increase complexity in the Climate DA and thus potentially have negative effects on the usability of the criteria. Hence, opting for same criteria for existing and new energy instalments can be regarded as the more plausible way forward.

Conclusion

Based on the findings above, lower CO2e thresholds for substantial contribution and do no significant harm for energy activities can be regarded as possible without creating friction across the sector. In addition, lower CO2e thresholds across the energy sector can also be regarded in order to secure alignment with the EU's climate goals. In order to ensure criteria that are aligned with a net zero trajectory by 2050, emission reduction measures need to be front-loaded in order to give more time for those emissions that are harder to reduce.

The analysis effectively leads to the following recommendations:

Table 5: Recommendations

	Current Value	Recommendation for 2025	Recommendation for 2030
Substantial Contribution	100g CO2e/kWh	45g CO2e/kWh	25g CO2e/kWh
DNSH	270g CO2e/kWh	240g CO2e/kWh[8]	115g CO2e kWh

Source: Platform

The reasons for choosing these recommendations for substantial contribution are threefold:

1. The updated TEG calculation for substantial contribution, following the formula used to draw up the 100g CO2e/kWh threshold, leads to a new threshold of 41,19g CO2e/kWh for 2025. The TEG has used a methodology that rounds up that value to 45g CO2e/kWh.

2. Providing the market with a clear signal on substantial contribution thresholds provides the opportunity to redirect financial flows towards the energy investments the EU needs in order to achieve net-zero by 2050. Since lifespans of energy utilities can last from 20-80 years, depending on the source of energy, new investments made from 2025 onwards need to contribute substantially towards the goal of climate change mitigation by reducing overall lifecycle emission.

3. Based on energy utility criteria, e.g. by Climate Bonds Initiative, a threshold of 45g CO2e/kWh for substantial contribution to climate change mitigation follows and is near current developments for new installations in the market. A threshold recommendation that deviates from market practices might lead to market distortion and thus reduce the effectiveness of the EU sustainable finance framework.

Currently, the g CO2e/kWh threshold only applies to some activities. In a future review, it should be reviewed if it should be applied to other activities which currently do not need to ensure alignment with a lifecycle emission threshold.

For DNSH, it is necessary to set a clear signal to market participants that an adjustment of DNSH criteria will come in the future. Based on the methodology used by the TEG to calculate the DNSH gCO2e/kWh threshold, the adjustments until 2025 can be regarded as minor. However, based on the Fit for 55 legislation, we must expect a strong reduction of the value coming out of that methodology by 2030. Hence, a recommendation should clearly signal this reduction and propose a lower value for 2030, while also adjusting the 2025 value according to the current trajectory. We invite participants of the consultation to hand in data concerning direct emissions of CHP in district heating to inform the recommendations for 2025.

While the TEG has proposed reviewing these thresholds every five years, it should be considered to review them in line with the requirement to review transitional activities every three years. The reason is that changed thresholds will take some time to come into force. Hence, reviewing the thresholds every three years will give markets additional time to adjust and ensure that, if adjusted, the adjustment can take place every five years.

8 We invite participants of the consultation to hand in data concerning direct emissions of CHP in district heating to inform the recommendations for 2025.

Technology/fuel neutrality is a key element of the EU Taxonomy. To meet this requirement and maintain a coherent energy system perspective and to avoid adverse impacts in the energy sector, the current life-cycle GHG emission threshold for Substantial Contribution of 100 g CO2e/kWh and the direct emissions DNSH criteria of 270g CO2e/kWh should be correspondingly lowered in all activities that refer to them in the energy sector, for consistency and the aforementioned technology/fuel neutrality.

Some of these activities lie outside the scope of this 2021 Climate DA Review, in several cases because they are found in the Complementary Delegated Act from 2022 and the more recent DAs from 2023. These activities include the activity Electricity generation from fossil gaseous fuels (4.29.) as well as activity 4.30 and 4.31, where both the 100g and 270g TSC are used, 100g in Annex I and 270g in Annex II of the Complementary Delegated Act ((EU) 2022/1214). Activities 4.26, 4.27, and 4.28 furthermore use the 100g threshold as additional criteria pertaining to substantial contribution to climate change mitigation (Annex I) and 270g for DNSH to climate change mitigation (Annex II).

Concerning activities 4.26, 4.27, 4.28, 4.29, 4.30. and 4.31, the Platform reiterates its critical position on the Complementary Delegated Act from January 21, 2022 (Platform on Sustainable Finance 2022)9. Nevertheless and whilst reiterating this position, the Platform would highlight to the Commission the need for revision of the energy TSC in a consistent manner across energy activities in all DAs, so that capital flows are not exposed to an undesirable inconsistency that would undermine EU Taxonomy objectives and EU climate policies.

The Platform also notes interlinkages between emission thresholds in energy activities and technical screening criteria of other activities in Taxonomy. The life cycle 100 g CO2e/kWh threshold is used as a substantial contribution criteria e.g. in Manufacture of aluminum (3.8.) and Manufacture of chlorine (3.13.) and is also a central element in Transmission and distribution of electricity (4.9.). For consistency, all these criteria should be reviewed and, when appropriate, adjusted to reflect the updated life cycle GHG emission threshold in energy activities. This also concerns the proposed substantial contribution criteria of Mining and Refining activities (copper, nickel, lithium).

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ii. Bioenergy activities

Methodology in the Climate DA

Bioenergy activities in the Climate DA diverge from using similar CO2e life cycle emission thresholds for substantial contribution, as used by the majority of activities in the energy sector (in the Climate DA set at 100g CO2e/kWh for SC). Instead, drawing on criteria from the EU's Renewable Energy Directive (RED) for bioenergy activities the Climate DA includes percentage reduction values for greenhouse gas emissions based on relative fossil fuel comparators, as set out in the RED's annexes. A key example is activity 4.8 (electricity generation from bioenergy):

Textbox 1: Technical Screening Criteria for Activity 4.8 (electricity generation from bioenergy)

Substantial contribution to climate change mitigation:

1. Agricultural biomass used in the activity complies with the criteria laid down in Article 29, paragraphs 2 to 5, of Directive (EU) 2018/2001. Forest biomass used in the activity complies with the criteria laid down in Article 29, paragraphs 6 and 7, of that Directive.

2. The greenhouse gas emission savings from the use of biomass are at least 80 % in relation to the GHG saving methodology and the relative fossil fuel comparator set out in Annex VI to Directive (EU) 2018/2001.

3. Where the installations rely on anaerobic digestion of organic material, the production of the digestate meets the criteria in Sections 5.6 and criteria 1 and 2 of Section 5.7 of this Annex, as applicable.

4. Points 1 and 2 do not apply to electricity generation installations with a total rated thermal input below 2 MW and using gaseous biomass fuels.

5. For electricity generation installations with a total rated thermal input from 50 to 100 MW, the activity applies high-efficiency cogeneration technology, or, for electricity-only installations, the activity meets an energy efficiency level associated with the best available techniques (BAT-AEL) ranges set out in the latest relevant best available techniques (BAT) conclusions, including the best available techniques (BAT) conclusions for large combustion plants (172).

6. For electricity generation installations with a total rated thermal input above 100 MW, the activity complies with one or more of the following criteria:
(a) attains electrical efficiency of at least 36 %;
(b) applies highly efficient CHP (combined heat and power) technology as referred to in Directive 2012/27/EU of the European Parliament and of the Council (173);
(d) uses carbon capture and storage technology. Where the CO2 that would otherwise be emitted from the electricity generation process is captured for the purpose of underground storage, the CO2 is transported and stored underground in accordance with the technical screening criteria set out in Sections 5.11 and 5.12, respectively, of this Annex.

Source: European Commission 2021, p. 71

In the annex to the TEG's final report, the TEG expressed the reasoning that "[f]or ease of conversion, a GHG emission reduction of 80% in relation to the relative fossil fuel comparator set out in RED II is assumed to be equivalent to the 100g CO2e / kWh threshold." (TEG 2020, 225). In a previous version of the report (June 2019), the TEG expected 85% GHG emission savings to be comparable: "A GHG emission reduction of 85% in relation to the relative fossil fuel comparator set out in RED II is roughly equivalent to the 100g CO2e / kWh threshold" (TEG 2019, 253).

However, it currently remains unclear whether the TEG put forward a calculation for this. No calculation were included in the June 2019 or March 2020 reports. It is also not clear where the reduction from 85% to 80% in emission savings came from. If 80%, as put forward in the 2020 report, would be assumed to be equivalent to the 100g CO2e/kWh threshold, it would result in a 500g CO2e/kWh standard value for fossil fuel comparators. Given that fossil fuels come with different degrees of GHG emissions, the standard value might need additional explanation. Below, we highlight that the fossil fuel comparator depends on the type of

bioenergy technology (e.g. energy or heat/cool production). 80 per cent reduction leads to different values if translated to g CO2e/kWh, some of them being above the 100g CO2e/kWh threshold currently in use.

Note: The RED has been amended since the publication of the TEG's Report (from "RED II" to "RED III"), but it remained "Directive (EU) 2018/2001". Therefor, the current RED references in the Climate DA remain valid, referring to the amended versions of the relevant articles and annexes.

Insights into the GHG savings methodology as set out in RED

For bioenergy activities, the RED sets out the GHG emission reduction methodology as used in the Climate DA. It does so by providing two key components:

- calculation methodologies to calculate GHG emission savings.
- lists of typical and default values of GHG emission savings.

Calculation methodologies

The annexes V and VI include a variety of calculation methodologies for calculating GHG emissions from the production and use of transport fuels, biofuels and bioliquids (Annex V) and from the production and use of biomass fuels (Annex VI).

Emissions from the production and use of biofuels (incl. used in transport) and bioliquids

Emissions from the production and use of biofuels (incl. used in transport) and bioliquids are calculated this way:

Textbox 2: Calculating emissions from the production and use of transport fuels, biofuels, and bioliquids

1. Greenhouse gas emissions from the production and use of transport fuels, biofuels and bioliquids shall be calculated as follows:

(a) greenhouse gas emissions from the production and use of biofuels shall be calculated as:

$E = e_{ec} + e_l + e_p + e_{td} + e_u - e_{sca} - e_{ccs} - e_{ccr}$,

where

E	=	total emissions from the use of the fuel;
e_{ec}	=	emissions from the extraction or cultivation of raw materials;
e_l	=	annualised emissions from carbon stock changes caused by land-use change;
e_p	=	emissions from processing;
e_{td}	=	emissions from transport and distribution;
e_u	=	emissions from the fuel in use;
e_{sca}	=	emission savings from soil carbon accumulation via improved agricultural management;
e_{ccs}	=	emission savings from CO_2 capture and geological storage; and
e_{ccr}	=	emission savings from CO_2 capture and replacement.

Emissions from the manufacture of machinery and equipment shall not be taken into account.

Source: European Commissions 2018, p. 71-2

There are, however, additional calculation methods depending on the use of biofuels. Textbox 2 only provides the first calculation method. Due to space constraints, the savings methodology for greenhouse gas emissions from the production and use of bioliquids shall be calculated as for biofuels (E), but with the extension necessary for including the energy conversion to electricity and/or heat and cooling produced is not presented here. It can be found in Annex V, Part C, point 1b. GHG emission savings from biofuels and bioliquids are calculated as follows:

Textbox 3: Calculating GHG emissions savings from biofuels and bioliquids

3. Greenhouse gas emissions savings from biofuels and bioliquids shall be calculated as follows:

(a) greenhouse gas emissions savings from biofuels:

$SAVING = (E_{F(t)} - E_B)/E_{F(t)}$,

where

E_B	=	total emissions from the biofuel; and
$E_{F(t)}$	=	total emissions from the fossil fuel comparator for transport

Source: European Commission 2018, p. 74)

In all of these saving calculations, fossil fuel comparator values play an important role. The renewable energy directive therefore provides the following fossil fuel comparator values for biofuels and bioliquids ($E_{F(t)}$):

Textbox 4: Fossil fuel comparator values for biofuels and bioliquids

19. For biofuels, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $E_{F(t)}$ shall be 94 g CO_2eq/MJ.

For bioliquids used for the production of electricity, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $EC_{F(e)}$ shall be 183 g CO_2eq/MJ.

For bioliquids used for the production of useful heat, as well as for the production of heating and/or cooling, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $EC_{F(h\&c)}$ shall be 80 g CO_2eq/MJ.

Source: European Commission 2018, p. 79.

Translated into g CO2e/kWh (source: own calculation), the values are:

- For biofuels: 338,4g CO2e/kWh
- For bioliquids used for the production of electricity: 658,3g CO2e/kWh
- For bioliquids used for the production if useful heat, heating and/or cooling: 288g CO2e/kWh

For biomass fuels, Annex VI presents similar calculation methods. GHG emissions from the production and use of biomass fuels are calculated as follows.

Textbox 5: Greenhouse gas emissions from the production and use of biomass fuels

1. Greenhouse gas emissions from the production and use of biomass fuels, shall be calculated as follows:

(a) Greenhouse gas emissions from the production and use of biomass fuels before conversion into electricity, heating and cooling, shall be calculated as:

$E = e_{ec} + e_l + e_p + e_{td} + e_u - e_{sca} - e_{ccs} - e_{ccr}$,

Where

E	=	total emissions from the production of the fuel before energy conversion;
e_{ec}	=	emissions from the extraction or cultivation of raw materials;
e_l	=	annualised emissions from carbon stock changes caused by land-use change;
e_p	=	emissions from processing;
e_{td}	=	emissions from transport and distribution;
e_u	=	emissions from the fuel in use;
e_{sca}	=	emission savings from soil carbon accumulation via improved agricultural management;
e_{ccs}	=	emission savings from CO_2 capture and geological storage; and
e_{ccr}	=	emission savings from CO_2 capture and replacement.

Emissions from the manufacture of machinery and equipment shall not be taken into account.

Source: European Commission 2018, p. 104-5

There are, however, additional calculation methods depending on the use of biofuels. Textbox 5 only provides the first calculation method. Due to space constraints, the other methodologies are not presented here. They can be found in Annex VI, Part B, points 1b-d. GHG emission savings from biomass fuels are calculated as follows:

Textbox 6: GHG emissions savings calculating method

3. Greenhouse gas emissions savings from biomass fuels shall be calculated as follows:

(a) greenhouse gas emissions savings from biomass fuels used as transport fuels:

$SAVING = (E_{F(t)} - E_B)/E_{F(t)}$

where

E_B	=	total emissions from biomass fuels used as transport fuels; and
$E_{F(t)}$	=	total emissions from the fossil fuel comparator for transport

(b) greenhouse gas emissions savings from heat and cooling, and electricity being generated from biomass fuels:

$SAVING = (EC_{F(h\&c,el)} - EC_{B(h\&c,el)})/EC_{F(h\&c,el)}$,

where

$EC_{B(h\&c,el)}$	=	total emissions from the heat or electricity,
$EC_{F(h\&c,el)}$	=	total emissions from the fossil fuel comparator for useful heat or electricity.

Source: European Commission 2018, p. 108-9

For biomass fuels the renewable energy directive provides the following fossil fuel comparator values $E_{F(t)}$:

Textbox 7: Fossil fuel comparator values for biomass fuels

19. For biomass fuels used for the production of electricity, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $EC_{F(el)}$ shall be 183 g CO_2eq/MJ electricity or 212 g CO_2eq/MJ electricity for the outermost regions.

For biomass fuels used for the production of useful heat, as well as for the production of heating and/or cooling, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $EC_{F(h)}$ shall be 80 g CO_2eq/MJ heat.

For biomass fuels used for the production of useful heat, in which a direct physical substitution of coal can be demonstrated, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $EC_{F(h)}$ shall be 124 g CO_2eq/MJ heat.

For biomass fuels used as transport fuels, for the purposes of the calculation referred to in point 3, the fossil fuel comparator $E_{F(t)}$ shall be 94 g CO_2eq/MJ.

Source: European Commission 2018, p. 113

Translated into g CO2e/kWh, the fossil fuel comparator values as currently used in the RED are:

- For biomass fuels for the production of electricity: 658,3g CO2e/kWh or 763,8 for the outermost regions
- For biomass fuels for the production of useful heat, heating and/or cooling: 288 g CO2e/kWh
- For biomass fuels used for the production of useful heat in which a direct physical substitution of coal can be demonstrated: 446,4g CO2e/kWh
- For biomass fuels used as transport fuels: 338,4g CO2e/kWh

These values highlight strong differences between the production of electricity on the one hand as well as the production of heat/cool, replacements of coal for useful heat, and transport fuels on the other hand. To some degree, the differences reflect lower efficiencies in producing electricity from fuels than producing heat from the same fuels, in this case electricity production from biomass fuels, as the fossil fuel comparator for the production of electricity is a much higher value than the others. These differences are not acknowledged in the current Climate DA. While there are different percentages for reduction compared to fossil fuel comparators for transport, the criteria for energy production as well as heat and/or heat/cool use the same GHG savings requirement (see table 2).

While fossil fuel comparators are calculated as a weighted average from fossil fuel technologies, the directive itself does not state how the average was weighted. While RED II has been updated with RED III (which EU member states have to transpose into national law by May 21, 2025), the fossil fuel comparators have not. Assuming that the composition of fossil fuel technologies has changed since 2018 when RED II was published (particularly with phase-outs for coal in several EU member states), the missing adjustments of the fossil fuel comparators raises additional methodological questions. In case the fossil fuel comparator would be lower because coal plays a smaller role in the weighted average for fossil fuel technologies, an 80 per cent GHG emission saving target s set forward by the EU Taxonomy would translate to a lower threshold as well (and vice versa, in case the weighted average would lead to a higher value).

The TEG has published in its final report that "[f]or ease of conversion, a GHG emission reduction of 80% in relation to the relative fossil fuel comparator set out in RED II is assumed to be equivalent to the 100g CO2e / KWh threshold." (TEG 2020, p. 235). Based on the fossil fuel comparators set forward by RED II/III (see above), each activity has a different threshold if translated to 100g C02e/kWh (see table 1).

Table 1: Translating GHG emission savings into g CO2e/kWh

No.	**Activity**	**Taxonomy, CCM DA (2022)**	**Fossil fuel comparator (in g CO2e/kWh) to be used** **[RED values converted from MJ to kWh]**	**80% emission savings result in g CO2e/kWh**
4.7.	Energy generation from renewable **non-fossil gaseous and liquid fuels**	N/A		N/A
4.8.	Electricity generation from bioenergy	≥ 80 %	• 658,3g CO2e/kWh • 763,8g CO2e/kWh in outermost regions	• 131g CO2/kWh • 152,8g CO2e/kWh in outermost regions
4.13.	**Manufacture** of **biogas and biofuels for use in transport and of bioliquids**	≥ 65 %	• 338,4g CO2e/kWh	• 118,4g CO2e/kWh
4.19.	Cogeneration of heat/cool and power from renewable **non-fossil gaseous and liquid fuels**	N/A		N/A
4.20.	Cogeneration of heat/cool and power from bioenergy	≥ 80 %	For generated electricity: • 658,3g CO2e/kWh • 763,8g CO2e/kWh in outermost regions	For generated electricity: • 131g CO2/kWh • 152,8g CO2e/kWh in outermost regions

No.	Activity	Taxonomy, CCM DA (2022)	Fossil fuel comparator (in g CO2e/kWh) to be used [RED values converted from MJ to kWh]	80% emission savings result in g CO2e/kWh
			For generated useful heat/cool: • 288g CO2e/kWh If a direct physical substitution of coal can be demonstrated: 446,4g CO2e/kWh	For generated useful heat/cool: • 57g CO2e/kWh If a direct physical substitution of coal can be demonstrated: 89,28g CO2e/kWh
4.23.	Production of heat/cool from renewable nonfossil gaseous and liquid fuels	N/A		N/A
4.24.	Production of heat/cool from bioenergy	≥ 80 %	• 288 g CO2e/kWh If a direct physical substitution of coal can be demonstrated: • 446,4g CO2e/kWh	• 57g CO2e/kWh If a direct physical substitution of coal can be demonstrated: • 89,28g CO2e/kWh

Source: Platform

The fossil fuel comparators do acknowledge different emission intensities between energy production or heat/cool production from biomass fuels. However, the same GHG emission reduction target across different activities leads to different thresholds in terms of g CO2e/kWh. This is particularly the case for energy production from biomass fuels, where, if translated to g CO2e/kWh, the threshold is set above the 100g CO2e/kWh threshold that is used for other energy sector activities. Keeping in mind that electricity production from biomass fuels has a lower efficiency compared to the production of heat/cool, using a higher threshold can be criticised because it appears that a less efficient technology has to comply with less ambitious criteria.

Lists of typical and default values

The Taxonomy criteria for bioenergy activities focus on GHG emission savings instead of clear thresholds. Typically, the criteria define a percentage for emission reduction in relation to the GHG saving methodology and the relative fossil fuel comparator set out in the annex of the RED (see Textbox 1 for an example)[10]. The fossil fuel comparator varies based on the type of bioenergy (biofuels and bioliquids on the one side, biomass

10 RED III reports that there will be a Delegated Act with the aim to update Annex V and VI.

fuels on the other side) as well as the type of activity they are used for (e.g. electricity production or heat/cool production, see 2.1).

The two annexes cited in the bioenergy provide extensive lists for different forms of biomass incl. their transport distance from production to usage. Most currently used forms of biofuels/biomass fuels should be covered by the two annexes. These lists include typical and default values for their greenhouse gas emission savings in comparison to their fossil fuel comparators.

Textbox 8: Extract from Annex VI

ANNEX VI

RULES FOR CALCULATING THE GREENHOUSE GAS IMPACT OF BIOMASS FUELS AND THEIR FOSSIL FUEL COMPARATORS

A. Typical and default values of greenhouse gas emissions savings for biomass fuels if produced with no net-carbon emissions from land-use change

WOODCHIPS

Biomass fuel production system	Transport distance	Greenhouse gas emissions savings –typical value		Greenhouse gas emissions savings – default value	
		Heat	Electricity	Heat	Electricity
Woodchips from forest residues	1 to 500 km	93 %	89 %	91 %	87 %
	500 to 2 500 km	89 %	84 %	87 %	81 %
	2 500 to 10 000 km	82 %	73 %	78 %	67 %
	Above 10 000 km	67 %	51 %	60 %	41 %
Woodchips from short rotation coppice (Eucalyptus)	2 500 to 10 000 km	77 %	65 %	73 %	60 %
Woodchips from short rotation coppice (Poplar – Fertilised)	1 to 500 km	89 %	83 %	87 %	81 %
	500 to 2 500 km	85 %	78 %	84 %	76 %
	2 500 to 10 000 km	78 %	67 %	74 %	62 %

Source: European Commission 2018, p. 96

The annexes thus provide a potential overview of what kind of biofuels/biomass fuels can currently expected to be Taxonomy-aligned. Textbox 8 provides a clear example: Based on the default values for GHG emission savings, woodchips from forest residues would be considered Taxonomy aligned up to 2.500 kilometres of transport distance for activity 4.8, given that the material complies with additional criteria referenced in the TSC for that activity. For heat (e.g. activity 4.24), woodchips from forest residues would be considered aligned

up to 10.000 kilometres, if the typical value applies. Such long transport distances come with potentially high emissions from transport. As an alternative to the provided typical and default values, energy producers can calculate their own GHG emission savings compared to the respective fossil fuel comparator based on calculation methodologies provided by the RED.

Criteria for agricultural and forest biomass

The technical screening criteria for bioenergy activities in the Climate DA refer to Article 29 of the RED to provide criteria for agricultural biomass (paragraphs 2 to 5) and forest biomass (paragraphs 6 to 7) used in the activities. In its Assessment Report 2024, the European Scientific Advisory Board on Climate Change underlines a high risk that "biomass demand (driven by EU policies) will exceed sustainably available supply" (2024, p. 202). According to the report, this development could lead to negative effects for biodiversity, as well as the LULUCF net sink (European Scientific Advisory Board on Climate Change 2024, p. 202).

In terms of climate change mitigation, biomass can also raise concerns in terms of GHG emissions particularly from forestry biomass and resourcing criteria. What is more, wetlands and peatlands are large carbon storages. Peatlands are the second largest natural carbon reservoir after oceans. Intensive management, e.g. through drainage, to enable their use for bioenergy activities, is criticised as significantly harming climate change mitigation. Empirical results underline these criticisms. Based on a spatially explicit land-use modelling approach with global coverage which simultaneously accounts for future food demand, population and income projections, as well as land-based mitigation measures, Humpenöder et al. (2020) have highlighted that peatlands are expected to remain a net CO_2 source in case of missing dedicated peatland policies.

The TEG originally approached a different way forward. Instead of referring to Article 29 of the RED, proposals for bioenergy activities required compliance with the criteria for activity 4.13 (Manufacture of Biomass, Biogas, and Biofuels). Activity 4.13 required compliance with Part A of Annex IX of the RED for biomass from advanced feedstock, cited activities 5.3 for Biowaste and 5.5 Sewage Sludge, as well as providing additional criteria for other biomass.

Article 29 of the RED has been reformed with RED III. The reform itself does strengthen the agricultural and forest biomass sustainability criteria to some degree. This is particularly the case concerning Article 3 and the inclusion of the cascading principle (which is, currently, not referred to in the EU Taxonomy and reformulation on paragraph 6. However, our analysis highlights that there are considerable issues that could still lead to unsustainable use of agricultural and forest biomass (see also European Scientific Advisory Board on Climate Change 2024, p. 202-3.

Table 2: Comparison of Article 29 in RED II and RED III

	RED II	**RED III**
Agricultural Biomass		
Article 29, paragraph 2	Biofuels, bioliquids and biomass fuels produced from waste and residues from agricultural land shall be taken into account (...) only where operators or national	No change

	RED II	RED III
	authorities have monitoring or management plans in place in order to address the impacts on soil quality and soil carbon	
Article 29, paragraph 3	"Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land with a high biodiversity value, namely land that had one of the following statuses in or after January 2008, whether or not the land continues to have that status: (a) primary forest and other wooded land, namely forest and other wooded land of native species, where there is no clearly visible indication of human activity and the ecological processes are not significantly disturbed; (b) highly biodiverse forest and other wooded land which is species-rich and not degraded, or has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes; (c) areas designated: (i) by law or by the relevant competent authority for nature protection purposes; or (ii) for the protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature, subject to their recognition in accordance with the first subparagraph of Article 30(4), unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes; (d) highly biodiverse grassland spanning more than one hectare that is: (i) natural, namely grassland that would remain grassland in the absence of human intervention and that maintains the natural species composition and ecological characteristics and processes; or (ii) non-natural, namely grassland that would cease to be grassland in the absence of human intervention and that is species-rich and not degraded and has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the harvesting of the raw material is necessary to preserve its status as highly biodiverse grassland.	New version: "Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land with a high biodiversity value, namely land that had one of the following statuses in or after January 2008, irrespective of whether the land continues to have that status: (a) primary forest and other wooded land, namely forest and other wooded land of native species, where there is no clearly visible indication of human activity and the ecological processes are not significantly disturbed; and old growth forests as defined in the country where the forest is located; (b) highly biodiverse forest and other wooded land which is species-rich and not degraded, and has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes; (c) areas designated: (i) by law or by the relevant competent authority for nature protection purposes, unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes; or (ii) for the protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature, subject to their recognition in accordance with Article 30(4), first subparagraph, unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes; (d) highly biodiverse grassland spanning more than one hectare that is: (i) natural, namely grassland that would remain grassland in the absence of human intervention and that maintains the natural species composition and ecological characteristics and processes; or (ii) non-natural, namely grassland that would cease to be grassland in the absence of human intervention and that is species-rich and not degraded and has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the harvesting of

	RED II	RED III
	The Commission may adopt implementing acts further specifying the criteria by which to determine which grassland are to be covered by point (d) of the first subparagraph of this paragraph. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 34(3)."	the raw material is necessary to preserve its status as highly biodiverse grassland; or (e) heathland. Where the conditions set out in paragraph 6, points (a)(vi) and (vii), are not met, the first subparagraph of this paragraph, with the exception of point (c), also applies to biofuels, bioliquids and biomass fuels produced from forest biomass. The Commission may adopt implementing acts further specifying the criteria by which to determine which grassland is to be covered by the first subparagraph, point (d), of this paragraph. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 34(3)."
Article 29, paragraph 4	"Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land with high-carbon stock, namely land that had one of the following statuses in January 2008 and no longer has that status: (a) wetlands, namely land that is covered with or saturated by water permanently or for a significant part of the year; (b) continuously forested areas, namely land spanning more than one hectare with trees higher than five metres and a canopy cover of more than 30 %, or trees able to reach those thresholds in situ; (c) land spanning more than one hectare with trees higher than five metres and a canopy cover of between 10 % and 30 %, or trees able to reach those thresholds in situ, unless evidence is provided that the carbon stock of the area before and after conversion is such that, when the methodology laid down in Part C of Annex V is applied, the conditions laid down in paragraph 10 of this Article would be fulfilled. This paragraph shall not apply if, at the time the raw material was obtained, the land had the same status as it had in January 2008."	No change
Article 29, paragraph 5	"Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land that was peatland in January 2008, unless evidence is provided	New version: "Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in paragraph 1, first subparagraph, points (a), (b) and (c), shall not be made from raw material obtained from land that was peatland in January 2008, unless evidence is

	RED II	RED III
	that the cultivation and harvesting of that raw material does not involve drainage of previously undrained soil"	provided that the cultivation and harvesting of that raw material does not involve drainage of previously undrained soil. Where the conditions set out in paragraph 6, points (a)(vi) and (vii), are not met, this paragraph also applies to biofuels, bioliquids and biomass fuels produced from forest biomass."
Forest Biomass		
Article 29, paragraph 6	"Biofuels, bioliquids and biomass fuels produced from forest biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall meet the following criteria to minimise the risk of using forest biomass derived from unsustainable production: (a) the country in which forest biomass was harvested has national or sub-national laws applicable in the area of harvest as well as monitoring and enforcement systems in place ensuring: (i) the legality of harvesting operations; (ii) forest regeneration of harvested areas; (iii) that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including in wetlands and peatlands, are protected; (iv) that harvesting is carried out considering maintenance of soil quality and biodiversity with the aim of minimising negative impacts; and (v) that harvesting maintains or improves the long-term production capacity of the forest; (b) when evidence referred to in point (a) of this paragraph is not available, the biofuels, bioliquids and biomass fuels produced from forest biomass shall be taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 if management systems are in place at forest sourcing area level ensuring: (i) the legality of harvesting operations; (ii) forest regeneration of harvested areas; (iii) that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including in wetlands and peatlands, are protected unless evidence is provided that the harvesting of that raw material does not interfere with those nature protection purposes; (iv) that harvesting is carried out considering the maintenance of soil quality and biodiversity with the aim of minimising negative impacts; and	New version: "Biofuels, bioliquids and biomass fuels produced from forest biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall meet the following criteria to minimise the risk of using forest biomass derived from unsustainable production: (a) the country in which forest biomass was harvested has national or sub-national laws applicable in the area of harvest as well as monitoring and enforcement systems in place ensuring: (i) the legality of harvesting operations; (ii) forest regeneration of harvested areas; (iii) that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including in wetlands, grassland, heathland and peatlands, are protected with the aim of preserving biodiversity and preventing habitat destruction; (iv) that harvesting is carried out considering maintenance of soil quality and biodiversity in accordance with sustainable forest management principles, with the aim of preventing any adverse impact, in a way that avoids harvesting of stumps and roots, degradation of primary forests, and of old growth forests as defined in the country where the forest is located, or their conversion into plantation forests, and harvesting on vulnerable soils, that harvesting is carried out in compliance with maximum thresholds for large clear-cuts as defined in the country where the forest is located and with locally and ecologically appropriate retention thresholds for deadwood extraction and that harvesting is carried out in compliance with requirements to use logging systems that minimise any adverse impact on soil quality, including soil compaction, and on biodiversity features and habitats; (v) that harvesting maintains or improves the long-term production capacity of the forest; (vi) that forests in which the forest biomass is harvested do not stem from the lands that have the statuses referred to in paragraph 3, points (a), (b), (d) and (e), paragraph 4, point (a), and paragraph 5, respectively under the same conditions of determination of the status of land specified in those paragraphs; and

	RED II	RED III
	(v) that harvesting maintains or improves the long-term production capacity of the forest."	(vii) that installations producing biofuels, bioliquids and biomass fuels from forest biomass, issue a statement of assurance, underpinned by company-level internal processes, for the purpose of the audits conducted pursuant to Article 30(3), that the forest biomass is not sourced from the lands referred to in point (vi) of this subparagraph. (b) when evidence referred to in point (a) of this paragraph is not available, the biofuels, bioliquids and biomass fuels produced from forest biomass shall be taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 if management systems are in place at forest sourcing area level ensuring: (i) the legality of harvesting operations; (ii) forest regeneration of harvested areas; (iii) that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including in wetlands, grassland, heathland and peatlands, are protected with the aim of preserving biodiversity and preventing habitat destruction, unless evidence is provided that the harvesting of that raw material does not interfere with those nature protection purposes; (iv) that harvesting is carried out considering maintenance of soil quality and biodiversity, in accordance with sustainable forest management principles, with the aim of preventing any adverse impact, in a way that avoids harvesting of stumps and roots, degradation of primary forests, and of old growth forests as defined in the country where the forest is located, or their conversion into plantation forests, and harvesting on vulnerable soils, that harvesting is carried out in compliance with maximum thresholds for large clear-cuts as defined in the country where the forest is located, and with locally and ecologically appropriate retention thresholds for deadwood extraction and that harvesting is carried out in compliance with requirements to use logging systems that minimise any adverse impact on soil quality, including soil compaction, and on biodiversity features and habitats; and (v) that harvesting maintains or improves the long-term production capacity of the forest."
Article 29, paragraph 7	"Biofuels, bioliquids and biomass fuels produced from forest biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall meet the following land-use, land-use change and forestry (LULUCF) criteria: (a) the country or regional economic integration organisation of origin of the forest biomass is a Party to the Paris Agreement and: (i) it has submitted a nationally determined contribution (NDC) to the United Nations	New version: "Biofuels, bioliquids and biomass fuels produced from forest biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall meet the following land-use, land-use change and forestry (LULUCF) criteria: (a) the country or regional economic integration organisation of origin of the forest biomass is a Party to the Paris Agreement and:

	RED II	RED III
	Framework Convention on Climate Change (UNFCCC), covering emissions and removals from agriculture, forestry and land use which ensures that changes in carbon stock associated with biomass harvest are accounted towards the country's commitment to reduce or limit greenhouse gas emissions as specified in the NDC; or (ii) it has national or sub-national laws in place, in accordance with Article 5 of the Paris Agreement, applicable in the area of harvest, to conserve and enhance carbon stocks and sinks, and provides evidence that reported LULUCF-sector emissions do not exceed removals; (b) where evidence referred to in point (a) of this paragraph is not available, the biofuels, bioliquids and biomass fuels produced from forest biomass shall be taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 if management systems are in place at forest sourcing area level to ensure that carbon stocks and sinks levels in the forest are maintained, or strengthened over the long term."	(i) it has submitted a nationally determined contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC), covering emissions and removals from agriculture, forestry and land use which ensures that changes in carbon stock associated with biomass harvest are accounted towards the country's commitment to reduce or limit greenhouse gas emissions as specified in the NDC; or (ii) it has national or sub-national laws in place, in accordance with Article 5 of the Paris Agreement, applicable in the area of harvest, to conserve and enhance carbon stocks and sinks, and provides evidence that reported LULUCF-sector emissions do not exceed removals; (b) where evidence referred to in point (a) of this paragraph is not available, the biofuels, bioliquids and biomass fuels produced from forest biomass shall be taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 if management systems are in place at forest sourcing area level to ensure that carbon stocks and sinks levels in the forest are maintained, or strengthened over the long term. 7a. The production of biofuels, bioliquids and biomass fuels from domestic forest biomass shall be consistent with Member States' commitments and targets laid down in Article 4 of Regulation (EU) 2018/841 of the European Parliament and of the Council (24) and with the policies and measures described by the Member States in their integrated national energy and climate plans submitted pursuant to Articles 3 and 14 of Regulation (EU) 2018/1999. 7b. As part of their final updated integrated national energy and climate plan to be submitted by 30 June 2024 pursuant to Article 14(2) of Regulation (EU) 2018/1999, Member States shall include all of the following: (a) an assessment of the domestic supply of forest biomass available for energy purposes in 2021-2030 in accordance with the criteria laid down in this Article; (b) an assessment of the compatibility of the projected use of forest biomass for the production of energy with the Member States' targets and budgets for 2026 to 2030 laid down in Article 4 of Regulation (EU) 2018/841; and (c) a description of the national measures and policies ensuring compatibility with those targets and budgets. Member States shall report to the Commission on the measures and policies referred in the first

	RED II	RED III
		subparagraph, point (c), of this paragraph as part of their integrated national energy and climate progress reports submitted pursuant to Article 17 of Regulation (EU) 2018/1999."

Source: Platform based on European Commission 2018, 2023

Some of the main amendments of Article 29 refer to forest biomass criteria in paragraphs 5 and 6. Here, some improvements can be seen, in particular in terms of consideration for soil and biodiversity maintenance and sustainable forestry standards. The updated article 29, however, can only be regarded as a partial improvement. Key questions, such as stringent sustainability criteria, sustainable resourcing criteria that prevent increased carbon emissions, improvements for biodiversity maintenance have not been addressed y consistant manner, e.g. by reflecting the Kunming-Montreal Global Biodiversity Framework, the EU Nature Restoration Law, and the EU Biodiversity Strategy. However, including a cascading principle for biomass use in RED III (Article 3) to achieve resource efficiency and thus prioritising material use of biomass along the lines of waste hierarchy as in Article 4 of Directive 2008/98/EC11 can generally be regarded as a positive improvement.

Currently, monitoring biomass compliance with RED sustainability criteria is overseen by the member states. At this stage, it remains somewhat vague if compliance with RED sustainability criteria is monitored with equal stringency across the EU. For comparison: For ETS 1, there are currently 15 voluntary certification schemes for bioenergy that are formally recognized by the European Commission. Currently, there are 13 additional applications for official recognition pending. At this stage, it remains unclear to what degree these certification schemes for ETS 1 are officially recognized by the member states. Regulatory rules for certification frameworks for RED sustainability criteria are set forward with Art 30 of RED II and Commission Implementing Regulation (EU) 2022/996 of 14 June 2022, which includes rules for sustainability certification, GHG emission savings criteria, and low indirect land-use change-risk criteria.

Due to the unclear monitoring of the sustainability criteria in the member states, somewhat unclear status of voluntary certification schemes in ETS 1, and additional room for improved stringency of the criteria set forward in the amended Article 29, a review of the Climate DA should set forward additional sustainability criteria for the agricultural and forest biomass used in bioenergy criteria. While RED III will come into force in May 2025 and its effects on bioenergy activities need to be taken into account during the next review, there are additional regulatory developments the criteria should reflect, e.g. the Kunming-Montreal Global Biodiversity Framework, the EU Nature Restoration Law, and the EU Biodiversity Strategy. The criteria therefore should ensure that biomass used for bioenergy activities do not lead to higher GHG emissions due to unsustainable resourcing practices. As described by the European Scientific Advisory Body on Climate Change, for biomass to play a role as an important mitigation lever, its use needs to be kept in sustainable limits. The increase of bioenergy by 100 per cent since 2005 has contributed to an increased use of wood biomass (European Scientific Advisory Body on Climate Change 2024, p. 197-200). What is more: "At least 45

11 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098

% of the increased forest biomass demand was met by increased harvesting" (European Scientific Advisory Body on Climate Change 2024, p. 199). According to Norton et al. (2019): "[...] replacing coal by biomass for electricity generation is likely to initially increase emissions of CO2 per kWh of electricity as a result of the lower energy density of wood, emissions along the supply chain, and/or less efficient conversion of combustion heat to electricity" (Norton et al. 2019, p. 1257). The increased atmospheric concentration of CO2 contributes to climate change – an "negative impact is only reversed later if and when the biomass regrows. Research has shown that the time needed to reabsorb the extra carbon released can be very long [...]" (Norton et al. 2019, 1257; see also Mckenchie et al. 2010). Emissions and sequestration losses can lead to an initial increase in GHG emissions compared to leaving residues to decompose naturally (Favero et al., 2020). An initial increase of GHG emissions due to wood bioenergy delays the net GHG mitigation benefits of bioenergy (Mckechnie et al. 2010) due to the time it takes for regrowing forests to offset the CO2 emitted from burning wood (which has the potential to exceed 50-100 years). According to the European Academies Science Advisory Body, the "validity of the carbon neutrality concept has been intensively studied and has been shown to be highly simplistic" (European Academies Science Advisory Body 2017, p. 21), since initial emissions are considered higher compared to fossil fuels due to the inherent lower energy density of biomass as well as the time needed to regrow biomass that compensates emissions (European Academies Science Advisory Body 2017, p. 21, see also above). The concept of carbon neutrality should thus be "considered on a case-by-case basis together with the related payback period" (European Academies Science Advisory Body 2017, p. 21-2). The application of a cascading principle that prioritizes carbon storage through durable usage of wood can therefore effectively improve the climate change mitigation potential of forests (European Academies Science Advisory Body 2017, p. 34). What is more, according to the European Scientific Advisory Board on Climate Change, overharvesting managed forests which "would lead to a decrease in the forest carbon sink (and even risking turning it into a source)" (European Scientific Advisory Body on Climate Change 2024, p. 199) In its response to the RED III proposal by the Commission, the European Parliament has proposed a reduction target of 85 per cent compared to fossil fuel comparators (European Parliament 2022, p. 62). This proposal has not found its way in the final RED III. What is more, stronger stringency in protecting ecosystems and biodiversity as well as water and marine resources needs to be implemented. As the European Academies Science Advisory Body has highlighted (2017, p. 27), producing biomass for bioenergy leads to increased land use compared to other energy sources. This increased land use can potentially come into conflict with land available and valuable for biodiversity (European Academies Science Advisory Body 2017, p. 27).

Reflection of changing thresholds to current nominal values

Bioenergy activities in the EU Taxonomy diverge from standard emission thresholds due to its usage of the GHG emission reduction methodology included in the renewable energy directive (see above). The GHG emission savings methodology from RED can be regarded as common practice among bioenergy producers. It does come, however, with additional challenges for the EU Taxonomy. A key example for it is fuel neutrality across the energy sector, as the current methodology leads to diverging thresholds across the bioenergy activities. Some of which, if translated to the g C02e/kWh methodology, are above 100g CO2e/kWh (see Table 1). In terms of its usability, however, the GHG emission savings methodology has its advantages because it is already in practice.

More stringent requirements in RED III compared to RED II

In the reflection of the GHG emission savings methodology, the new requirements of RED III need to be considered. As Table 3 highlights, RED III sets higher requirements for GHG emission savings in use. RED II set forward GHG emission saving targets of 70 per cent for existing installations and, under specific circumstances, of 80 per cent for new installations. In contrast, RED III leads to higher targets (80 per cent) for existing and new installations, thus matching the GHG emission savings targets in the EU Taxonomy. In its final report, the TEG has set forward that the GHG emission savings targets for bioenergy activities should be above the targets included in RED. RED III, however, will only come into force in member states by May 2025, while some member states have yet to implement RED II. One reason for the delay is that the RED II Implementation Regulation 2022/2448 only came into force in January 2023.

Table 3: GHG emission savings requirements

Activity in Taxonomy		**Requirement for GHG savings in use**		
		RED II (2018)	Taxonomy, CCM DA (2022)	RED III (MS bring into force by 21/5/2025)
4.7.	Energy generation from renewable **non-fossil gaseous and liquid fuels**		N/A	
4.8.	Electricity generation from bioenergy	≥ 70-80 %*	≥ 80 %	≥ 70-80 %**
4.13.	**Manufacture** of **biogas and biofuels for use in transport and of bioliquids**	≥ 50-65 %	≥ 65 %	
4.19.	Cogeneration of heat/cool and power from renewable **non-fossil gasenous and liquid fuels**		N/A	
4.20.	Cogeneration of heat/cool and power from bioenergy	≥ 70-80 %*	≥ 80 %	≥ 70-80 %**
4.23.	Production of heat/cool from renewable nonfossil gasenous and liquid fuels		N/A	
4.24.	Production of heat/cool from bioenergy	≥ 70-80 %*	≥ 80 %	≥ 70-80 %**
NEW	RFNBOs (Renewable fuels of non-biological origin and recycled carbon) ["e-fuels"]			≥ 70 %

Source: Platform

* SOLID BIOMASS FUELS (note: new installations only). In installations with a thermal input ≥ 20 MW starting operation 1/1/202131/12/2025, at least 70 %; and in similar size installations starting from 1/1/2026, at least 80 %. For gaseneous biomass fuels, the total rated thermal input threshold for new installations is ≥ 2 MW.

** SOLID BIOMASS FUELS (note: existing and new installations). In installations with total rated thermal input ≥ 7,5 MW that started operating after 20/11/2023, at least 80 %. In installations with a total rated thermal input ≥ 10 MW that started operating between 1/1/2021 and 20/11/2023: at least 70 % until 31/12/2029, and at least 80 % from 1/1/2030. In installations with a total rated thermal input ≥ 10 MW that started operating before 1/1/2021: at least 80 % after they have been operating for 15 yrs and at the earliest from 1/1/2026 and at the latest from 31/12/2029. Note EC proposal for RED III: threshold 5 MW, savings ≥ 80 %, for existing and new installations from 1/1/2026. GASENOUS BIOMASS FUELS: In installations with a thermal input ≥2 MW that started operating after 20/11/2023, at least 80 %. In installations with a total rated thermal input 2-10 MW that started operating between 1/1/2021 and 20/11/2023: at least 70 % before they have been operating for 15 years and at least 80 % thereafter. In installations with a total rated thermal input 2-10 MW that started operating before 1/1/2021: at least 80 % after they have been operating for 15 yrs and at the earliest from 1/1/2026. NOTE: introduction of biomethane flow rate threshold for installations producing gaseous biomass fuels.

Discussing methodologies

Both the GHG emission savings methodology from RED as well as a potential g CO2e/kWh threshold for bioenergy activities come with good arguments (see Table 4). In terms of its usability, the GHG emission savings methodology includes an additional methodological step.

Table 4: Comparison of methodologies

	GHG emission savings methodology	**g CO2e/kWh**
Usability	Unless companies are able to use the reduction values in Annex VI, they have to first calculate CO2e emissions and compare it to the relative fossil fuel comparator. In the EU, however, the GHG emission savings methodology is already known to companies due to existing regulation (RED II/III in particular)	Companies have to calculate their lifecycle emissions in order to ensure compliance. There might be overlap from other regulations. In the EU, however, bioenergy producers already rely on GHG emission savings methodology and have developed experience in applying it to their activities
Informative value	The information value is somewhat reduced due to the relative reduction compared to a fossil fuel comparator. Due to different fossil fuel comparators, the effective thresholds vary across activities.	Depending on the biomass used for the activity, lifecycle emissions should vary. This is already highlighted to some degree by the default and typical reduction values in Annex VI of the RED. A g CO2e/kWh threshold therefore would enable additional information concerning lifecycle emissions from bioenergy activities in a way that is comparable to other activities.
Continuous strengthening of criteria	There are two ways to strengthen the criteria: 1. Updating the fossil fuel comparator values in the RED 2. Using higher relative GHG emission saving values Both approaches can be combined. However, the Climate DA can only influence the latter.	Strengthening the criteria would be possible by lowering the g CO2e/kWh threshold. The threshold is supposed to be reviewed every five years across the energy sector.
Level of ambition	The level of ambition is dependent on the fossil fuel comparator and the relative GHG emission saving criteria. The fossil fuel comparator is based on a weighted average of fossil fuel technologies. It remains, however, unclear how these technologies are weighted. What is more, they have not been updated through RED III.	The level of ambition would be set via the g CO2e/kWh threshold

Source: Platform

Potential ways forward

Aligning GHG emission savings targets

As the analysis above highlights, the current GHG emission saving methodology included in the Climate DA for bioenergy activities is well-known to energy producers and investors applying Taxonomy criteria. While there are plausible reasons to switch to a g CO2e/kWh threshold (see table 3), concerns about usability underline the continuous use of the GHG emission savings methodology as set forward in the RED.

Nonetheless, the current targets do pose potential issues that need to be addressed. As electricity production usually has a lower energy efficency compared to heat production, , the current 80 per cent GHG emission savings target effectively leads to a threshold above 100 gCO2e/kWh for electricity production from bioenergy if the 80 per cent are translated to such a threshold. A proposal for higher GHG emission reduction targets should therefore address the energy efficiency differences between energy production and heating/cool in bioenergy activities. What is more, fuel neutrality across the energy sector is an important aspect of the EU Taxonomy. If the gCO2e/kWh threshold for other energy activities is lowered, GHG emission saving requirements for bioenergy should be addressed similarly. Otherwise, it would give some energy activities an advantage over others which could lead to market distortions and undesired outcomes in the energy sector and its GHG emissions.

If a 45 gCO2e/kWh threshold for the energy sector is adopted, GHG emission saving targets would change according to their respective energy efficiency (see Textbox 9). The strongest change would occur for electricity production from bioenergy, where the threshold would be at 92 per cent (currently: 80 per cent). Heat (general) would not change as much (new: 83 per cent, currently: 80 per cent) as the current GHG emission saving target is already near 50 gCO2e/kWh.

Textbox 9: Translating gCO2e/kWh thresholds into RED methodology

4. Converting other gCO2/kWh values than 100 into reduction percentage
If the Taxonomy threshold of currently 100 gCO2e/kWh would be lowered to 45 gCO2e/kWh, this would result in the following reduction percentages based on the RED calculation methodology, using the fixed values for fossil fuel comparators from the RED:

For electricity:
(183 gCO2e/MJ – (45g CO2e/kWh / 3.6 MJ/kWh)) / 183 gCO2e/MJ = 93 % reduction
183 gCO2/MJ is the fossil fuel comparator from Annex VI of the RED, which is to be used for electricity.

For heat (general):
(80 gCO2e/MJ – (45g CO2e/kWh / 3.6 MJ/kWh)) / 80 gCO2e/MJ = 84 % reduction

For heat (when direct physical substitution of coal can be demonstrated):
(124 gCO2e/MJ – (45g CO2e/kWh / 3.6 MJ/kWh)) / 124 gCO2e/MJ = 90 % reduction

Source: Platform

These thresholds, however, need to take notice that bioenergy instalments often are a combination of electricity as well as heat/cool production. Therefore, strong differences between both types of activities might lead to follow-up problems for the respective producers. There might also be country-specific issues that make longer periods of adjustments necessary for increased GHG emissions saving targets.

Increasing GHG emission saving targets is one possible way forward. A different way forward would be to adjust the fossil fuel comparator used in the RED. The fossil fuel comparators are weighted averages based on different forms of fossil fuels. While there have been changes in the composition of fossil fuels in the EU since RED II, RED III did not adjust these values. Hence, proposing a new value for the use of the EU Taxonomy is a possibility, e.g. by proposing grid emission factors as the new comparator. Such a proposal, however, is likely to produce additional issues regarding standard and typical values for GHG emission saving targets in RED III. If electricity and heat/cool producers would have to calculate their own GHG emission savings based on grid emission factors, this could lower the usability of the EU Taxonomy for these activities. However, grid emission factors include all forms of electricity production, incl. renewable electricity, and thus do not only represent the emissions to be replaced by renewable energy. What is more, grid emission factors are based

in electricity and would thus be difficult to be used for heat/cool producing activities. Hence, changing the methodology potentially leads to usability problems that should be avoided.

Lastly, the EU Taxonomy could follow current market developments. Climate Bonds Initiative has put forward new electricity utility criteria which uses a 50 gCO2e/kWh lifecycle emission threshold for *new* installations generating electricity from bioenergy. While it would be an easy way forward regarding fuel neutrality in the energy sector, it would deviate from the RED. The RED GHG emission savings methodology is, however, common practice for bioenergy producers (electricity as well as heat/cool). What is more, CBI does not include heat/cool production, which is important. Hence, such a proposal comes with additional issues that would need to be addressed.

Recommendations

In its report *Towards EU climate neutrality: progress, policy gaps and opportunities*, the European Scientific Advisory Board on Climate Change highlights that RED I and RED II have led to strong incentives (particularly in terms of subsidies) for bioenergy. That is even the case "in sectors where available mitigation options (e.g. electricity and low-temperature heat production) are more efficient and carry lower land-use and biodiversity risks (policy inconsistency)" (European Scientific Advisory Board on Climate Change 2024, p. 27). It also states that "EU policies in support of CCU/CCS, bioenergy and hydrogen should be better targeted towards applications with no, or very limited, other mitigation options" (European Scientific Advisory Board on Climate Change 2024, p. 27). While "bioenergy deployment, subject to stringent sustainability criteria and the energy efficiency first principle, also contributes to a net zero energy system" (European Scientific Advisory Board on Climate Change 2024, p. 52), RED III's effectiveness remains unclear. According to the European Scientific Advisory Board on Climate Change (2024, p. 202), this uncertainty comes from potential monitoring and compliance issues. What is more, the report states that there is a risk that "aggregate biomass demand will exceed sustainably available supply. Key EU policies such as the RED III do not target incentives for bioenergy towards end uses that have limited alternative mitigation options." (European Scientific Advisory Board on Climate Change 2024, p. 207). A review of the bioenergy criteria in the Climate DA has to take these issues into consideration.

Based on the analysis above, the criteria for the bioenergy activities could be adjusted in three dimensions: 1) GHG emission savings targets, 2) sustainability criteria for biofuels, bioliquids, and biomass used in the activities, and 3) eligible transport distances for biomass.

1) GHG emission saving targets

The analysis above highlights that the current GHG emission saving targets for bioenergy activities do lead to different levels of ambition between the bioenergy activities. In effect, electricity generation from bioenergy, despite its lower energy efficiency, has to comply with weaker criteria than heat/cool production. It also leads to diverging requirements across the energy sector. In order to maintain fuel neutrality, particularly regarding the Platform's recommendation to lower the threshold for substantial contribution from energy production from 100g to 45g CO2e/kWh in 2025, adjustments concerning the GHG emission saving targets are necessary. The Platform highlights that the percentage GHG emission saving requirements need to be improved in part due to the missing update of fossil fuel comparator values in RED III. Due to limited time, the Platform has focused its attention on analyzing how to align bioenergy activities with recommendations for the energy sector, due to the different methodology used.

Due to limited time, the Platform has focused its attention on analyzing how to align bioenergy activities with recommendations for the energy sector, the Platform emphasizes that impacts of increasing the GHG emission savings requirement should be properly assessed to avoid undesirable effects for energy markets at EU, national and regional level. This also includes an impact assessment of the proposed GHG emission saving requirement's effect on feedstock markets and changes in the usage of sources of biomass for bioenergy. Negative consequences, such as an increased use of saw logs, veneer logs, industrial grade roundwood,

stumps and root to produce energy, need to be prevented. At this stage, there is no publicly available impact assessment of higher GHG emission saving requirements that addresses these issues.

Table 5: GHG emission savings recommendations

Activity	Name	Current GHG emission savings target	Proposal
4.8	Electricity production from bioenergy	≥ 80 %	≥ 85 %
4.13	Manufacture of biogas and biofuels for use in transport and of bioliquids	≥ 65 %	≥ 70 %
4.20	Cogeneration of heat/cool and power from bioenergy	≥ 80 %	≥ 85 %
4.24	Production from heat/cool from renewable non-fossil gaseous and liquid fuels	≥ 80 %	≥ 85 %

Source: Authors'

These recommendations are based on three key rationales:

1. In its final report, the TEG has recommended that the thresholds "will be reduced every 5 years in line with a net-zero CO2e in 2050 trajectory." (TEG 2020, p. 234 for activity 4.8). This is the first of these reviews. Based on changes EU climate goals, a reduction of these thresholds/higher GHG emission savings targets would be in line with a trajectory to achieve net-zero in 2050.

2. Technology/fuel neutrality is a key element of the EU Taxonomy. To meet this requirement and maintain a coherent energy system perspective and to avoid adverse impacts in the energy sector, the current life-cycle GHG emission threshold for Substantial Contribution of 100 g CO2e/kWh and the direct emissions DNSH criteria of 270g CO2e/kWh should be correspondingly lowered in all activities that refer to them in the energy sector, for consistency and the aforementioned technology/fuel neutrality. Some of these activities lie outside the scope of this 2021 Climate DA Review, in several cases because they are found in the complementary Delegated Act from 2022 and the more recent DAs from 2023. These activities include the activity Electricity generation from fossil gaseous fuels (4.29.) as well as activity 4.30 and 4.31, where both the 100g and 270g TSC are used, 100g in Annex I and 270g in Annex II of the complementary Delegated Act ((EU) 2022/1214). Activities 4.26, 4.27, and 4.28 furthermore use the 100g threshold as additional criteria pertaining to substantial contribution to climate change mitigation (Annex I) and 270g for DNSH to climate change mitigation (Annex II). Concerning activities 4.26, 4.27, 4.28, 4.29, 4.30. and 4.31, the Platform reiterates its critical position on the Complementary Delegated from January 21 2022 (Platform on Sustainable Finance 2022)12. Nevertheless, and whilst reiterating this position, the

12 https://finance.ec.europa.eu/system/files/2022-01/220121-sustainable-finance-platform-response-Taxonomy-complementary-delegated-act_en.pdf

Platform would highlight to the Commission the need for revision of the energy TSC in a consistent manner across energy activities in all DAs, so that capital flows are not exposed to an undesirable inconsistency that would undermine EU Taxonomy objectives and EU climate policies.

3. Currently, the EU Taxonomy GHG emission saving requirement criteria for bioenergy do not differentiate based on differences in energy efficiency between energy production from bioenergy and heat/cool, aside from additional energy efficiency criteria in 4.8 (paragraphs 5 and 6). The analysis highlighted strong differences. These differences in energy efficiency need to be reflected in the next review of the criteria.

The Platform notes interlinkages between emission thresholds in energy activities and technical screening criteria of other activities in Taxonomy. The 100 gCO2e/kWh threshold is used as a criteria e.g. in Manufacture of aluminium (3.8.) and Manufacture of chloride (3.13.) and is also a central element in Transmission and distribution of electricity (4.9.). For consistency, these criteria should be reviewed and, when appropriate, adjusted to reflect updated GHG emission thresholds in energy activities. This also concerns the substantial contribution criteria for the proposed Mining and Refining activities (copper, nickel, lithium).

The Platform also notes that the current Taxonomy GHG emission savings requirement is more stringent than in RED III in three respects: First, the Taxonomy criteria requires 80% emission savings for *all* installations whereas in RED III the lower thermal threshold for installations under the same requirement is 7,5 MW. Second, in Taxonomy the 80% emission savings are required immediately whereas in RED III applies a stepwise approach for old installations so that some of them are required to comply with the 80 % emission savings requirement only in the early 2030s. Third difference is that Taxonomy criteria requires the installations to use 100% RED III aligned agricultural and forestry feedstocks ('exclusively from biomass, biogas or bioliquids') but when operating solely under RED III installations can use mass balance calculations to determine the share of RED III compliant feedstocks. Most bioenergy installations use mixes of feedstocks, such as forest biomass, agricultural biomass, waste, peat, coal and gas.

2) sustainability criteria for biofuels, bioliquids, and biomass used in the activities

Currently, the criteria included in the Climate DA cite Article 29 of the RED for sustainability criteria for biomass, biofuels, or bioliquids used for the activities. While there have been some improvements in RED III, there is no systemic improvement to biomass sustainability criteria in RED. What is more, RED III will only come into force by May 2025. Some member states are still in the process of implementing RED II which support cautious approach in updating Taxonomy renewable energy sustainability criteria. On the other hand, as the European Scientific Advisory Board on Climate Change has highlighted, stringent sustainability criteria are needed for bioenergy to play a role in a net-zero energy system (European Scientific Advisory Board on Climate Change 2024, p. 52). Hence, the review of the Climate DA should lead to additional sustainability criteria:

Textbox 10: Additional sustainability criteria

In addition to Article 29, the technical screening criteria for substantial contribution should also include: Activities need to document they ensured that energy from biomass is produced in a way that minimises undue distortive effects on the biomass raw material market and an adverse impact on biodiversity, the environment and

the climate. To that end, they shall document how they took into account the waste hierarchy set out in Article 4 of Directive 2008/98/EC and shall ensure the application of the principle of the cascading use of biomass, with due regard to national specificities. Activities need to document they ensured that woody biomass is used according to its highest economic and environmental added value in the following order of priorities:
(a) wood-based products;
(b) extending the service life of wood-based products;
(c) re-use;
(d) recycling;
(e) bioenergy; and
(f) disposal.

Stumps and roots are not used to produce energy.

Activities may derogate from the cascading use principle of woody biomass where the local industry is quantitatively or technically unable to use forest biomass for an economic and environmental added value that is higher than energy production, for feedstocks coming from:
(a) necessary forest management activities, aiming to ensure pre-commercial thinning operations or carried out in accordance with national law on wildfire prevention in high-risk area
(b) salvage logging following documented natural disturbances; or
(c) the harvest of certain woods whose characteristics are not suitable for local processing facilities.

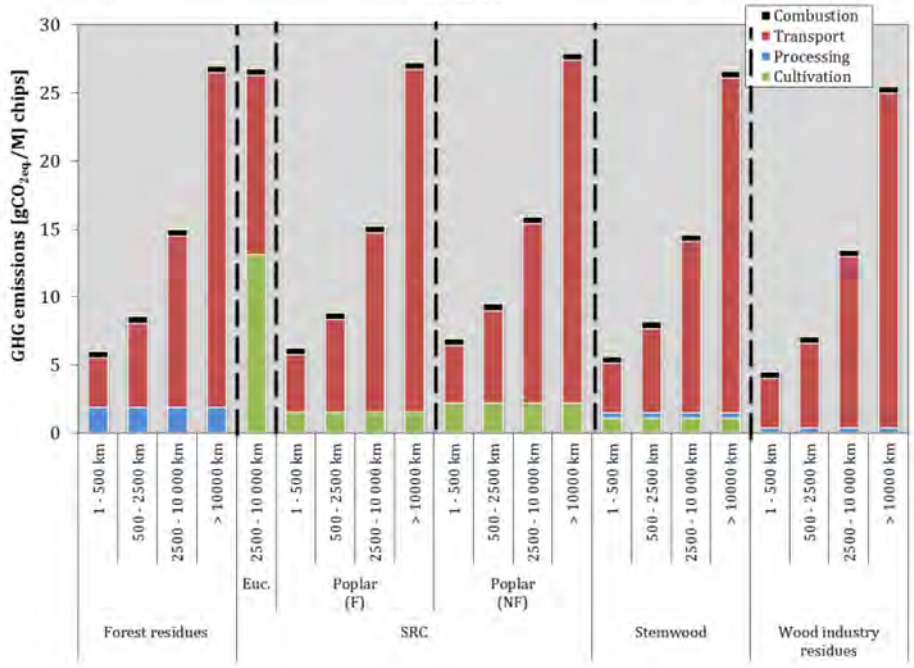
Activities need to comply with the EU Regulation for Deforestation-Free Products (2023/1115)

3) Transport emissions

Some parts of the GHG emission savings methodology appear to work with average values where environmental effects might vary, e.g. transport emissions or land use changes. To use transport as an example: Transport emissions play an important role in the overall emissions of bioenergy activities. Currently, transport emissions are addressed in the Renewable Energy Directive by providing ideal and typical values for GHG emission savings that differ based on the transport distance of the biomass/biofuels. The operators may also provide actual values for emissions saving calculations. As Figure 1 and 2 highlight, the role transport emissions in the overall emissions from the use of biomass/biofuels differs depending on the source of biomass. What the typical and default values do not account for to the same degree, however, are the differences in emissions from different transport forms. Keeping in mind that the transport sector will undergo strong changes in the upcoming years and the calculations provided in figure 1 and 2 were made ten years ago, a future review should address differences in transport emissions to a larger degree, incl. emission differences between transport via train, via trucks, and via shipping. Depending on the mode of transportation as well as fuels and engines used, transport emissions can vary strongly.

Figure 1: GHG emission for wood chip pathway

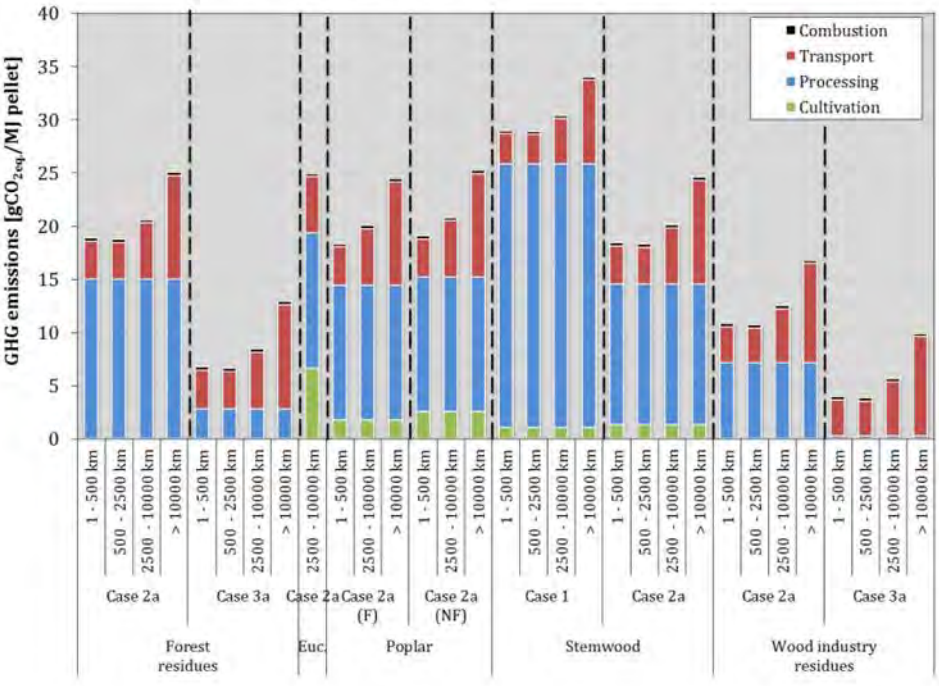
Figure 3. GHG emissions for wood chips pathways: contribution of various steps in the supply chain. Based on the default values reported in Table 87 and Table 91.



Source: Giuntoli et al. (2016), p. 124

Figure 2: GHG emissions for the most relevant pellets pathways

Figure 4. GHG emissions for the most relevant wood pellets pathways: contribution of various steps in the supply chain. Based on the default values reported in Table 88, Table 89, Table 92 and Table 93.



Source: Giuntoli et al. (2016), p. 125

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iii. Manufacturing activities

Introduction

The following activities **in bold** below were in scope of review (i.e., transitional activities from the first Climate DA and activities of concern and two activities of a need for review due to their nature and/or SRM feedback – 3.10 manufacture of hydrogen and 3.6 manufacture of other low carbon technologies):

3.6. Manufacture of other low carbon technologies (currently classified as low-carbon but needs review)

3.7. **Manufacture of cement**

3.8. **Manufacture of aluminium**

3.9. **Manufacture of iron and steel**

3.10. Manufacture of hydrogen (currently classified as a low-carbon activity but transitional in nature)

3.11. Manufacture of carbon black (not reviewed; *handed over to the COM*)

3.12. Manufacture of soda ash (not reviewed; *handed over to the COM*)

3.13. Manufacture of chlorine (not reviewed; *handed over to the COM*)

3.14. **Manufacture of organic basic chemicals**

3.16. Manufacture of nitric acid (not reviewed; *handed over to the COM*)

3.17. **Manufacture of plastics in primary form**

Note: Unless specifically addressed, Platform has not reviewed DNSH criteria, i.e., focused on a substantial contribution and further aspects (usability, activity boundaries, etc.).

Stakeholder Input (via Stakeholder Request Mechanism, SRM)

activity no	activity name	transitional	low-carbon	number of SRM inputs
3.1	3.1. Manufacture of renewable energy technologies		x	3
3.2	3.2. Manufacture of equipment for the production and use of hydrogen		x	2
3.3	3.3. Manufacture of low carbon technologies for transport		x	10

3.5	3.5. Manufacture of energy efficiency equipment for buildings		x	16
3.6	3.6. Manufacture of other low carbon technologies		x	6
3.7	3.7. Manufacture of cement	x		3
3.8	3.8. Manufacture of aluminium	x		1
3.9	3.9. Manufacture of iron and steel	x		9
3.10	3.10 Manufacture of hydrogen		x	5
3.12	3.12. Manufacture of soda ash	x		1
3.14	3.14. Manufacture of organic basic chemicals	x		10
3.17	3.17. Manufacture of plastics in primary form	x		10
Total sum of inputs received				76

We have received 76 inputs related to standalone activities in total, after excluding feedback related to new activities (i.e., not suggesting revision of the existing criteria in the current Taxonomy Delegated Acts) and after further exclusions of input provided towards the Environmental Taxonomy Delegated Act). On top of that, we have received input that was common for multiple activities.

The feedback that related to multiple activities related to overarching topics; these could be grouped into the following areas:

(i) Carbon capture, storage and utilization (CCUS): Platform members consider this as a priority area for future work of the Platform – a decision on whether (and if so, to what extent) an extension towards the CCU shall be considered in the TSC. Similarly to the EU ETS purposes (permanently chemically bound in a product so that they do not enter the atmosphere under normal use and do not enter the atmosphere under any normal activity taking place after the end of the life of the product), the future work shall consider that if the activities could be extended towards CCU in the Taxonomy, it shall not fall behind this definition.
(ii) EU ETS
(iii) Generic DNSH criteria (DNSH to PPC)

1. SRM

SRM covers input given until December 2023. Apart from general feedback above (that related to overarching area and/or to multiple activities), the Platform received feedback on individual activities that is summarized further below.

2. Targeted outreach

Further to the SRM feedback above, Platform organized a targeted stakeholder workshop in October 2024 to gather further feedback on the current criteria and market and technology developments between December 2023 (SRM first cut-off date) and October 2024 (targeted outreach). Stakeholder workshop gathered experts representing activities 3.7, 3.9, 3.14 and 3.17, which were in scope of a workshop.

Apart from the two channels above, Platform gathered further feedback from member states, the European Commission and the Platform members representing diverse stakeholder groups across geographies and sectors.

Recommendations for future work on Manufacturing activities

3.6. Manufacture of other low carbon technologies

See Introduction for this section (above)

3.10 Manufacture of hydrogen

See Introduction for this section (above)

3.14 Manufacture of organic basic chemicals

During the final stages of the work, stakeholders highlighted that certain substances in scope of the activity *3.14 Manufacture of organic basic chemicals* (i.e. vinyl chloride, styrene, ethylene oxide), could not be aligned given their potential hazardous classification and consequential contradiction with the generic DNHS criteria for pollution prevention and control – Appendix C, and their exclusion from the activity was proposed. However, this issue requires further verification. Further stakeholder clarification is required.

3.17 Manufacture of plastics in primary form

The Platform has undertaken extensive discussions on activity *3.17 Manufacture of plastics in primary form*. Several stakeholders have commented on the technical impossibility of having a plastic in primary form fully manufactured by chemical recycling of plastic waste, since virgin feedstock always needs to be added. Reasons argued by stakeholders in this regard were: i) chemical recycling requires the addition of intermediate products, ii) limited availability of plastic waste with the appropriate recyclability characteristics required, iii) the quality of the output is compromised by the contaminants present in the chemical recycled feedstock. Stakeholders also argued that a target for a fully manufactured plastic in primary form by chemical recycling is not technically feasible as it would imply a free allocation mass balance accounting not possible with current legal approved definition of plastics recycling in the EU, which requires fuels to be deducted.

Several additional stakeholder proposals on this activity were not taken up given the need for further data and evidence: i) inclusion of a definition for “plastics in primary form” within he activity description, ii) introduction of minimum thresholds for the emissions savings requirements in paragraphs b) and c) of the substantial contribution criteria, and iii) expansion of the definition of renewable feedstock. An additional proposal suggested including “physical recycling” as an additional category, but Platform members noted the lack of a definition for it and its usual inclusion within the ‘’mechanical recycling’’ category.

Recommendation for multiple activities

Please note that this is a general recommendation common to all *transitional* activities *with thresholds based on references to the EU ETS values*, i.e., activities:

3.7 Manufacture of cement,

3.8 Manufacture of aluminium,

3.9 Manufacture of iron and steel,

3.11 Manufacture of carbon black,

3.12 Manufacture of soda ash,

3.14 Manufacture of organic basic chemicals,

3.16 Manufacture of nitric acid).

Recommendation:

Revise the Taxonomy threshold values for the specific GHG emissions of tCO2e per tonne of product to a) or b), whichever is lower:

a) the new values, representing the average value of the 10% most efficient EU ETS installations in 2021 and 2022, for the respective products after the 2025 update of the transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC (EU ETS free allocation rules), or

b) the new EU ETS Benchmark value set in the same 2025 update of the transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC, due in 2025 (EU ETS free allocation rules).

This recommendation applies unless in certain industries more rapid developments, e.g. by the successful introduction of breakthrough decarbonisation technologies, allow for a more ambitious development of the Taxonomy thresholds.

Rationale

In general, Platform concludes that – so far – on the *transitional* activities that it has reviewed (i.e., 3.7, 3.8, 3.9, 3.14, 3.17) and other *transitional* activities from the first Climate DA (i.e., 3.11, 3.12, 3.13, 3.16) – the activities shall remain on the a linear trajectory in terms of decarbonization falling curve, and the Taxonomy thresholds for substantial contribution should be updated with increasingly ambitious quantitative thresholds, until a low-carbon technology becomes widely available and cost-effective in a given sector (i.e., so-called low-carbon technology 'tipping point' has not yet been observed). When such a tipping point is reached, the Taxonomy criteria should be updated to reflect the much improved performance that becomes possible with such low-carbon technology. Nevertheless, the Platform suggests to review this approach in a next review period as new breakthrough technologies are expected to come into use in the market soon.

These activities are transitional Taxonomy activities, for which the Taxonomy Regulation requires regular revision of the technical screening criteria to reflect technical progress in the sector. The current thresholds

for specific GHG emissions in the Taxonomy ('the first' Climate DA) are the average value of the 10% most efficient installations in 2016 and 2017, as published in Commission Implementing Regulation (EU) 2021/447 (Revised benchmark values for free allocation of emission allowances for the period from 2021 to 2025 pursuant to Article 10a(2) of Directive 2003/87/EC). An update of these values (average performance of the 10% most efficient EU ETS installations in 2021 and 2022, as well as EU ETS benchmark values) in a new Commission Implementing Regulation is due in 2025, and consequently, the values in the Taxonomy thresholds should be updated to reflect improvements of GHG performance in the respective industry sector, in line with the Recommendation given by teh TEG when it developed these Taxonomy criteria

In case a sector average is not decarbonizing at least at the rate of the minimum ETS benchmark improvement, the new benchmark value should be used in the Taxonomy, which reflects a minimum progress defined by the EU ETS legislation for such cases.

In line with the Taxonomy Regulation, this recommendation applies unless in certain industries more rapid developments, e.g. by the successful introduction of breakthrough decarbonisation technologies at industrial scale, allow for a more ambitious development of the Taxonomy thresholds.

Stakeholder input:

The stakeholder input received in this regard was divergent and only applied to specific activities. Therefore, in this review, the Platform decided to follow the approach used in the original Climate Delegated Act to account for the need to revise transitional activities every three years, as specified in the EU Taxonomy Regulation.

Usability, Data and Guidance:

This recommendation concerns an update of threshold current values and does not affect the usability of the criteria or the data requirements to demonstrate alignment.

Activity 3.6 Manufacture of other low carbon technologies

Recommendation:

Description of the activity Manufacture of low carbon technologies aimed at substantially reducing GHG-emissions in other sectors of the economy – the "target activities" - where those technologies are not covered in Sections 3.1 to 3.5 of this Annex.

The economic activities in this category could be associated with several NACE codes, in particular from C22, C25, C26, C27 and C28 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an enabling activity in accordance with Article 10(1), point (i), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

Technical screening criteria

Substantial contribution to climate change mitigation

The economic activity manufactures technologies that are instrumental for low GHG-emission performance of the target activities as opposed to being required for the target activities' general functionality.

The use of the manufactured technology leads to substantial life-cycle GHG emission savings in the target activities compared to the best performing alternative technology/product/solution available on the market.

Life-cycle GHG emission savings are calculated using Commission Recommendation 2013/179/EU[96] or, alternatively, ISO 14067:2018[97] or ISO 14064-1:2018[98].

The technologies do not lead to a lock-in of the target activities, i.e., they do not lead to the target activities being unable to reach zero GHG-emission levels when using the technology enabling the GHG-emission reductions and do not prevent the uptake by the target activity of substitute technologies with even lower GHG-emission levels. The technologies do not significantly lower the environmental performance level of the target activities for any of the environmental objectives.

Quantified life-cycle GHG emission savings are verified by an independent third party

Rationale

The activity is an enabling activity, which was developed before the enabling framework was in place. The recommended changes are aimed at bringing the description and substantial contribution criteria closer to the requirements of the enabling framework, making them more consistent with other enabling activities. They also clarify that technologies which lead to a lock-in of downstream technologies in GHG-emissions do not meet the criteria.

Usability

The proposed changes aim at clarifying the scope of activities eligible under activity 3.6 . In particular, they show that upstream technologies can be eligible as long as the GHG emission reductions that are achieved as a result of them being used by a downstream activity are substantial. The LCA requirement is the core of the criteria, since it is impossible to narrow the scope of eligible activities by listing them explicitly if the umbrella nature of activity 3.6 is to be preserved. Feedback from industry shows that this umbrella nature is perceived as particularly helpful and should not be lost by a more detailed specification of the activity's scope. Guidance on the identification of the best performing alternative would further improve usability, but is out of scope of the Platform under its current mandate.

Activity 3.7 Manufacture of cement

Stakeholder Input

Input received via the stakeholder request concerned the following:

- clarification of the name of the activity (addressed by Recommendation 4 below)

- proposal to delete SC criterion (a) in order to stronger incentivize lowering the clinker-to-cement ratio (not addressed to keep the incentive also to improve the GHG performance of grey cement clinker production, not only the clinker-to-cement-ratio)
- lowering the threshold in criterion (b) by a general factor based on a linear projection towards the proposed emission target of -90% GHG for the EU in 2040 (addressed partly: in a manner based on technically proven progress, in Recommendation 2 below and in Recommendation on multiple activities above)
- introduction of CCU into the criteria, this was input concerning the whole manufacturing sector and other sectors (not addressed due to lack of resources to address the topic in a consistent manner across the Taxonomy)
- request to accept derogations from legal requirements in DNSH criteria of Appendix C of the Climate Delegated act (which apply to individual installations) also in the context of the Taxonomy (not addressed due to lack of resources to address the topic in a consistent manner across the Taxonomy)

Recommended revisions for substantial contribution (SC) and for name and description of the activity

Challenges:

The current Taxonomy criteria include alternative binders (alternative hydraulic binders), but there is no further explanation of the term "alternative", creating uncertainty in the application of the criteria (usability issue).

The activity is a transitional activity. The progress of the industry in reducing its carbon intensity needs to be reflected in an update of the quantitative thresholds, which are in this activity:

- the ETS-based threshold for clinker production (covered by the recommendation for multiple activities at the beginning of the Manufacturing section of this report) and
- the clinker-to-cement ratio.

Recommendation 1

Revise text under TSC (SC), letter (a) and (b) shall read as follows (additions in capital letters):

"(a) grey cement clinker, *OR ALTERNATIVE BINDER SUITABLE TO SUBSTITUTE GREY CEMENT CLINKER,* where the specific GHG emissions are lower than (…) per tonne of grey cement clinker *OR TONNE OF ALTERNATIVE BINDER SUITABLE TO SUBSTITUTE GREY CEMENT CLINKER;*

(b) cement from grey clinker or alternative binder *WHICH MEETS PRODUCT SPECIFICATIONS SUITABLE FOR USE IN CEMENT PRODUCTION OR IS SUITABLE TO SUBSTITUTE CEMENT FROM GREY CEMENT CLINKER*, where (...)".

This recommendation also applies to Activity 3.7 in Annex II (Substantial Contribution to Climate Change Adaptation).

Rationale (regarding Recommendation 1): **Clarification** of the term alternative (hydraulic) binder based on the ETS free allocation rules (Annex I of the Delegated Regulation (EU) 2019/331, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02019R0331-20240101), for which the guidance

document[13] states: "Grey cement clinker or alternative hydraulic binders for the production of cement, as total amount of hydraulic binder produced. Products produced within the system boundaries of other product benchmarks or as by-product or waste of other production processes are not covered by this benchmark, including fly ash, blast-furnace slag, steel slag, silica fume, paper sludge.": "They need to meet product specifications suitable for use in cement production." Note the following differences between EU ETS and the EU Taxonomy concerning the scope of cement/cement clinker/alternatives: (i) The EU ETS benchmark does not include the use of by-products or waste of other production, whereas the Taxonomy does. (ii) The EU ETS benchmark is limited to grey cement *clinker* and alternative hydraulic binders , whereas the Taxonomy includes both grey cement clinker and cement, and in the current Taxonomy, alternative binders are covered under cement, not under cement clinker.

Moreover, it is recommended to remove the limitation to “hydraulic” binders because it is currently an inconsistency in the Taxonomy: it is currently present in the text of the “Technical screening criteria”, but not in the “Description of the activity”. Both hydraulic and non-hydraulic binders (e.g. some magnesium-based systems) are technically possible and the Taxonomy should be open to different types of binders, as long as they deliver the required substantial contribution to climate change mitigation, as defined by the quantitative threshold.

Recommendation 2. Lower the clinker to cement ratio, which is applied for calculating threshold (b) and is specified in the respective footnote, from 0.65 to 0.62. Use the factor 0.62 and the new value for threshold (a). For the new value of threshold (a), see recommendation for multiple activities at the beginning of this chapter on Manufacturing activities.

This recommendation also applies to Activity 3.7 in Annex II (Substantial Contribution to Climate Change Adaptation).

Rationale (regarding Recommendation 2): This is a transitional activity. The recommendation to lower the clinker factor, resulting in a more ambitious threshold, is based on the fact that this is a transitional activity. The change of the factor (“clinker to cement ratio” or “clinker factor”) by 0.03, i.e. 3 %, is based on the progress of the average observed in the European cement industry. The recommendation of the factor 0.65, made by the TEG in 2020 and implemented in the Climate Delegated Act in 2021, was based on data for the European cement industry in 2014 and a 2030 projection (see TEG report, technical annex). According to the European Cement Association, the average clinker-to-cement ratio is currently 73.7% and used to be 76.4% in 2015[2]. The difference of 2.7%, rounded to 3%, is the average progress achieved in the European cement industry since the first value of the clinker-to-cement ratio used in the Taxonomy, and it is recommended to update threshold (b) by this progress. While cements with low clinker factors are increasing in the European markets, even first cements with 0% clinker content have become available[3].

[1] Cembureau – The European Cement Association (2024): Clinker Substitution IN BRIEF, https://lowcarboneconomy.cembureau.eu/5-parallel-routes/resource-efficiency/clinker-substitution/

[2] Cembureau – The European Cement Association (2024): Our progress on the road to 2050, https://lowcarboneconomy.cembureau.eu/5-parallel-routes/resource-efficiency/clinker-substitution/

13 EU Guidance Doc 9 on free allocation (Chapter 10. Grey cement clinker, https://climate.ec.europa.eu/document/download/e8f4c2a8-98dc-470f-88ab-c6ce76b817cf_en?filename=9_gd9_sector_specific_guidance_en.pdf

[3] 2024 Hoffmann Green Cement Technologies (2024): Hoffmann Green Cements: first decarbonated cements 0% clinker, https://www.ciments-hoffmann.com/low-carbon-cement/

Recommendation 3. Revise the text in the description of the activity – the description shall read as follows:

"Manufacture of cement clinker, cement or alternative binder *WHICH MEETS PRODUCT SPECIFICATIONS SUITABLE FOR USE IN CEMENT PRODUCTION*".

This recommendation also applies to Activity 3.7 in Annex II (Substantial Contribution to Climate Change Adaptation).

Rationale (regarding Recommendation 3): Clarification in line with Recommendation 1 above.

Recommendation 4. Revise the text in the name of the activity – the name shall read as follows:

"Manufacture of cement *OR ALTERNATIVE MATERIAL TO SUBSTITUTE CEMENT OR CEMENT CLINKER*, or, Manufacture of cement *OR ALTERNATIVE BINDER SUITABLE TO SUBSTITUTE CEMENT OR CEMENT CLINKER*."

This recommendation also applies to Activity 3.7 in Annex II (Substantial Contribution to Climate Change Adaptation).

Rationale (regarding Recommendation 4): see Recommendation 3 above.

This recommendations is based on stakeholder input via the SRM, among further input from the Platform.

Usability, Data and Guidance:

These recommendations aim at improving the usability of the Taxonomy criteria by providing more clarity. They do not affect the data or information needed to demonstrate alignment with the criteria for SC.

Recommended revisions for **DNSH**

n/a, not reviewed by the group

Activity 3.8. Manufacture of aluminium

Stakeholder input

Recommended revisions for substantial contribution (SC)

Recommendation 1: Prepare FAQ to address approach in integrated plants

Rationale (regarding Recommendation 1):

There are no detailed criteria for aluminium downstream producers (rolling, extrusion, etc.) when these activities are **integrated** with aluminium recycling activities. The standard practice is that melting activities

exist within the same location with the downstream activity. The description of the activity includes the products that are derived from the casthouse production with the raw materials: pre-consumer and post-consumer scrap (not primary aluminium). These intermediate products are called slabs or billets and are then used further downstream in a process called rolling or extrusion that produces coils, aluminium sheets etc. Since the final products (that account for the revenue of the company) come from the downstream activity which is not listed as eligible, the activity of recycling cannot be declared as eligible revenue as they are intermediate products utilized internally. as input materials. In that sense the final products, after an extensive mechanical and metallurgical process, are a result of the rolling and extrusion process (not the casthouse). To show Taxonomy alignment under article 8, Aluminium companies would have to identify the amount of primary or recycled aluminium they source to produce their final products and in turn derive the overall turnover.

Challenge: scope / usability

Recommendation 2: FAQ to clarify that:

(i) The current Taxonomy criteria for primary aluminium manufacturing are applicable for electro-smelting of primary raw materials to produce pure aluminium .

(ii) Secondary Aluminium criteria are applicable for manufacturing of aluminium by remelting of pre-consumer and post-consumer scrap in a cast house and guidance if further downstream processing (e.g. rolling or extrusion) to produce coils, aluminium sheets etc.) may be included in the Taxonomy reporting or not.

(iii) Both primary and secondary aluminium manufacturing activities which are carried out at an integrated site, should be considered eligible, individually and collectively.

Rationale (regarding Recommendation 2):

Usability

DNSH

n/a, not reviewed by the group

Activity 3.9. Manufacture of iron and steel

Stakeholder input

Recommended revisions for substantial contribution (SC)

1. Prepare FAQ to address approach for integrated steel mills

Recommendation 1: FAQ to clarify that:

(i) EAF Steel manufacturing criteria are applicable for manufacturing of steel by remelting of pre-consumer and post-consumer scrap in a cast house and guidance if further downstream processing (e.g. rolling) to steel sheets etc.) may be included in the Taxonomy reporting or not;

(ii) guidance shall be provided on steel manufacturing activities which are carried out at an integrated site including whether such activities, individually and collectively (e.g. sheets) can be included in the Taxonomy reporting or not should be considered eligible.

Rationale: scope / usability

There are no detailed criteria for steel rolling mills when these are integrated with meltshop activities. The standard practice is that melting activities exist within the same location with the downstream activity.

Steel companies that produce EAF steel products and then use rolling mills, are not able to show alignment, even though TSC are respected, due to the fact that intermediate steel slabs do not have a selling price coming out of the melt shop.

Usability

DNSH

Recommended revisions for **DNSH**

DNSH to CE (currently n/a)

Recommendation 2: New criteria shall read as follows:

“The steel scrap input relative to product output is not lower than 15% [of post-consumer scrap].”

Rationale (regarding Recommendation 2): Every tonne of scrap used saves CO2, energy and resources while avoiding primary raw material extraction and transport on a large scale (e.g. fewer ore transports from America/Australia to Europe). The steel industry itself has provided evidence of the saving made by scrap in different steel crude production processes in extensive studies. Multiple studies show that most sense would be to have product-specific targets (differentiating between long and flat products). While this approach might not be aligned to the current wording/approach in TSC for substantial contribution, the option that aligns the suitable one-size-fits-all criteria of at least 15% (regardless on the steelmaking production route) should be introduced. [The Platform still discusses whether a threshold should relate to the post-consumer scrap only as circularity might be improved rather substantially. Recommendations will be double checked against additional JRC data as well as other consultation inputs.]

Usability

Activity 3.14. Manufacture of organic basic chemicals

Stakeholder input

Most of the proposals received for this activity, both from the Stakeholder Request Mechanism and from additional consultations and outreach to experts, suggested expanding the scope of the activity to include additional substances. A specific request supported the inclusion of benzene and hydrogen under High Value Chemicals, following the categorisation under the EU ETS product benchmark for steam cracking. However,

this was not taken up in the recommendations since benzene is included under the aromatics category and hydrogen has its own TSC under the activity "3.10 Manufacture of hydrogen" (see recommendation 4). Another request in this regard favoured the inclusion of tetrahydrofuran in the scope of this activity, however, further evidence regarding its carbon intensity would be required to make a recommendation. The stakeholder proposal suggesting the inclusion of phenol and acetone in the scope of the activity was accepted given the existing product benchmark under the EU ETS for these substances (recommendation 3).

Other comments received related to inconsistencies with the EU ETS Directive, especially for the electrification of steam cracking and the misalignment for manufacturing processes not covered under the EU ETS for substances under the scope of this activity. Recommendations 1 and 2 aim to address these concerns.

Recommended revisions for substantial contribution (SC)

Recommendation 1

1. Addition of a footnote in point (a), reading as follows:

(x) For the manufacture of High Value Chemicals (HVC) via steam cracking, the indirect emissions from electricity consumption within the system boundaries of steam cracking shall be calculated with the average life-cycle GHG emissions of the electricity used. Life-cycle GHG emissions are calculated using Recommendation 2013/179/EU or, alternatively, using ISO 14067:2018 or ISO 14064-1:2018.

Rationale: This approach would allow for the correct calculation of the emissions of electrified steam cracking processes.

Recommendation 2

2. Addition of alternative emission calculation methodologies for manufacturing processes which are not covered under the EU Emissions Trading System (EU ETS).

Rationale: Footnote (1) in the SC criteria requires the calculation of GHG emissions from the organic basic chemicals production processes in accordance with the EU ETS, referenced through Regulation (EU) 2019/331. However, the calculation methodologies provided for in said Regulation only cover specific processes. Companies manufacturing substances in scope of this economic activity with alternative and lower-emitting production processes are therefore unable to calculate and compare their GHG emissions against the emission thresholds established in the SC criteria, which stem from the EU ETS product benchmarks. Alignment in these cases is ultimately not possible, while the activity remains eligible.

Recommendation 3

3. Inclusion of additional substances in the scope of the economic activity, with the respective substantial contribution criteria, reading as follows (changes in capital letters):

Description of the activity

Manufacture of:

(a) high value chemicals (HVC):

(i) acetylene;

(ii) ethylene;

(iii) propylene;

(iv) butadiene.

(b) Aromatics:

(i) mixed alkylbenzenes, mixed alkylnaphthalenes other than HS 2707 or 2902;

(ii) cyclohexane;

(iii) benzene;

(iv) toluene;

(v) o-Xylene;

(vi) p-Xylene;

(vii) m-Xylene and mixed xylene isomers;

(viii) ethylbenzene;

(ix) cumene;

(x) biphenyl, terphenyls, vinyltoluenes, other cyclic hydrocarbons excluding cyclanes, cyclenes, cycloterpenes, benzene, toluene, xylenes, styrene, ethylbenzene, cumene, naphthalene, anthracene;

(xi) benzol (benzene), toluol (toluene) and xylol (xylenes)

(xii) naphthalene and other aromatic hydrocarbon mixtures (excluding benzole, toluole, xylole).

(c) vinyl chloride;

(d) styrene;

(e) ethylene oxide;

(f) monoethylene glycol;

(g) adipic acid;

(H) PHENOL/ACETONE

Substantial contribution to climate change mitigation

GHG emissions [(1)] from the organic basic chemicals production processes are lower than:

(a) for HVC: 0,693 [(2)] tCO2e/t of HVC;

(b) for aromatics: 0,0072 [(3)] tCO2e/t of complex weighted throughput;

(c) for vinyl chloride: 0,171 [(4)] tCO2e/t of vinyl chloride;

(d) for styrene: 0,419 [(5)] tCO2e/t of styrene;

(e) for ethylene oxide/ethylene glycols: 0,314 [(6)] tCO2e/t of ethylene oxide/glycol;

(f) for adipic acid: 0,32 [(7)] tCO2e /t of adipic acid.

(G) FOR PHENOL/ACETONE: 0,244 [(8)] tCO2e /t OF PHENOL/ACETONE

[(8)] Reflecting the average value of the 10 % most efficient installations in 2016 and 2017 (tCO2 equivalents/t) as set out in the Annex to the Implementing Regulation (EU) 2021/447.

Rationale: Both substances (phenol and acetone) have a product benchmark under the EU ETS.

Recommendation 4

4. Clarification through FAQs on the emissions calculation for High Value Chemicals (HVC).

Proposal: The European Commission should clarify that even though a company can only report on the four substances under the high value chemicals category, the calculation of the emissions can be based on the EU ETS scope and include both benzene and hydrogen.

Rationale: The EU ETS product benchmark for steam cracking (high value chemicals) includes both benzene and hydrogen. However, those two substances are not under the scope of high value chemicals in the EU Taxonomy since benzene is included under the aromatics category and hydrogen has its own TSC under the activity "3.10 Manufacture of hydrogen". This discrepancy can be confusing when calculating the emissions for high value chemicals.

Usability, Data and Guidance:

Recommendations 1, 2 and 4 are expected to enhance the usability of the criteria of this activity by facilitating compliance efforts, since they addressed challenges and concerns raised by stakeholders in this regard.

The recommendations do not require any additional type of data as compared to the current criteria. No issues have been raised for the existing criteria.

Recommended revisions for **DNSH**

n/a, not reviewed by the group

iv. Environmental protection and restoration activities

Restoration of wetlands

Introduction

Wetland (incl. peatlands) are among the most diverse terrestrial ecosystems and can contribute simultaneously to several EU environmental objectives: climate change mitigation, climate change adaptation, sustainable use of water resources, and biodiversity protection and restoration. Their central role in climate change mitigation is based on the fact that they are the largest natural terrestrial carbon store on Earth (Joosten et al. 2016). They store more carbon than all other vegetation types in the world combined.

The Platform did not receive SRM feedback on the economic activity Restoration of wetlands by the first cut-off date in December 2023, but in order to facilitate the uptake of the activity and increase the usability of the criteria, the Platform has made some recommendations to clarify the scope of the activity and to make some updates and adjustments to the technical screening criteria. Some recommendations were expanded after Commission comments. In general terms, the Platform proposes that also partially excavated (in depth) peatlands would be explicitly in scope of the activity. These areas are typically large GHG emissions sources and restoring (rewetting) them can lead to substantial emission reductions. In addition, the Platform recommends some refinements to the substantial contribution and the DNSH criteria to reflect latest scientific evidence on wetland restoration. The primary objective of all changes is to facilitate capital flows to Restoration of wetlands which activity can provide an unusually wide variety of environmental public goods, services and benefits for the society.

Description of the activity

Recommendation: To increase climate change mitigation impacts, it would be useful to state explicitly that the activity may also include restoration of only partially (in depth) excavated peatlands. These are common types e.g. in the Nordics and Baltics due to recent climate and energy policy changes that aim at phasing out peat utilisation for energy production; in Europe, these lands can be estimated to cover several hundreds of thousand hectares. According to existing scientific evidence, partially excavated peatlands can maintain their status as significant carbon storages but without proper restoration activities can also emit large amounts of CO_2. The Ramsar definitions (e.g. “The presence of peat or vegetation capable of forming peat is the characteristics of peatland.”) does not rule out the proposed widening of the activity scope.

Technical screening criteria

Substantial contribution to climate change mitigation

Recommendations (for exact wordings, see Table below):

1. Restoration plan
    1.1. After the adoption of the ENV DA, one could also refer here to a restoration plan as required under Annex IV, 1. ENVIRONMENTAL PROTECTION AND RESTORATION

ACTIVITIES 1.1. Conservation, including restoration, of habitats, ecosystems and species. Restoration of wetlands usually serve SC to CCM and biodiversity, or have at least biodiversity co-benefits. Cross-reference to existing requirements would increase the consistency and coherence of the Taxonomy DAs.

1.2. Some clarifications and rewording are suggested to increase usability.

1.3. No changes

1.4. We suggest that the restoration plan should also provide for *subsequent monitoring* that ensures that the development goes in the desired direction, and if necessary, to undertake corrective actions. COM(95) 189 final (p. 14) gives similar guidance: "Subsequent monitoring is vital to assess if the restoration objectives have been achieved and, if necessary, to undertake corrections." We see two options here: the streamlined approach would be based on subsequent visual monitoring which would reduce the administrative burden and expenses of the operators. The second option would follow Conservation, including restoration, of habitats, ecosystems and species, as in Delegated Regulation (EU) 2023/2486, where provisions for monitoring and audit are more comprehensive and detailed. The Platform recommends following the latter option for consistency but opts for some simplifications. It recognises that the criteria in the Restoration of wetlands would end up being more streamlined than in the Conservation activity but this can be considered justified because Restoration of wetlands is under CCM and requires climate benefit analysis which can sometimes be quite laborious. Thus it is proposed that section reads: "The restoration plan provides for monitoring which ensures the correctness of the information contained in the plan, in particular as regards the data relating to the involved area, and subsequent monitoring of the water table rise and other specific and relevant indicators, allowing to measure progress towards achieving the restoration objectives and an identification of corrective measures as necessary."

2. Climate benefit analysis

2.1. Some suggestions to streamline the text.

2.2. The 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories is not sufficient guidance here as it includes only selected wetland uses: reservoirs, ponds, canals and ditches. For many typical restoration cases the relevant guidance is in the IPCC 2013 Wetland supplement, so it should be mentioned here too. https://www.ipcc.ch/publication/2013-supplement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories-wetlands/

3. [Note that point 3 is missing from (EU) 2021/2139]
4. Guarantee of permanence [No changes]
5. Audit [Some suggestions to increase alignment with Conservation activity as in (EU) 2023/2486.]

Do no significant harm (DNSH)

(4) Transition to circular economy

We propose reformulation as follows: "The activity does not involve peat extraction, unless it is necessary to remove the nutrients and chemicals added to the upper peat

layer for previous cultivation purposes, in order to avoid nutrient and chemical leakage."
Rationale: Peat extraction at the upper peat layer can be justified in wetland restoration processes if there has previously been fertilization or use of chemicals for agricultural purposes.

(5) Pollution prevention and control
We propose reformulation as follows: "The activity does not use pesticides, with exception of occasions where the use of pesticides is needed to control large-scale outbreaks of pests and diseases and invasive alien species. In these occasions alternative approaches or techniques, such as non-chemical alternatives to pesticides are favoured, in accordance with Directive 2009/128/EC."
Rationale: Wetlands are particularly fragile ecosystems where the use of pesticides in restoration activity can cause significantly harmful impacts on pollution prevention and control, and simultaneously contribute negatively to other EU environmental objectives such as sustainable use and protection of water and marine resources, and biodiversity protection.

In addition, we propose a reformulation as follows: "The activity does not use fertilisers or manure."
Rationale: Wetlands are particularly fragile ecosystems where the use of fertilizers and manure in restoration activity can cause significantly harmful impacts on pollution prevention and control, and simultaneously contribute negatively to several other EU environmental objectives such as climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, and biodiversity protection.

The Platform recognises that in the activity Conservation, including restoration, of ecosystems, habitats and species [(EU) 2023/2486, Annex IV] the DNSH criteria for pollution prevention and control (PPC) are less stringent with regard to use of pesticides, fertilizers and manure than those that the Platform recommends for Restoration of wetlands. However, since the scope of the Restoration of wetlands is significantly more focused than the Conservation activity and specifically covers measures in water environments which are known to be particularly fragile to pesticide, fertilizer and manure use and to leakages of chemicals and nutrients, a more stringent DNSH PPC is justified in the activity Restoration of wetlands also from scientific perspective.

The recommended changes are presented in the Table below.

Table: Restoration of wetlands: proposed changes to description and criteria.

Original CCM DA	Recommended changes
2. ENVIRONMENTAL PROTECTION AND RESTORATION ACTIVITIES	**2. ENVIRONMENTAL PROTECTION AND RESTORATION ACTIVITIES**
2.1. Restoration of wetlands	**2.1. Restoration of wetlands**
Description of the activity	*Description of the activity*
Restoration of wetlands refers to economic activities that promote a return to original conditions of wetlands and economic activities that improve wetland functions without necessarily promoting a return to pre-disturbance conditions, with wetlands meaning land matching the international definition of wetland[1] or of peatland[2] as set out in the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)[3]. The concerned area matches the Union definition of wetlands, as provided in the Commission Communication on the wise use and conservation of wetlands[4]. …	Restoration of wetlands refers to economic activities that promote a return to original conditions of wetlands and economic activities that improve wetland functions without necessarily promoting a return to pre-disturbance conditions, with wetlands meaning land matching the international definition of wetland[1] or of peatland[2] as set out in the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)[3]. The concerned area matches the Union definition of wetlands, as provided in the Commission Communication on the wise use and conservation of wetlands[4]. Restoration activities may include restoration of partially (in depth) excavated peatlands but exclude afforestation which is treated under 1.1. in CCM DA. …
Technical screening criteria	**Technical screening criteria**
Substantial contribution to climate change mitigation	**Substantial contribution to climate change mitigation**
1. Restoration plan	**1. Restoration plan**
1.1. The area is covered by a restoration plan, which is consistent with the Ramsar Convention's principles and guidelines on wetland restoration[6], until the area	1.1. The area is covered by a restoration plan, which is consistent with the Ramsar Convention's principles and guidelines on wetland restoration6, until the area

is classified as a wetland and is covered by a wetland management plan, consistent with the Ramsar Convention's guidelines for management planning for Ramsar sites and other wetlands[7]. For peatlands, the restoration plan follows the recommendations contained in relevant resolutions of the Ramsar Convention, including the resolution XIII/13.	is classified as a wetland and is covered by a wetland management plan, consistent with the Ramsar Convention's guidelines for management planning for Ramsar sites and other wetlands7. For peatlands, the restoration plan follows the recommendations contained in relevant resolutions of the Ramsar Convention, including the resolution XIII/13. A restoration plan that complies with the requirements set in (EU) 2023/2486 under Annex IV (1.1 Conservation, including restoration, of habitats, ecosystems and species, Section 3: Management plan or equivalent), fulfils the requirement on restoration plan in activity Restoration of Wetlands.
1.2. The restoration plan contains careful consideration of local hydrological and pedological conditions, including the dynamics of soil saturation and the change of aerobic and anaerobic conditions. …	1.2. The restoration plan contains careful consideration of local hydrological and pedological conditions, together with a clear aim of soil saturation with water and the change from aerobic to anaerobic conditions. …
1.4. The restoration plan provides for monitoring which ensures the correctness of the information contained in the plan, in particular as regards the data relating to the involved area.	1.4. The restoration plan provides for monitoring which ensures the correctness of the information contained in the plan, in particular as regards the data relating to the involved area, and subsequent monitoring of the water table rise and other specific and relevant indicators, allowing to measure progress towards achieving the restoration objectives and an identification of corrective measures as necessary.
2. Climate benefit analysis	**2. Climate benefit analysis**
2.1. The activity complies with the following criteria:	2.1. The activity complies with the following criteria:
(a) the climate benefit analysis demonstrates that the net balance of GHG emissions and removals generated by the activity over a period of 30 years	(a) the climate benefit analysis demonstrates that the net balance of GHG emissions and removals generated by the activity over a period of 30 years

after the beginning of the activity is lower than a baseline, corresponding to the balance of GHG emissions and removals over a period of 30 years starting at the beginning of the activity, associated to the business-as-usual practices that would have occurred on the involved area in the absence of the activity; …	after the beginning of the activity is lower than a baseline, ~~corresponding to the balance of GHG emissions and removals over a period of 30 years starting at the beginning of the activity~~, associated to the business-as-usual practices that would have occurred on the involved area in the absence of the activity; …
2.2. The calculation of climate benefit complies with all of the following criteria: (a) the analysis is consistent with the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories[8]. In particular, if the wetland definition used in that analysis differs from the wetland definition used in the national GHG inventory, the analysis includes an identification of the different land categories covered by the involved area. The climate benefit analysis is based on transparent, accurate, consistent, complete and comparable information, covers all carbon pools impacted by the activity, including above-ground biomass, below-ground biomass, deadwood, litter and soil, relies on the most conservative assumptions for calculations and includes appropriate considerations about the risks of nonpermanence and reversals of carbon sequestration, the risk of saturation and the risk of leakage. For coastal wetlands, climate benefit analysis considers projections of expected relative sea level rise and the potential that the wetlands will migrate; …	2.2. The calculation of climate benefit complies with all of the following criteria: (a) the analysis is consistent with the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories[8] and the IPCC 2013 Wetland Supplement. In particular, if the wetland definition used in that analysis differs from the wetland definition used in the national GHG inventory, the analysis includes an identification of the different land categories covered by the involved area. The climate benefit analysis is based on transparent, accurate, consistent, complete and comparable information, covers all carbon pools impacted by the activity, including above-ground biomass, below-ground biomass, deadwood, litter and soil, relies on the most conservative assumptions for calculations and includes appropriate considerations about the risks of nonpermanence and reversals of carbon sequestration, the risk of saturation and the risk of leakage. For coastal wetlands, climate benefit analysis considers projections of expected relative sea level rise and the potential that the wetlands will migrate*;* …
5. Audit …In order to reduce costs, audits may be performed together with other forest certification, climate certification or other audit.	**5. Audit** … In order to reduce costs, audits may be performed together with any forest certification, land-use certification, biodiversity certification, climate certification or other audit.

As a result of the verification, the certifier issues an audit report. … **Do no significant harm ('DNSH')** **(4) Transition to a circular economy** Peat extraction is minimised. **(5) Pollution prevention and control** The use of pesticides is minimised and alternative approaches or techniques, which may include non-chemical alternatives to pesticides are favoured, in accordance with Directive 2009/128/EC, with exception of occasions where the use of pesticides is needed to control outbreaks of pests and diseases. The activity minimises the use of fertilisers and does not use manure. The activity complies with Regulation (EU) 2019/1009 or national rules on fertilisers or soil improvers for agricultural use.	As a result of the verification, the certifier issues an audit report. … **Do no significant harm ('DNSH')** **(4) Transition to a circular economy** The activity does not involve peat extraction, unless it is necessary to remove the nutrients and chemicals added to the upper peat layer for previous cultivation purposes, to avoid nutrient and chemical leakage. **(5) Pollution prevention and control** The activity does not use pesticides, with exception of occasions where the use of pesticides is needed to control large-scale outbreaks of pests, diseases and invasive alien species. In these occasions alternative approaches or techniques, such as non-chemical alternatives to pesticides are favoured, in accordance with Directive 2009/128/EC. The activity does not use fertilisers or manure.

v. Construction and real estate

Introduction

To deliver on EU climate goals, the construction and real estate sectors need to undertake a deep transformation of the building stock and associated value chain, which contribute around 40% of the EU's

greenhouse gas emissions14. This includes changes to the way buildings and associated materials are currently produced, constructed, operated, maintained, renovated and demolished.

The climate change impacts of the building sector emerge from 1. greenhouse gas emissions associated with the energy consumption of the technical building systems during the use and operation of the building, referred to as operational emissions (B6 in the Level(s) framework indicator 1.2), and, 2. from the greenhouse gas emissions associated with materials and construction processes throughout the whole life cycle of a building, referred to as embodied emissions[15].

Together, these emissions are described as a building's whole life carbon, or the life cycle global warming potential (GWP), referring to the quantitative global warming potential contributions of a building caused by greenhouse gas emissions along its full life cycle, encompassing both operational and embodied emissions.

With Europe's well developed building stock it is essential to accelerate renovation/retrofitting rates to set the whole building stock on a net-zero emissions pathway, while embodied and operational emissions of new buildings must be significantly reduced in order to minimise their impact over their life cycle, with the aim that the whole real estate sector can also align with the interim 2030 EU targets compatible with 1.5 degrees temperature goal.

Over the past few years, Europe's buildings and construction sector has become increasingly familiar with the concept of "life-cycle Global Warming Potential" (GWP). Despite regional differences in their advancements, these developments must be reflected in the EU Taxonomy.

The EU Taxonomy plays an essential role in directing financial flows towards the full decarbonisation of the built environment across its entire life cycle. The EU Taxonomy has set a first legal standard of what constitutes green investments in construction and real estate reflecting the EU's commitment to promoting sustainable building practices along the value chain, from planning and design to construction, and operation and maintenance.

For the financial year 2022, over 1700 companies had reported at least one of their economic activity eligible (for which sustainability criteria exist) to the Climate Delegated Act. The real estate sector was the second largest sector, after the energy sector, reporting EU Taxonomy aligned activities (30% aligned turnover and 26% aligned capital expenditures). However, large inconsistencies in EU Taxonomy reporting in the built environment due to internal reporting difficulties, such as data gathering, and varying interpretations of the legal text, remain high barriers for stakeholders to effectively and easily report and align to the EU Taxonomy criteria for construction and real estate. The Do No Significant Harm criteria particularly pose reporting challenges[16].

14 Ramboll, 2023. https://c.ramboll.com/life-cycle-emissions-of-eu-building-and-construction

15 In the Level(s) framework indicator 1.2, these comprise: material extraction and upstream production (A1), transport to manufacturer/factory (A2), manufacturing (A3), transport to site (A4), construction and installation processes (A5), use phase (B1), maintenance (B2), repair (B3), replacement of building components (B4), renovation (B5), deconstruction (C1), transport to end-of-life facilities (C2), processing for reuse, recovery or recycling (C3) and disposal of waste (C4). Benefits and loads from product reuse, material recycling and exported energy / energy recovery beyond the system boundary (D) should be reported separately according to EN 15978 and associated standards.

16 Platform on Sustainable Finance, January 2024: Compendium of market practices

The analysis and recommendations presented in this report tackle feedback received, usability issues in Taxonomy reporting and the need to review, and if deemed necessary update, Taxonomy criteria every three years. The analysis and recommendations build upon:

- the feedback received through the Stakeholder Request Mechanism by December 2023 made available by the European Commission to the Platform,
- the findings of the Platform on Sustainable Finance on EU Taxonomy usability issues[17] and market practices[18],
- the initial work of the Technical Expert Group (TEG) in setting the technical screening criteria in 2020, including their recommendations for future work[19],
- discussions and research by the Platform, and exchanges in the Platform on Sustainable Finance, as mandated by the EU Taxonomy legal text,
- discussions held in an Expert Roundtable, which took place 17 October 2024 with around 30 participants across industry associations (financial sector and real economy), civil society and research organisations and the European Commission.

Rationale

Challenges

The Technical Expert Group (TEG), which developed the first draft of the EU Taxonomy framework and its technical screening criteria, faced several challenges when it first developed Mitigation criteria for the construction and real estate sectors – it acknowledged:

- The lack of consistent and comparable data across countries for benchmarking building stock performance and setting suitable thresholds.
- The inherent difficulty of creating a level playing field across countries with different climates and degrees of market readiness, and differences in design, construction techniques and building age. Compared to other economic activities, the operation of individual buildings has unique characteristics, which means the performance of different assets cannot easily be compared.
- The desire to find a compromise between rising ambition and building upon already existing 'green' financing instruments.
- The urgent need to increase the number of energy renovations, especially in private households.

Whilst all of the challenges identified by the TEG in 2020, especially the lack of data, are still valid in 2024, the market has learned to report to the EU Taxonomy, and there have been fundamental changes in the voluntary and regulatory landscape for construction and real estate activities.

Building on feedback from the SRM

[17] Platform on Sustainable Finance, 2022: Platform Recommendations on Data and Usability. https://finance.ec.europa.eu/system/files/2022-10/221011-sustainable-finance-platform-finance-report-usability_en_1.pdf

[18] Platform on Sustainable Finance, 2024: A Compendium of Market Practices. https://finance.ec.europa.eu/sustainable-finance/overview-sustainable-finance/platform-sustainable-finance_en

[19] TEG, 2020: Taxonomy Report: Technical Annex. https://finance.ec.europa.eu/system/files/2020-03/200309-sustainable-finance-teg-final-report-Taxonomy-annexes_en.pdf

By 31 December 2023, over 70 feedback entries were sent through the Stakeholder Request Mechanism regarding Chapter 7 of Annex I in the Climate Delegated Act. Most respondents represent European non-financial undertaking organisation.

Further feedback and recommendations were also submitted through the SRM on 3.5 Manufacture of energy efficiency equipment for buildings and 4.16. Installation and operation of electric heat pumps.

The majority of feedback received addressed the following aspects of Chapter 7:

7.1. Construction of new buildings;
7.2. Renovation of existing buildings;
7.7. Acquisition and ownership of buildings;

Thus, Platform focused its work on these three economic activities (see sections below).

The Platform analysed and summarised the feedback received. However, due to the extent of the feedback received, it is not possible to add it to this report. The feedback received has been used to inform the prioritisation of the work of the Platform, among other factors, and has informed the recommendations in this report, as relevant. The feedback received resulted in over 30 issues being identified that need addressing. With the timeline and capacities available to the Platform in its current mandate, it is not possible to propose new criteria templates. The Platform decided to focus on recommendations for future work on criteria for construction and real estate instead.

Feedback on DNSH criteria, on 3.5 Manufacture of energy efficiency equipment for buildings and on 4.16. Installation and operation of electric heat pumps could not be addressed in the current mandate of the Platform.

Relation between construction, renovation and acquisition and ownership OBJ

Construction to renovation: The current EU Taxonomy may inadvertently favour new construction over renovation due to its limited focus on embodied carbon, which encompasses emissions from materials and construction processes throughout a building's lifecycle. While addressing operational energy efficiency, the EU Taxonomy overlooks the climate impact of construction, often making it simpler to invest in new, energy-efficient buildings than to retrofit existing buildings.

Moreover, the same DNSH criteria apply for renovations (with the exception of DNSH 6), which often cover renovation in households and/or small assets , as for the construction of large buildings – the reporting burden and difficulty to access data is difficult to label households renovations as EU Taxonomy aligned. In this sense, the EU Taxonomy would need to be updated to bring it in line with the recast of the EPBD and the increase in ambition due to the EU Green Deal and the EU Renovation Wave.

Construction to acquisition and ownership: Any building acquired after December 2020, or owned but built after December 2020, is subject to the same criteria as for 7.1 Construction of new buildings, with the important exception of the DNSH criteria for biodiversity, pollution, circularity and water. This means that owners of new buildings can report their economic activities under 7.7 instead of 7.1 and thereby omit reporting towards DNSH criteria for four environmental objectives. At the same time, developers must report their economic activities under 7.1. In the case that their clients do not pursue compliance with DNSH criteria, the client/owner of the new building may report the asset as EU Taxonomy aligned, but the developer cannot. Additionally the criteria do not have any improvement aspects, meaning these criteria may include ownership

of buildings that are not highly efficient without improvement, and yet may not capture acquisition of buildings for large energy efficiency improvements through renovation.

Renovation to acquisition and ownership: To incentivise energy upgrades in the existing building stock, it would be sensible for market actors to invest or finance the renovation of a building with upgraded energy performance, and subsequently sell it off or rent it out as an EU Taxonomy aligned building. However, in most jurisdictions the renovation criteria for a "major renovation", or 30% energy reduction outside of the EU, does not result in the building reaching energy performance level of EPC A. However, EPC A is the required threshold to acquire or own an EU Taxonomy aligned building before December 2020.

Moreover, the TEG identified the risk that a top-performance approach may have 'limited long-term impact in terms of emission reductions if the market simply trades financial exposure in the top 15% of national stocks without improving the energy efficiency of such buildings through renovation'. The TEG already recognised the risk of undermining renovation efforts if EU Taxonomy aligned acquisition of buildings became less onerous than the financing of energy efficiency measures. Thus, the TEG recommended introducing renovation requirement for long asset tenures[20] - this is not included in the current EU Taxonomy requirements.

Regulatory environment

The Energy Performance of Buildings Directive (EPBD), revised in 2024, introduces dates by which Member States will need to ensure that life-cycle GWP is calculated and disclosed for new buildings. National governments will also need to publish roadmaps with life cycle GWP targets and limit values.

At the national level, national governments like Denmark and France have introduced mandatory reporting and limit values for life-cycle GWP; a number of Member States have already introduced legislative measures to ensure systematic and consistent measurement and disclosure of WLC of buildings; and other EU countries are in the process of setting up WLC measurement and benchmarking initiatives.

As a legislation that defines green economic activities it is essential that the EU Taxonomy ambition level is well above the minimum requirements put forward in the EPBD, and that it helps to prepare the EPBD's uptake. It can do so by introducing WLC requirements for those actors seeking to invest in and implement green construction and/or large companies that typically have more resources and capacities to change building practices and report progress.

Usability issues of the criteria

1. Reporting at the entity, economic activity and asset level

The EU Taxonomy is based on economic activities to define green finance. In the context of construction and real estate, the economic activity defining how a building is constructed, operated, maintained, renovated, redeveloped and/or demolished has a direct impact on the sustainability levels of the given building.

An underlying issue, which leads to divergent interpretations of the TSC, comes from the fact that the significant contribution to climate change mitigation is assessed at the economic activity level in the EU

[20] TEG, 2020: Taxonomy Report: Technical Annex. https://finance.ec.europa.eu/system/files/2020-03/200309-sustainable-finance-teg-final-report-Taxonomy-annexes_en.pdf

Taxonomy, but the performance level is measured at the asset level (energy performance of the building itself). Voluntary schemes to address sustainability performance in construction and real estate are all based on the performance of the asset, not the economic activity that results in changes in the asset's sustainability performance, or address entity-level performance and asset-level performance separately.

Investor/ Financier	Client / owner	Company/contractor	Economic activity	Asset/Output
Enables an entity to service and/or perform an economic activity in buildings, or part of a building	Pays for an economic activity to take place, performed on their own or serviced out to a contractor	Performs an economic activity on a building, or part of a building, on behalf of a client	The act of using resources to produce specific goods or services, such as a building or a modification to a building, or part of a building	The modified building, or part of a building, from the performed economic activity

As per the EU Taxonomy Regulation (2020/852) - Article 10, economic activities can have a substantial contribution to climate change mitigation in three ways:

An economic activity shall qualify as contributing substantially to climate change mitigation where that activity contributes substantially to the stabilisation of greenhouse gas concentrations in the atmosphere, such as by generating, transmitting, storing, distributing or using renewable energy [...], improving energy efficiency [...], or switching to the use of sustainably sourced renewable materials.	An economic activity shall qualify as contributing substantially to climate change mitigation where that activity enables any of the economic activities contributes substantially to the stabilisation of greenhouse gas concentrations in the atmosphere. *These activities are labelled **Enabling***	An economic activity for which there is no technologically and economically feasible low-carbon alternative shall qualify as contributing substantially to climate change mitigation where it supports the transition to a climate-neutral economy consistent with a pathway to limit the temperature increase to 1,5°C [...] that correspond to the best performance in the sector or industry; does not hamper the development and deployment of low-carbon alternatives; and does not lead to a lock-in of carbon-intensive assets, considering the economic lifetime of those assets. *These activities are labelled **Transitional***

Current labelling of economic activities listed in Annex I Chapter 7:

7.1. Construction of new buildings	No label
7.2. Renovation of existing buildings	Transitional
7.3. Installation, maintenance and repair of energy efficiency equipment	Enabling

7.4. Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)	Enabling
7.5. Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings	Enabling
7.6. Installation, maintenance and repair of renewable energy technologies	Enabling
7.7. Acquisition and ownership of buildings	No label

2. Different actors influencing and enabling EU Taxonomy alignment

Different types of market actors report towards the same set of criteria under Chapter 7, such as investors, financial institutions, developers, energy service providers, public entities, companies owning buildings or parts of buildings, or public entities, such as national and local governments owning public buildings. As an example, the 7.2 renovation of existing buildings criteria may be reported towards by a bank offering green mortgages for their clients' home renovation, by a developer renovating a client's building, or by an owner renovating its own building. The reporting of the criteria is slightly different for each and the decision-making lever of each actor is different. For example, whilst a developer or owner can influence the energy efficiency level of a building in its design stage, occupiers/tenants can minimise empty / unused floor space and facility managers can track and report real energy consumption.

Even more actors influence energy performance of buildings, such as designers, architects, engineering companies, asset managers, facility managers, homeowners, tenants, manufacturers. At the same time, the construction and real estate value chain is largely comprised of SMEs, therefore many market actors aren't subject to EU Taxonomy reporting regulation. This accrues reporting challenges, e.g. in data collection and proof of compliance.

3. Links to EU Directives with divergent national transpositions

The criteria in Chapter 7 are linked to EU Directives, which are not uniformly transposed across EU countries (or not transposed at all)[21]. With very few exceptions, so far, national governments have not eased this reporting barrier, by, for example, translating EU Taxonomy criteria in their jurisdiction.

At the same time, national regulations arguably represent the best local transposition of EU goals and appropriately reflect climatic conditions, market readiness, design and construction practices or building age.

4. Criteria outside the EU

The cross-referencing of EU Directives poses particular reporting challenges for economic activities outside of the EU. This particularly challenging for 7.1 where no international equivalent to the EU based criteria is provided, and for DNSH criteria referring to EU legislation and frameworks.

[21] WorldGBC & EPRA, 2023: Nearly Zero Energy Buildings (NZEB), Major Renovations, Energy Performance Certificates (EPC) factsheets. https://worldgbc.org/sustainable-finance/

Many jurisdictions have voluntary green building certifications which could be used as an alternative to the EPC as a source of energy demand data. Several of such schemes already operate both within and outside of Europe and Green Building Councils and other operators of these schemes have already adapted them to enable their use as a tool to demonstrate Taxonomy alignment[8]. Given how critical the decarbonisation of the real estate sector is for achieving climate goals, significant efforts should be invested into making the Taxonomy easily applicable to financial products, instruments, and mortgages[22].

Building upon TEG recommendations

The TEG recommended:

- Setting criteria for new constructions **to raise above mandatory design requirements** and **progress towards net-zero emissions in the use phase by 2030**, and work to **introduce a requirement on including embodied carbon**.
- Setting criteria to direct finance towards **a large volume of major renovation projects** as well as towards individual measures aimed at improving energy and carbon performance
- Adopting a **best-in-class approach** to ensure that the acquisition and ownership criteria support both significant market uptake and sufficient environmental benefits [whereby] the performance of the top performing 15% of the national stock **needs to be transposed into absolute energy or carbon metrics**, but the TEG considered that data was not yet adequately available in 2020.
- Requiring **improvements over time** to ensure overall stock decarbonisation.

Recommendations

We list recommendations that are overarching all economic activities in Chapter 7.

We also provide further analysis and recommendations on those parts of Chapter 7 of the Climate Delegated Act Annex I which pose the highest usability challenges, of which the regulatory context has seen large changes, and which received critical and many entries through the Stakeholder Request Mechanism, namely: 7.1. Construction of new buildings; 7.2. Renovation of existing buildings; 7.7. Acquisition and ownership of buildings.

Recommendations for short-term changes

1. Allow proxies, such as high ambition green building certification systems, based on standard market practices, in the EU for a transitional period, while the EPC framework is being strengthened, and outside the EU to demonstrate equivalent ambition levels.
2. Update EPBD cross-references, and also clearly stipulate the energy or carbon requirements from the EPBD in the Climate Delegated Act to ease usability of the criteria (more specific recommendations are provided under 7.1, 7.2 and 7.7).
3. Add a ban of new fossil fuel equipment in buildings under 7.1, 7.2 and 7.7, in line with the requirements of the EPBD recast 2024.
4. Label 7.1 Construction of new buildings as a transitional activity because energy and carbon requirements are evolving ,and because the sourcing of materials for building construction cannot be zero carbon yet.

[22] Platform on Sustainable Finance, 2022: Platform Recommendations on Data and Usability. https://finance.ec.europa.eu/system/files/2022-10/221011-sustainable-finance-platform-finance-report-usability_en_1.pdf

5. Label 7.7. Acquisition and ownership of buildings as a transitional activity because the nature of the economic activity is based on a best-performance approach and a decarbonation pathway towards a zero-emissions building stock by 2050, and insert such pathway requirements.
6. Consider clear signalling for the buildings industry as to how the criteria will be adjusted in 3 years' time i.e. for next transitional review.

Recommendations for future developments

To enhance the usability of the criteria in construction and real estate, the Platform on Sustainable Finance previously suggested to:

1. Consider the addition of the economic activity of "redevelopment" of a building (with demolition limitations and energy efficiency improvement requirements), either by integrating to 7.1 or 7.2, or by adding it into chapter 7 as a new economic activity. The latter is the clearest way forward and poses the least usability issues.
2. Review building-specific DNSH criteria and simplify reporting requirements whilst ensuring that no significant harm is done, for example through Building certification / passports
3. Clearly enhance the requirement of data collection and (anonymised) public disclosure of buildings' energy performance
4. Work with the International Platform for Sustainable Finance (IPFS) and/or national jurisdictions and/or Green Building Councils to create a list of "EPCs" international equivalences by mapping the quality and the level of implementation of energy efficiency and green buildings labelling schemes within and outside of the EU.
5.

Recommendations outside the Climate Delegated Act

6. Develop guidance to inform market actors how to report towards the criteria in Chapter 7
    a. The guidance should be by actor type / finance instrument type including developers, owners/clients, funders, investors, tenants (if not the owner)
    b. It should explain how each type of market actor can and should influence and report towards the criteria
    c. Clearly describe guiding principles behind the TSC and reporting requirements, to inform appropriate decision-making and verification services
7. Clarify how the economic activity influences the asset's performance, either in the Delegated Act or in the guidance mentioned above.
8. Review and strengthen the EPC framework so that it is equally and timely applied across Europe.
9. Allow investors, lenders, and certifying bodies to have direct access to EPC databases and develop an EU-wide framework of unique identifiers, e.g., based on geo coordinates, such that lenders are in a position to conduct automated checks to identify when EPC or updated EPC are available.

7.1 Construction of new buildings

Rationale

If the entire stock is meant to contribute to 55% reductions by 2030, upcoming 2040 goals, and be net-zero carbon by 2050, it follows that those buildings built between 2021 and 2050 must be net-zero carbon in order for the overall target to be met. The sooner new buildings are built with net-zero performance, the less difficult it will be to meet the 2050 target for the whole sector to be net-zero.

The EU Taxonomy for the construction of buildings requires the disclosure of a building's primary energy demand (PED) as per the Energy Performance of Buildings Directive (EPBD) of 2010. The EPBD does not include specific energy thresholds, but mandates Member States to provide a national interpretation of an NZEB. Companies and financial institutions that wish to, or are required to, report their EU Taxonomy-alignment for the buildings they construct, acquire or own, need to do so in line with the PED levels set out in the NZEB definitions of each of the Member States where those buildings are located.

Usability issues of the criteria

The current criteria can pose significant challenges, especially to organisations with economic and financial activities across several EU countries or beyond.

- Lack of comparability: NZEB standards are based on divergent methodologies, broadly split between absolute or relative energy requirements (e.g. to a reference building) and based on different PED and floor space measurement approaches. Thus, the energy performance thresholds (PED/m2) aren't directly comparable across countries.
- Lack of accessibility: NZEB requirements are hidden in long and technical building codes and standards, often in legal language, not easily accessible (e.g. the German standard is behind a paywall) and not available in English. NZEB standards comprise several metrics, of which PED is only one, often rendering the extraction of the PED parameter difficult. Data on energy performance is also not readily available, prohibiting progress to report against NZEB standards.
- Double counting of renewable energy: In many Members States, NZEB standards allow for the use of onsite, or even offsite renewable energy to comply with the Primary Energy Demand thresholds. The EU Taxonomy, however, separates out investments into renewable energy and energy efficiency investments while the PED thresholds only refer to energy efficiency investments. This can lead to a risk of double counting renewable energy when complying with the NZEB standard and reporting to the EU Taxonomy and therefore skew EU Taxonomy percentage alignment.
- The requirements under the EPBD are not in line with those of the EU Taxonomy: The concept of NZEBs is more comprehensive than the reference to Primary Energy Demand thresholds that the EU Taxonomy sets. The EPBD recast has replaced NZEB with a new standard – zero emissions buildings (ZEBs), suggesting NZEB will soon be an outdated standard.

TEG recommendations

The TEG recommended the following actions to fully cover the significant contribution that construction of new buildings can bring to climate change mitigation:

- Establish a timeline for reviewing the 20% (10% in the current legal text) relative improvement from NZEB requirements, and with the clear objective of converging towards net-zero energy and net-zero carbon targets for new buildings by 2030.
- Acknowledging the evolving policy landscape for energy performance of buildings, the TEG recommended to consider tightening of NZEB requirements in 2023, review of threshold, if necessary, in 2025, and 2028, introduce technical definitions of net-zero energy and net-zero carbon requirements by 2030.
- Where operational net-zero carbon is already mandated by regulation, the Taxonomy should not require better performance, since net zero carbon can be considered sufficient to allow the entire building stock to be climate-neutral by 2050.
- Introducing thresholds for embodied carbon by 2025.
    - Gather and analyse existing data in order to establish reliable thresholds for carbon emission embodied in new constructions, to be integrated into the Taxonomy criteria for the activity 'Construction of new buildings' as additional threshold to be met.
    - These thresholds should be based on a wide and consistent set of data, suitable for benchmarking best practice across different building uses and typologies (i.e. houses, flats, offices, etc.).
    - Thus, the Taxonomy should encourage and support the generation of such data.

Regulatory change

The EPBD represents minimum performance and moves the mainstream market with implications for all buildings in the EU. The EPBD requires Member States to ensure that life cycle GWP is calculated and disclosed via Energy Performance Certificates (EPCs) with the following timelines:

- as of 2028 for all new buildings with a useful floor area larger than 1,000m2
- as of 2030 for all new buildings.

It also replaces NZEB with ZEB and mandates that all new buildings should be zero-emission buildings by 2030.

There is therefore the need to update the criteria in line with the new developments in the EPBD recast 2024. The EU Taxonomy can also play an important role to prepare the EU market for the incoming EPBD.

Recommendations

Recommendations for short-term changes

1. Reflect changes of EPBD recast in EU Taxonomy and encourage the generation of data across buildings' life cycles
    a. As of 2025, require that information on the life cycle GWP is disclosed via Energy Performance Certificates (EPCs) for any new building.
    b. Alternatively, require that information on the life cycle GWP is disclosed via Energy Performance Certificates (EPCs) for the construction of buildings with a useful floor area larger than 1,000m2 as of 2025 and for any new building as of 2028.
    c. Replace "NZEB -10%" with the definition of a Zero Emissions Buildings, whilst ensuring the energy efficiency first principle
        i. Add the ZEB definition in the Climate Delegated Act for ease of reporting

ii. Clarify how to measure Primary Energy Demand, as national regulation differs - mainly the use of renewable energy to meet PED levels differs between countries.
iii. Incentivise first movers by encouraging early adoption of EPBD standards included embedded carbon, as the Substantial Contribution, prior to full transposition into law.

Recommendations for future developments

1. Develop a pan-EU methodology to calculate lifecycle global warming potential (GWP) impact. As per the EPBD, the European Commission will adopt a Delegated Act by the end of 2025 Article 7 (3) to establish an EU-wide framework for national calculation of life cycle GWP.
2. Develop lifecycle GWP limit values for construction of buildings of more than 1,000m2 to be included in the legal text latest by 2026. The revised standard EN 15978 is also a useful tool to perform this calculation that industry is familiar with, been the standard available since 2011. The upcoming Delegated Act (mandated under EPBD 2024 Article 7 (3) is also of relevance.
3. Develop and integrate lifecycle GWP limit values for construction of any new building to be included in the legal text latest by 2030.
4. Improve cross reference to Environmental Product Declaration (EPD) disclosure requirements from the Construction Products Regulation (CPR).

7.2 Renovation of existing buildings

Rationale

Many buildings that exist today will still stand in 2050 or beyond and need to be retrofitted to zero emissions by then at the latest. In countries where most of the building stock has already been constructed, the priority should be to increase the rate of energy retrofits, particularly for the worst-rated buildings.

The aim of this economic activity is to pursue a comprehensive renovation with deep energy retrofits over “traditional” renovations. Ideally, renovations include a deep energy retrofit to reach relatively high energy classes, as an alternative to stepping through the energy classes over an extended time-period. Single, deep retrofits have higher up-front costs but are more cost-efficient and less disruptive in the long term.

The EU Taxonomy for the renovation of buildings is linked to the term “major renovation” as per the Energy Performance of Buildings Directive (EPBD) of 2010. The EPBD does not prescribe a uniform definition of a major renovation, but enables Member States to provide one. Companies and financial institutions that wish to, or are required to, report their EU Taxonomy-alignment for the buildings they renovate need to refer to national requirements of a major renovation set out by each of the Member States where those buildings are located.

Usability issues of the criteria

Currently, the definition of a "major renovation" in the EPBD allows Member States to define the term based on either a percentage of the building's surface envelope or its value. This poses several drawbacks:

- The term “major renovation” is not yet well established, used nor clearly defined. In the EPBD 2018 “major renovation” is linked to the surface of the building renovated or the cost of renovation. This is being implemented very differently across Member States and often not accurately measured. The

alternative criteria to reduce primary energy demand (PED) at least 30% is much easier to comply with.

- Confusion between major and deep renovations The terms major and deep renovations are used interchangeably, and the definitions of the terms aren‘t clear to market participants or regulators. Also, the translation of the English term “major renovations“ in the EPBD 2010 is not easily tracked in national building regulations.
- Allowing Member States to choose their definition could lead to inconsistencies in how renovations are classified and managed across the EU.
    - This variability could create challenges for companies operating in multiple countries and for the standardization of building practices and reporting.
    - Defining a major renovation based on the value of a building introduces complexities. The building's value can fluctuate due to market conditions and might not accurately reflect the building's physical state or the environmental impact of renovations.
    - The flexibility in the definition could lead to scenarios where minimal work is done to meet the technical definition of a major renovation without significantly improving the building's energy performance, thus undermining the goals of the EPBD, the Green Deal and the Renovation Wave.
- The term “demolition” is almost not addressed in any national interpretation of a major renovation. It is unclear whether the full or partial demolition of a building is allowed as part of a major renovation. At the same time, the Taxonomy requirements for waste from renovation are difficult to comply with and risk impeding progress on renovation.

TEG recommendations

The TEG provided no future recommendations for 7.2 Renovation of existing buildings.

Recommendations for short-term changes

1. Reflect changes of EPBD recast in EU Taxonomy: Replace “major renovation” with the definition of a “deep renovation”
    - Add the deep renovation definition in the Climate Delegated Act for ease of reporting
    - Focus as a first step and major energy efficiency renovations, with signalling that in 3 years the embedded carbon aspects will be included.

Recommendations for future developments

1. As of 2028, require that information on the life cycle GWP is disclosed via Energy Performance Certificates (EPCs) for the renovation of buildings with a useful floor area larger than 1,000m2.
2. Facilitate compliance for residential renovations, particularly for renovations of buildings under a certain size – to ease reporting for financial institutions and energy service companies
3. Instigate:
    a. the reporting imbalance of mortgage / loan ratios of renovation compared to new construction and ensure that sustainable finance for renovation is not disincentivised
    b. the Taxonomy-compliance of the loan / mortgage when the owner uses blended finance

7.7 Acquisition and ownership of buildings

Rationale

The financing of buildings and building energy improvements is the most developed segment of the green finance market, and the ownership of buildings in portfolios is an extensively practiced economic activity. The built environment has a mature Environmental, Social and Governance (ESG) ecosystem, relative to other sectors, with a large number of voluntary programs, standards, and certification schemes. Investors, funders and asset managers are also increasingly using top-down schemes, anchored in science-based decarbonisation pathways, to align transition plans and portfolio KPIs with global climate goals.

There is an inherent link between portfolio decarbonisation pathways and targets and asset-level energy and carbon performance. The aim of the acquisition and ownership criteria is to incentivise decarbonisation of portfolios by acquiring EU Taxonomy aligned assets, creating demand for EU Taxonomy aligned construction and renovation, and performing energy upgrades in those portfolios, creating demand for EU Taxonomy aligned renovation and individual measures (7.3, 7.5, 7.6).

The lack of data in 2020 impeded the development of decarbonisation pathways under 7.7. As an alternative the EPC A and 15% best performing thresholds were introduced, with the aim of generating appropriate data.

Usability issues of the criteria

Market actors have difficulties reporting portfolio-level performance against the EU Taxonomy set at the asset level, the current best-performance approach doesn't incentive owners to perform energy upgrades in their portfolio, and the criteria do not reflect a path towards a zero emissions building stock by 2050, and depending on the overall energy efficiency of the current building stock, may represent a fairly low level of energy efficiency without any incentive to improve the owned portfolio.

Whilst the aim of the TSC for the acquisition and ownership of buildings was to allow investors and financial institutions to assess their portfolios against the EU Taxonomy, the TSC were based on non-harmonised national definitions and metrics, i.e. as NZEB and EPCs.

EPC schemes are developed and run by national governments so that companies and financial institutions that wish to, or are required to, report their EU Taxonomy-alignment for the buildings they construct, acquire or own, need to refer to EPC schemes of each of the Member States where those buildings are located. However, national EPC schemes don't cover all building types, for example industrial buildings are often not covered. The implementation and content of EPCs varies quite considerably across the Member States. As a result, EPC class A refers to significantly different ambition levels in terms of energy performance, that are not solely due to climatic conditions, technical feasibility or market readiness. Representation of EPCs vary in several countries, for example some of the EPCs are based on primary energy demand, some on annual energy consumption and a few on emissions basis (for e.g., Spain). In several countries EPC class A represents a similar level of ambition as Nearly Zero Energy Buildings (NZEB), passive house or energy positive standards, whereas in several other Member States EPC class A does not represent the highest level of ambition. For example, in several countries EPC grades exist above EPC A, such as in the Netherlands where the highest EPC class is EPC A ++++.

TEG recommendations

The TEG considered that a best-in-class approach could be approximated by benchmarking the top performing 15% of the existing national stock. This performance level was intended to decline following 2050 decarbonisation targets.

By the end of 2024,

- establish absolute thresholds for energy and carbon emissions to represent the performance of the top 15% of national stocks and
- provide a clear decarbonisation pathway as threshold for assessing the acquisition and ownership of assets built before 2021.

By 2026, absolute thresholds should be introduced in the Taxonomy and from then on, every five years afterwards, the performance level should be lowered to reflect a pathway reaching net-zero operational carbon in 2050. Such pathway could look as follows:

- Until 2025: X kgCO2eq/m2y, corresponding to the performance of the top 15% of the national stock
- 2026-2030: (5/6)*X kgCO2eq/m2y
- 2031-2035: (4/6)*X kgCO2eq/m2y
- 2036-2040: (3/6)*X kgCO2eq/m2y
- 2041-2045: (2/6)*X kgCO2eq/m2y
- 2046-2050: (1/6)*X kgCO2eq/m2y
- From 2051: net-zero kgCO2eq/m2y

Recommendations

Recommendations for short-term changes

1. Allow proxies to demonstrate compliance with the TSC, with the requirement to label proxied data as such.
2. Require data used for EU Taxonomy reporting purposes to be publicly disclosed, or at the least be made available on public databases in an anonymised format.
3. Incorporate real annual energy performance measurement
    a. Buildings' EPCs do not (all) reflect real energy performance EPCs reflect the estimated energy demand of buildings whereas the actual energy consumption of buildings often largely varies thus not providing sufficient insights in the real performance of buildings. There are well documented discrepancies between calculations of primary energy demand (PED) and actual energy consumption under real world conditions.
    b. There is evidence of schemes in other countries worldwide, such as the NABERS program in Australia or Energy Star in the USA. Alternatively, frameworks such as LEED, BRREAM, DGNB, Paris Proof, or Green Star have in-use solutions that reflect actual energy consumption on a yearly basis.
4. Add a ban of new fossil fuel equipment in buildings.
5. Align EU Taxonomy definitions and criteria and the SFDR PAI indicators, and specifically the definition of an energy-efficient property
6. Align EU Taxonomy definitions and criteria and those of the EBA to calculate GAR (Green Asset Ratio)

Recommendations for future developments

1. Evaluate the purpose of the economic activity and its substantial contribution criteria and consider changing the criteria for portfolio assessment, or alternatively, add portfolio-level criteria
2. Clarify the purpose of the criteria, especially in the context of informing transition plans aligned with the Corporate Sustainability Reporting Directive (CSRD) and the Corporate Sustainability Due Diligence Directive (CSDDD)
3. Develop decarbonisation pathways
    a. that represent a wide range of data from national building stocks, which should be made suitable for benchmarking practices across different building typologies (such as offices, hotels, multi-family buildings, apartments).
    b. That are backed by energy pathways, by considering regional/local appropriateness regarding energy systems, climate, health, resilience, equity, policy environment etc.
    c. That are aligned with the MEPS as specified in the EPBD. In general, Minimum Energy Performance Standards (MEPS) are requirements for existing buildings to meet a certain energy performance as part of a wide renovation plan for a building stock or at a trigger point on the market, over a period of time or by a specific date, thereby triggering the renovation of existing buildings.
    d. Where the grid has decarbonized completely, the emissions metrics (kgCO2) can be switched to energy metrics (kWh/m2)
4. Consider third party verification requirements of assets and portfolio performance reporting to enhance accountability amongst stakeholder groups, e.g. developers, financial institutions and investors.

Recommendations outside the Climate Delegated Act

5. Harmonise EPC frameworks across member states.
    a. It can be aligned with the EPBD recast that suggests common requirements to have national databases on the energy performance of buildings, on access to those databases and publication of aggregated information.
    b. It will improve the availability of information, its quality and facilitate the work of public authorities and financial institutions, to spearhead renovations across Europe.
    c. As in the EPBD, Building (renovation) passport schemes can also be introduced across all Member States to provide reliable and personalised renovation roadmaps to building owners planning a staged renovation of their building.

vi. Review of Appendix B on generic criteria to DNSH for Sustainable Use of Water and Protection of Water and Marine Resources

Appendix B generic criterion for DNSH to sustainable use and protection of water and marine resources currently requires companies [public sector organizations will need to be added to the revised text of the criteria] “to identify and address” environmental risks to achieve good ecological status (GES) and good ecological potential (GEP), in line with the WFD and MSFD, and to develop ad-hoc “water use and protection

management plans" for affected water bodies. The risk identification requirement may seem vague but aligns with similar decisions in the Taxonomy Regulation (i.e. DNSH criteria for pollution prevention and control, climate risks and vulnerability assessments for CCA). In its current form, though, it is difficult for companies to understand which proof needs to be provided for compliance with the criteria:

- In its current wording, it is not clear whether the mentioned water management plan is the same as the relevant river basin management plan (RBMP) or a separate document. This needs to be made more explicit.
- Companies [and public sector organizations] are unclear on how to comply with WFD or MSFD classifications due to inexperience and, often times, due to lack of the right capabilities in house. They often refer to permits (in different forms: entitlements, licenses, etc.) or standards for environmental management systems (i.e., ISO 14001) which may not be sufficient to prove no significant harm to the good water status and good ecological potential of the water body.
- Permits might only be considered as a proof for formal compliance, provided they are granted, reviewed or amended, as need be, so as to include all necessary conditions stemming from the above-mentioned water management plan to address identified risks, hence preventing deterioration of the water body and ensuring the GES or GEP.
- It is acknowledged, though, attribution of specific changes in GES or GEP (thus, impacts) as a result of the activity of a single company or [public sector organization] and proving no deterioration in water bodies might include an assessment against a properly defined baseline of the water body's ecological status, effluent characterization, and dilution modelling, along with provisions for bioassays and toxicity tests. This assessment might be technically unfeasible.
- The current wording of the generic DNSH criterion refers to a non-binding "Environmental Impact Assessment". We deem impractical too to expect companies [or public sector organizations] to deliver an EIA that, regarding water, includes an assessment against a properly defined baseline of the water body's ecological status, effluent characterization, and dilution modelling, along with provisions for bioassays and toxicity tests. These technical requirements might be unfeasible.

It is strongly recommended that companies are either given further guidance on how to comply with the criteria (e.g. in the form of FAQs, as this is not currently the case) or that the criteria are amended so that the necessary assessments that must be carried out to demonstrate compliance with the criteria are described in more detail.

vii. Review of Appendix C on generic DNSH to Pollution Prevention and Control

Usability Issue / "Current Wording Appendix C"	**Issue(s)**	**Recommendation**
b) mercury and mercury compounds, their mixtures and mercury-added products as defined in Article 2 of Regulation (EU) 2017/852 of	The referenced legislation does include exemptions for mercury and mercury compounds, for example in production equipment, which should also be included in	Add: "*except where exemptions are included in the regulation."*

the European Parliament and of the Council	Appendix C as they reflect technical limitations.	
(c) substances, whether on their own, in mixture or in articles, listed in Annexes I or II to Regulation (EC) No 1005/2009;	The referenced legislation does include exemptions, for example in production equipment, which should also be included in Appendix C as they reflect technical limitations. Regulation 1005/2009 has been updated.	Add: "*except where exemptions are included in the regulation."* *Replace Regulation 1005/2009 by the updated Regulation 2024/590.*
(d) substances, whether on their own, in mixtures or in articles, listed in Annex II to Directive 2011/65/EU, except where there is full compliance with Article 4(1) of that Directive;	This paragraph references Article 4(1) of the RoHS Directive, creating legal ambiguity, as RoHS exemptions are covered in Article 4(6) and Annexes III and IV. Substances such as lead and cadmium which are broadly used in all electrical and electronic equipment, such EV chargers and heat pumps, are essential for the green transition. The RoHS Directive allows industry to continue placing on the EU market electrical and electronic equipment containing such substances via Article 4(6) and the use of exemptions (Annexes III and IV). RoHS exemptions are evaluated regularly and renewed only when alternative solutions are not yet technically mature, and the risk is acceptable.	*Replace with:* "e*xcept where exemptions are included in the regulation."* *Alternatively replace with:* *d) substances listed in Annex II to Directive 2011/65/EU in articles being in the scope of this Directive, except where there is full compliance with Article 4 of that Directive, taking into account the exempted applications of Annex III and IV of the RoHS Directive.*
All points	Some detection and measuring devices use a small amount of a substance as a reference for working. These could potentially fail to be aligned with the current version of Appendix C.	Add a footnote in cases where detection and measuring devices are affected by Appendix C, exempting the banning of substances when used in a very small amount and just for used as a reference in devices for safety or PPC purposes.
Substances of concern (SoCs)	Currently, different regulations, including the EU Taxonomy, provide different definitions for substances in scope of the legislation, leading to a lack of consistency. This divergence affects their use and consequences and underlines the need for a single definition across all legislation to frame these substances. Without alignment, our industries would have to comply with the different definitions of substances in scope in the Biocidal Products Regulation (BPR), Ecodesign for Sustainable Products Regulation (ESPR), or Batteries legislation. For example, under BPR and ESPR, the definitions and their implications differ significantly. Even the seemingly clear	For point f) use the concept of Substances of Concern by referring to the definition in ESRS. This would simplify the wording, clarifying the level of ambition by using a definition already existing in the ESRS and a concept described in the EU's chemicals strategy, namely: *f) substances, whether on their own, or in mixtures or in an article, in a concentration above 0,1 % weight by weight (w/w), that meet the points i and*

	Taxonomy definition does not facilitate the creation of an exhaustive list of substances, thereby complicating compliance efforts for companies.	*ii of the definition of Substances of Concern included in EU Regulation 2023/2772 (ESRS).* This is already working in SC for CE in Manufacture of plastic packaging goods (Environmental Delegate Act). As this is a safeguard for PPC in CE, it could be considered as reference in terms of level of ambition for DNSH-PPC. In addition, since point ii) of the definition of Substances of Concern in the ESRS already refers to Regulation 1272/2008 (CLP), point f) bis of the current version of Appendix C, which refers to the same legislation, would be removed to avoid overlapping requirements.

Other usability concerns identified by members of the Technical Working Group and through the EU Taxonomy Stakeholder Request Mechanism

Introductory part "The activity does not lead to the manufacture, placing on the market or use of"

From a usability and legal point of view, the introductory part of Appendix C *"The activity does not lead to the manufacture, placing on the market and the use of:"* causes confusion as the regulations and directives referred to in Appendix C have different scopes.

REACH covers the use of substances, mixtures, placing on the market of substances, and/or mixtures and placing on the market of articles. RoHS only applies to the initial placing of electrical and electronic equipment on the EU market; the use of the regulated substances and mixtures as well as articles, for example, in the manufacturing process, is not covered by RoHS.

Consequently, Appendix C apply the provisions of regulations/directives referenced in this Appendix beyond the scope of the referenced regulations/directives. This takes the criteria listed out of their original context, as some provisions originally refer to the use of substances and others to the placing on the market of articles. This leads to definition gaps and discrepancies with what is technically feasible. Scope clarification is needed to enhance usability and harmonised application of the criteria by companies reporting on the EU Taxonomy.

In addition, some Platform members have pointed out how the current interpretation of "use" prevents the alignment of (the manufacturing of) substances (e.g. chemical precursors key for the transition towards a sustainable economy) that fulfil both the substantial contribution and the DNSH criteria but require the involvement of restricted substances during the manufacturing process that are not present in the final product nor in contact with it (e.g. intermediates, substances required for fuel/combustion, etc.). These types of emissions are covered by the DNSH criteria to the Pollution Prevention and Control (PPC) objective, which refer to the relevant BAT-AEL values. Instead, the heading could follow the wording currently used in paragraph f) bis: "*the activity does not lead to the manufacture, presence in the final product or output, or placing on the market*".

Compliance with paragraph f) is challenging

1. Article 59(1) concerns the substances of very high concern in the Candidate List for eventual inclusion in the authorisation procedure. For the full list of candidate substances there is only an information obligation according to REACH Articles 31, 32 and 33 for substances on their own, in mixtures or in an article. Currently, there is no procedure for evaluating or communicating alternatives. This comes first with proposing a restriction on articles containing substances that are on the Authorisation List in the Annex XIV, public consultation and the evaluation of an exemption under Annex XVII. According to the legal procedures, in both cases it will take at least up to four years until the sunset date or at least three years of working on the restriction proposal for the industry to evaluate and prepare for alternatives.

2. The absence of legal definitions for “assessed and documented" “suitable alternative” and “used under controlled conditions” leaves companies unable to prepare compliance and auditors to perform an audit. These substances are currently only subject to information requirements. Their use is allowed by law. Such information is only available when a restriction is proposed on articles containing substances that are on the Authorisation List in the Annex XIV, public consultation and the evaluation of an exemption under Annex XVII. As a result, there is no procedure for evaluation or communication on alternatives. This risks different interpretations in the market and may as a result distortion reported practices, making them difficult to audit and to compare. The European Commission’s FAQs of November 29, 2024 may lead to some clarifications on these points.

3. The concept of ‘controlled conditions’ is unclear in the context of Appendix C since REACH includes a very specific interpretation of ‘strictly controlled conditions’ in relation to intermediates (i.e. Arts. 17 and 18). This risks leading to divergent and excessively stringent interpretations which would ultimately hamper data comparability. Referring to existing terminology could provide more certainty and clarity to reporting undertakings. E.g.: “*controlled conditions*” could be replaced by “*and provided procedural and controlled technologies are used to minimise emission and any resulting exposure*”, also from REACH. The European Commission’s FAQs of November 29, 2024 may lead to some clarifications on these points.

4. Manufacturers of complex articles usually do not have sufficient information on the presence of substances in components and parts received from their suppliers in complex supply chains once a substance is listed in the REACH Candidate List. To collect such information throughout the supply chain will take time – with an estimate of at least one year. To conduct an 'assessment of alternatives' will take even more time.

Lastly, stakeholders pointed out how some targets in Appendix C are set in absolute value thresholds instead of considering unit of production-based metrics and how this can be detrimental to larger production facilities, which are more efficient in terms of GHG emissions but may exceed said absolute pollution thresholds. Further clarification on this is required

viii. Review of Appendix D on generic criteria to DNSH to Protection and Restoration of Biodiversity

The European Commission has published guidance in the form of FAQs addressing certain usability issues relating to Appendix D. While some issues have been solved, issues relating to interpretation and practical implementation of Appendix D remain. This includes the following:

1. The generic DNSH criteria requires that “Environmental impact assessment or screening has been completed in accordance with 2011/92/EC”. Screening refers to “the procedure through which the competent authority determines whether projects listed in Annex II to Directive 2011/92/EU is to be made subject to an environmental impact assessment (as referred to in Article 4(2) of that

Directive)". However, projects have been permitted and executed also before the implementation of 2011/92/EU (EIA Directive), often in accordance with Directive 85/337/EEC. If these projects have not been subject to changes/extensions that would have triggered a requirement for an EIA in accordance with 2011/92/EU, the screening option becomes applicable. However, it is unclear what this means since it is often not possible or practical to make an entire EIA retrospectively. Although Taxonomy is voluntary, such a requirement might also deviate from the principle of legal certainty.

2. Some member states (Croatia) joined the EU after the implementation of 2011/92/EU and more countries are expected to join in the future. In these countries, EIAs in accordance with 2011/92/EC are not available for projects permitted and executed before joining. Same issue as in point 1 on the content and implications of "screening".

It is recommended that the Commission provides guidance or legal clarification on how the EIAs should be made in the above cases when the "screening" by the competent authority determines it to be necessary. In point 2, it would also be useful to clarify whether footnote 2 on "third countries" is applicable.

2. Review of Annex II – Climate Change Adaptation

i. The basis and rationale for the review

The review of adaptation-related criteria and other elements in the Taxonomy was guided by the general principles of improving the usability and clarity of the application of the criteria and Taxonomy structure as a whole. The work considered and responded to user and other stakeholder feedback, which was received from several sources, including the Stakeholder Request Mechanism, the Member State Expert Group, a number of European Commission Directorates General, inputs from the multi-lateral development banks as well as consulting and audit sector which services a large number of Taxonomy reporters across all industries, and other stakeholders.

The feedback received focused on these key aspects:

- Clarification of certain terms used in adaptation criteria and ensuring coherent use of terms
- Clarification of certain requirements in the generic DNSH criteria
- More intuitive structuring of the generic adaptation criteria
- Better coverage of maladaptation
- Calls for required guidance to support adaptation criteria implementation

There were likewise two recommendations received for new activities to be included in the Adaptation Annex, however that is outside of the scope of the Climate Delegated Act review work and not addressed in this report.

ii. Improving the usability of the Adaptation generic criteria

The review of the generic Substantial Contribution and DNSH criteria for adaptation focused on four aspects prioritised based on stakeholder feedback:

Issue 1: better structuring of the criteria to align with established standard processes for climate risk assessments and adaptation panning

Issue 2: Better coverage of maladaptation to ensure that not only the "adapted" activity, but also the implemented adaptation measures do not harm other environmental objectives

Issue 3: Simplification of the wording of the "enabling criterion" to facilitate its clarity

Issue 4: Providing clarifications of certain terms

Issue 1 Better sequencing and Issue 2: Maladaptation

These two issues were tackled in the same process, as both could be addressed while revisiting the generic adaptation criteria. The experiences of Taxonomy users indicate that the criteria for adaptation are currently not sequenced in an order that would align with established step-wise standard processes for climate risk assessments and adaptation planning. Simple re-ordering of the way the criteria are presenting without changing the core content and principles, would in and of itself facilitate the understandability and ease of use.

On maladaptation the issue identified is that current criteria may lead to unequal treatment of adaptation measures, which are or are not included in the Taxonomy as separate activities and leads to exposure to maladaptation risks, especially where the adaptation measures implemented may lead to significant harms to other environmental objectives.

The Platform proposes to restructure the generic criteria for a Substantial Contribution and DNSH to climate change adaptation in order to improve usability by following the established good practice risk assessment and adaptation planning and implementation cycle more closely.

Improving the Substantial Contribution generic criteria

The Platform proposes the following **structural changes** (with no change to the essence of the criteria):

Proposed reordering	Rationale
Deletion of the introductory text to criterion 2 "*The physical climate risks that are material to the activity have been identified from those listed in Appendix A to this Annex by performing a robust climate risk and vulnerability assessment with the following steps:*"	The paragraph is repetitive.
Relocation of criterion 2(c) [*„An assessment of adaptation solutions that can reduce the identified physical climate risk*"] downwards under criterion 3.	Reordering following standard climate risk assessment and adaptation planning and implementation cycle.
Relocation of criterion (d) from the last paragraph [*„are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met"]* as a separate paragraph to the end.	Reordering following standard climate risk assessment and adaptation planning and implementation cycle.
Relocation of criterion (a) [*do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities*] from the last paragraph below criterion (c).	Clustering criteria (a) and (e) to make it clearer that they address maladaptation

The Platform proposes standards-aligned changes in criteria sequencing and the minor linguistic adaptations that are require to retain the readability of the criteria. The proposed reworded text is detailed as follows:

Initial text (reordered, not reworded)	*Proposed new wording do the generic Adaptation SC criteria*	*Rationale for highlighted change (repetitive changes are only explained once)*
1. The economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity.	**The economic activity has implemented physical and[23] non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The adaptation solutions are part of an adaptation plan that has been systematically developed and complies with the following criteria:**	Erase the numbering and add an introductory sentence to make it clear that the first sentence is the Taxonomy-aligned end state and the following criteria relate to the process for achieving it The mention of the adaptation plan: a) Makes it much clearer what documentation serves as proof of alignment b) Better aligns with the generic DNSH criteria ,which already contain such mention
[2](a) screening of the activity	**1. The activity was screened**	SC refers to a state where the adaptation solutions are implemented; this becomes more apparent if the corresponding criteria are written in past tense.
to identify which physical climate risks from the list in Appendix A to this Annex may affect the performance of the economic activity during its expected lifetime;	**to identify which climate-related hazards from the list in Appendix A to this Annex may affect the performance of the economic activity during its expected lifetime.**	The table in Annex I, Appendix A, Section II does not show any physical climate risks and is already labelled as „classification of climate-related hazards". Thus, the change merely establishes consistency of wording within the existing regulation.
[2](b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to this Annex,	**2. Where the activity was screened to be potentially impacted by one or more of the climate-related hazards listed in Appendix A to this Annex,**	This step relates to the previous screening of hazard. It is therefore not yet assessed whether the activity is a risk. Risks (which, in addition to the hazard, also include the risk factors exposure, sensitivity, vulnerability and adaptive capacity are assessed later in the process. This change improves the consistent use of terminology.
a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity;	**a climate risk assessment was conducted to assess the materiality of the physical climate risks on the economic activity.**	Vulnerability is a risk factor as defined by the latest IPCC reports and the EN ISO 14091 standard on vulnerability, impacts and risk assessment. The term 'climate risk and vulnerability assessment' is therefore a duplication. Removing it improves consistent use of terminology.
The climate risk and vulnerability assessment is proportionate to the scale of the activity and its expected lifespan, such that:	**3. The conducted climate risk assessment was proportionate to the scale of the activity and its expected lifespan, such that:**	/

[23] The Platform notes that the Taxonomy Draft FAQs issued on 29 November, 2024 include a question, which points to the issue that the use of the word "and" in this sentence may lead to an interpretation that both phycical nad non-physical solutions need to be implemented. To make it clearer that the entity may implement either/or or both types of solutions (in accordance with which are the best to address the identified risks), a change from "and" to "or" should be considered in consultation with legal experts.

Initial text (reordered, not reworded)	*Proposed new wording do the generic Adaptation SC criteria*	*Rationale for highlighted change (repetitive changes are only explained once)*
(a) for activities with an expected lifespan of less than 10 years, the assessment is performed, at least by using climate projections at the smallest appropriate scale;	**(a) for activities with an expected lifespan of less than 10 years, the assessment was performed, at least by using climate trends and forecasts at the smallest appropriate scale;**	For this lifespan, using climate projections is not state of the art methodology and thus not coherent. Similar interpretation is also provided in the recommendation companies by the German Environment Agency on how to perform a Taxonomy-aligned climate risk assessment (p. 7, Footnote 10): „[For a period of less than 10 years], climate projections based on climate models are not trustworthy. Therefore, we interpret the legal requirements to mean that that decadal climate forecasts are to be used as substitutes, if available. Furthermore, we recommend the use of past climate trends, i.e. extrapolating the climate developments of recent years into the future.“
(b) for all other activities, the assessment is performed using the highest available resolution, state-of-the-art climate projections across the existing range of future scenarios (348) consistent with the expected lifetime of the activity, including, at least, 10 to 30 year climate projections scenarios for major investments.	**(b) for all other activities, the assessment was performed using the highest available resolution, state-of-the-art climate projections across the existing range of future scenarios (348) consistent with the expected lifetime of the activity, including, at least, 10 to 30 year climate projections scenarios for major investments.**	Recommendation to add FAQ: Footnote 348 is misleading as it can be understood as a requirement to assess all four IPCC pathways. For the Generic Criteria to DNSH (Annex I, Appendix A) this issue is clarified in Commission Notice C/2023/267 (FAQs): „168. Is it required to use all 4 IPCC pathways (RCP 2,6, RCP 4,5, RCP 6,0 and RCP 8,5)?“. As similar clarification would be useful for significant contribution.
3. The climate projections and assessment of impacts are based on best practice and available guidance and take into account the state-of-the-art science for vulnerability and risk analysis and related methodologies in line with the most recent Intergovernmental Panel on Climate Change reports*,	**4. The used climate projections and assessment of impacts were based on best practice and available guidance and took into account the state-of-the-art science for climate risk assessments and related methodologies in line with the most recent Intergovernmental Panel on Climate Change reports*,**	Add ‘used’ to emphasise the link to the criteria above.
scientific peer-reviewed publications and open source**or paying models.	**scientific peer-reviewed publications, and open source**or paying models.**	Add a comma to match with the wording of the generic criteria for DNSH.
[2](c) An assessment of adaptation solutions that can reduce the identified physical climate risk	**5. Adaptation solutions that substantially reduce the most important physical climate risks that are material to the economic activity were identified, systematically assessed**	Rewording of the criterion for the assessment of adaptation solutions in order to align more clearly with the risk assessment and adaptation planning standard processes.
	and included in an adaptation plan.	The adaptation solutions need to be documented somewhere. Mentioning the adaptation plan categorises the steps more clearly in the risk management cycle and makes it easier to search for guidance documents. Adopting the wording from the generic criteria for DNSH also contributes to the coherence of the criteria.

Initial text (reordered, not reworded)	*Proposed new wording do the generic Adaptation SC criteria*	*Rationale for highlighted change (repetitive changes are only explained once)*
The adaptation solutions implemented: (b) favour nature-based solutions (351) or rely on blue or green infrastructure (352) to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies;	**6. The adaptation solutions planned and implemented:** **a) favour nature-based solutions (351) or rely on blue or green infrastructure (352) to the extent possible;** **(b) are consistent with local, sectoral, regional or national adaptation plans and strategies;**	Clarification that the safeguards also apply to the adaptation plan.
	(c) avoid maladaptation by:	For clarity - clustering criteria that safeguard against maladaptation.
a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in this Annex, the solution complies with the do no significant harm technical screening criteria for that activity.	**(i) not adversely affecting the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities;** **(ii) complying with the do no significant harm technical screening criteria where the adaptation measures implemented are activities for which technical screening criteria have been specified in this Annex,**	Restructure and reformulate the sentence to fit grammatically into the new criteria cluster.
	iii) best efforts to avoid avoiding significant harm to other environmental objectives where the implemented adaptation measures that are not included in this Annex; where possible guided by the available generic do not significant harm criteria (as defined in Appendix B, C, D to ....) .	Clarification that maladaptation has to be avoided also for adaptation solutions that are not included in the EU Taxonomy as activities themselves. Also improves equal application and fairness among entities/activities implementing various adaptation solutions.
(d) are monitored and measured against pre-defined indicators	**7. The adaptation solutions implemented and the adaptation plan are monitored and measured against pre-defined indicators**	The adaptation needs to be effective as part on an overall adaptation plan. This clarification helps specify not only the individual solution but the adaptation plan (progress of overall implementation and adequacy of planned actions) needs to be monitored.
and remedial action is considered	**and remedial action is implemented**	Action need to implemented to be effective; only considering it leaves a loophole for inaction.
where those indicators are not met;	**where those indicators show no substantial reduction of the most important physical climate risks that are material to the economic activity.**	Clarification of what it means if indicators are not met, by referring back to the outcome that represents the substantial contribution.

The new order of the criteria matches with classic steps of climate risk management according to EN ISO 14090/14091 and European Adaptation Support Tools (e. g. the Urban Adaptation Support Tool); the first paragraph only introduces the substantial contribution, the following paragraphs clarify the process-based criteria:

Reordered criteria (not reworded)	Steps in standard risk assessment and adaptation planning cycle	
	Urban Adaptation Support Tool	**EN ISO 14090 / 14091**
The economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The adaptation solutions are part of an adaptation plan that has been systematically developed and complies with the following criteria: **SUBSTRATIONAL CONTRIBUTION / TARGETED OUTCOME**	[Step 5 – Implementing adaptation]	[EN ISO 14090 – 8. Implementation]
1. The activity was screened to identify which climate-related hazards from the list in Appendix A to this Annex may affect the performance of the economic activity during its expected lifetime. **SCREENING STEP, RANGE OF HAZARD** 2. Where the activity was screened to be potentially impacted by one or more of the climate-related hazards listed in Appendix A to this Annex, a climate risk assessment was conducted to assess the materiality of the physical climate risks on the economic activity. **SCREENING TO RISK ASSESSMENT**	**Step 1 – Preparing the ground for adaptation – 1.2 Collecting initial information** **Indirectly: Step 2 – Assessing climate change risks and vulnerabilities**	**EN ISO 14091 – 5.** Preparing a climate risk assessment - 5.4 Determining the scope of the methodology
3. The conducted climate risk assessment was proportionate to the scale of the activity and its expected lifespan, such that: **PROPORTIONALITY OF METHOD REQUIRED**	**Step 2 – Assessing climate change risks and vulnerabilities**	**EN ISO 14091 – 5.** Preparing a climate risk assessment - 5.5 Setting the time horizon
(a) for activities with an expected lifespan of less than 10 years, the assessment was performed, at least by using climate trends and forecasts at the smallest appropriate scale; **METHOD WHEN LIFESPAN <10YRS** (b) for all other activities, the assessment was performed using the highest available resolution, state-of-the-art climate projections across the existing range of future scenarios (348) consistent with the expected lifetime of the activity, including, at least, 10 to 30 year climate projections scenarios for major investments. **METHOD WHEN LIFESPAN >10YRS** 4. The used climate projections and assessment of impacts were based on best practice and available guidance and took into account the state-of-the-art science for climate risk assessments and related methodologies in line with the most recent Intergovernmental Panel on Climate Change reports*, scientific peer-reviewed publications, and open source**or paying models. **QUALITY REQUIREMENTS (FOR BOTH METHODS)**		**EN ISO 14091 – 6.** Implementing a climate risk assessment
5. Adaptation solutions that substantially reduce the most important physical climate risks that are material to the economic activity were identified, systematically assessed and drawn up in an adaptation plan. **ASSESSMENT OF OPTION, ADAPTATION PLAN DEVELOPMENT**	**Step 3** – Identifying adaptation options **Step 4** – Assessing and selecting adaptation options **Step 5** – Implementing adaptation - 5.1 Designing an effective adaptation action plan	**EN ISO 14091 – 7.** Reporting and communicating climate change risk assessment results (indirectly)**, EN ISO 14090 – 7.** Adaptation Planning

Reordered criteria (not reworded)	Steps in standard risk assessment and adaptation planning cycle	
	Urban Adaptation Support Tool	**EN ISO 14090 / 14091**
6. The adaptation solutions planned and implemented: (a) favour nature-based solutions (351) or rely on blue or green infrastructure (352) to the extent possible; **PROMOTE NBS** (b) are consistent with local, sectoral, regional or national adaptation plans and strategies; **SAFEGUARDS** (c) avoid maladaptation by: **SAFEGUARDS MALADAPTATION** i. not adversely affecting the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; ii. complying with the do no significant harm technical screening criteria for an activity for which technical screening criteria have been specified in this Annex, where the adaptation solution implemented is physical and consists in that activity; iii. avoiding significant harm to other environmental objectives.	/	**For (c): EN ISO 14090 – 7.** Adaptation Planning – 7.2 Policy, strategy and planning context
7. The adaptation solutions implemented and the adaptation plan are monitored and measured against pre-defined indicators and remedial action is implemented where those indicators show no substantial reduction of the most important physical climate risks that are material to the economic activity. **MONITORING**	**Step 6** - Monitoring and evaluating adaptation	**EN ISO 14090** – 9. Monitoring and evaluation

Improving Adaptation DNSH generic criteria

The Platform proposes to **restructure the Generic DNSH criteria analogue to the Substantial Contribution criteria**:

Proposed reordering	Rationale
Deletion of the introductory text "*The physical climate risks that are material to the activity have been identified from those listed in the table in Section II of this Appendix by performing a robust climate risk and vulnerability assessment with the following steps: "*	The paragraph is repetitive.
Relocation of criterion [1](c) [*„An assessment of adaptation solutions that can reduce the identified physical climate risk*"] and the adaptation plan development in criterion 4 [*„An adaptation plan for the implementation of those solutions is drawn up accordingly*."] into a new paragraph below criterion 3 (quality requirements for climate risk assessments).	Reordering following standard climate risk assessment and adaptation planning and implementation cycle.

In addition, the ACEG proposes a **rewording analogue to the Substantial Contribution criteria** in order to improve the usability of the criteria. The restructured and reworded criteria can thus be easily compared. The differences between the criteria are highlighted below:

Criteria for Substantial Contribution (reordered and reworded)	Criteria for DNSH (reordered and reworded)
The economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The adaptation solutions are part of an adaptation plan that has been systematically developed and complies with the following criteria:	
1. The activity was screened to identify which climate-related hazards from the list in Appendix A to this Annex may affect the performance of the economic activity during its expected lifetime.	The activity was screened to identify which climate-related hazards from the list in Section II of this Appendix may affect the performance of the economic activity during its expected lifetime.
2. Where the activity was screened to be potentially impacted by one or more of the climate-related hazards listed in Appendix A to this Annex, a climate risk assessment was conducted to assess the materiality of the physical climate risks on the economic activity.	Where the activity was screened to be potentially impacted by one or more of the climate-related hazards listed in Section II of this Appendix, a climate risk assessment was conducted to assess the materiality of the physical climate risks on the economic activity.
3. The conducted climate risk assessment was proportionate to the scale of the activity and its expected lifespan, such that: (a) for activities with an expected lifespan of less than 10 years, the assessment was performed, at least by using climate trends and forecasts at the smallest appropriate scale; (b) for all other activities, the assessment was performed using the highest available resolution, state-of-the-art climate projections across the existing range of future scenarios (348) consistent with the expected lifetime of the activity, including, at least, 10 to 30 year climate projections scenarios for major investments.	The conducted climate risk assessment was proportionate to the scale of the activity and its expected lifespan, such that: a) for activities with an expected lifespan of less than 10 years, the assessment was performed, at least by using climate trends and forecasts at the smallest appropriate scale; b) for all other activities, the assessment was performed using the highest available resolution, state-of-the-art climate projections across the existing range of future scenarios (320) consistent with the expected lifetime of the activity, including, at least, 10 to 30 year climate projections scenarios for major investments.
4. The used climate projections and assessment of impacts were based on best practice and available guidance and took into account the state-of-the-art science for climate risk assessments and related methodologies in line with the most recent Intergovernmental Panel on Climate Change reports*, scientific peer-reviewed publications, and open source**or paying models.	The used climate projections and assessment of impacts were based on best practice and available guidance and took into account the state-of-the-art science for climate risk assessments and related methodologies in line with the most recent Intergovernmental Panel on Climate Change reports (*321), scientific peer-reviewed publications, and open source (*322) or paying models.
5. Adaptation solutions that substantially reduce the most important physical climate risks that are material to the economic activity were identified, systematically assessed and drawn up in an adaptation plan.	Physical and non-physical solutions ('adaptation solutions') that reduce the most important physical climate risks that are material to the economic activity were identified, systematically assessed and drawn up in an adaptation plan.
6. The adaptation solutions planned and implemented: (b) favour nature-based solutions (351) or rely on blue or green infrastructure (352) to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) avoid maladaptation by: i. not adversely affecting the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; ii. complying with the do no significant harm technical screening criteria for an activity for which technical screening criteria have	The adaptation solutions planned and implemented do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; are consistent with local, sectoral, regional or national adaptation strategies and plans; and consider the use of nature-based solutions (323) or rely on blue or green infrastructure (324) to the extent possible.

Criteria for Substantial Contribution (reordered and reworded)	Criteria for DNSH (reordered and reworded)
been specified in this Annex, where the adaptation solution implemented is physical and consists in that activity; iii. avoiding significant harm to other environmental objectives.	
/	For existing activities and new activities using existing physical assets, the economic operator implements the adaptation solutions, over a period of time of up to five years, that reduce the most important identified physical climate risks that are material to that activity. For new activities and existing activities using newly-built physical assets, the economic operator integrates the adaptation solutions that reduce the most important identified physical climate risks that are material to that activity at the time of design and construction and has implemented them before the start of operations.
7. The adaptation solutions implemented and the adaptation plan are monitored and measured against pre-defined indicators and remedial action is implemented where those indicators show no substantial reduction of the most important physical climate risks that are material to the economic activity.	/

The proposed changes do not lead to a change in the ambition level. The ambition level of the Substantial Contribution criteria remains higher than that of the DNSH criteria in the following aspects:

Substantial Contribution	DNSH
Implementation of adaptation solutions is completed, leading to substantial reduction of most important physical climate risks	Reduction of most important physical climate risks: a) for new activities/ activities using newly-built physical assets: adaptation solutions are implemented before the start of operations b) for other activities: implementation of adaptation solutions has started and will be implemented within 5 years
Favour nature-based solutions	Consider the use of nature-based solutions
Monitoring and remedial action	Not required

Usability, data and guidance

The above changes to the generic Adaptation SC and DNSH criteria respond directly to user concerns by :

- Improving the structuring of the criteria to be more in line with established practices
- Improving the consistency of terms used
- Improving the alignment in both sequencing and wording between the SC And DNSH criteria

- Adding clarity on the documentation (Adaptation Plan) as supporting evidence for alignment
- Introducing improved equal treatment in the coverage of maladaptation
- Removing unnecessary/redundant wording

To further facilitate the ease of application of the generic adaptation criteria the Platform strongly recommends further guidance to be provided, for example via the development of a "Taxonomy Adaptation Support Tool" hosted on the EU's Climate-ADAPT portal similar to the already existing "Adaptation Support Tool" and "Urban Adaptation Support Tool" (which themselves have originally been based on the EU **"**Guidelines on developing adaptation strategies")**.** The general risk assessment and adaptation planning process does not significantly differ for private sector and other entities, and especially the Urban Adaptation Support Tool can be efficiently used as the basis for a tailored online support tool for Taxonomy users, adapting the content as required. **We recommend that the tool spells out where different approaches are needed for different implementing entities**. Hosting the tool on Climate-ADAPT also allows for direct dynamic linking to the rich range of helpful supportive resources already available in the Climate-ADAPT database and toolbox, including climate risk data sets/data explorers, guidances, scientific evidence, methodologies, national, regional and local risk assessments and strategies, database of adaptation solutions and others. Furthermore, existing Climate-ADAPT development, upkeep and maintenance set-up, including EEA oversight and the existing availability of a range of adaptation experts for the tasks, deem this guidance development option cost- and time-efficient.

Issue 3: Simplification of the wording of the "enabling criterion

The Platform proposes improvements in the clarity of the generic "enabling criterion" – criterion 5. Of the Adaptation SC criteria ,which needs to be fulfilled for an activity to be considered "adapted-enabling"". Multiple and inconsistent interpretations are observed in the market, and clearer, streamlined language would improve it's harmonised uptake and clarify what the requirement is about.

Current wording	Identifying core requirements	Simplified wording
In order for an activity to be considered as an enabling activity as referred to in Article 11(1), point (b), of Regulation (EU) 2020/852,	*Reference to Taxonomy Regulation definition of "enabling"*	In order for an activity to be considered as an enabling activity as referred to in

		Article 11(1), point (b), of Regulation (EU) 2020/852»,
the economic operator demonstrates,	Has to be **"demonstrated"**	the economic operator **demonstrates** that :
through an assessment of current and future climate risks, including uncertainty and based on robust data,	Climate risk assessment has to be done – **risk needs to be "existing"**	a) the **primary objective** of the technology, product, service, information, or practice provided or promoted by the activity,
that the activity provides a technology, product, service, information, or practice, or promotes their uses	*List of types of "enablers", promotion of their use*	i) is either **increasing the resilience** level ii)or is **contributing to adaptation efforts*** of other people, of nature, of cultural heritage, of assets and of other economic activities;
with one of the following primary objectives:	The enabling objective has to be **"primary"**	b) the activity **addresses identified physical climate change risks** through undertaking an assessment of current and future climate risks, including

		uncertainty and based on robust data.
a) increasing the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities;	*The difference between a) and b) not straightforward. Both describe enabling resilience of "others".*	
b) contributing to adaptation efforts of other people, of nature, of cultural heritage, of assets and of other economic activities.	**What needs to be "enabled":** a)Direct **increase of resilience** **b)Support for "efforts**"	

- See next sub-section on guidance required

Usability, data and guidance

The proposed changes aim to improve the usability of the standard criterion that applies to “adapted-enabling” activities under Adaptation objective, by improving the sequencing and clarity of language without changing the essence of the content.

The Platform would like to further stress that guidance on compliance with this criterion should be included in the Taxonomy Adaptation Support Tool proposed in the previous Section. This should include the clarification on the difference between “increasing resilience level” and “contributing to adaptation efforts” aspects. In the views of Platform, there may be redundancy between the two, however the European Commission’s reasoning for separating the two aspects was not available to the Platform at the time of this work, therefore out of precaution both were included in the revised text.

Issue 4: Clarifications of terminology and requirements details

The following requests for clarifications have been received via the described feedback channels:

- Definition of “physical” vs. “non-physical ” adaptation solutions (1 comment in SRM)
- Clarification on the starting point of the 5-year period in the generic DNSH criteria (2 comments in SRM)
- Clarification on what is “robust” climate risk assessment (1 comment in SRM)
- When is an activity “adapted”? “Adapted” vs. “adapting” activities (1 comment in SRM and other sources)
- Clarity on “adapted”, “adapted-enabling” and adaption “enabling” activities (other sources)
- Request for guidance on assessing specific climate hazards (1 comment in SRM)

Physical vs non-physical adaptation solutions

Note: Please refer to the Draft FAQs published on November 28, 2024 where this question has been addressed, including Platform (and other) input: https://finance.ec.europa.eu/publications/frequently-asked-questions-eu-Taxonomy_en

The Platform’s view on this is that in general terms, the main categories of physical solutions are: physical infrastructure and technological solutions as well as nature-based and ecosystem-based approaches (Types C and D in the below typology table).

And the main categories of non-physical solutions are: governance and institutional solutions (including initiation or changes of practices, processes and process management, planning, monitoring and cooperation systems and similar) economics and financial solutions (including insurance), as well as knowledge and behavioural change related approaches (Types A, B and E in the below typology table).

The original ETC/CCA / EEA classification:

Key types of Measures (KTMs)	**Sub-KTM**
A: Governance and Institutional	A1: Policy instruments A2: Management and planning A3: Coordination, cooperation and networks
B: Economic and Finance	B1: Financing and incentive instruments B2: Insurance and risk sharing instruments
C: Physical and Technological	C1: Grey options C2: Technological options

D: Nature Based Solutions and Ecosystem-based Approaches	D1: Green options D2: Blue options
E: Knowledge and Behavioural change	E1: Information and awareness raising E2: Capacity building, empowering and lifestyle practices

Source: https://www.eionet.europa.eu/etcs/etc-cca/products/etc-cca-reports/rationale-approach-and-added-value-of-key-type-of-measures-for-adaptation-to-climate-change/@@download/file/ETC-CCA_report_KTMs_2020_20201218.pdf

This typology was developed to enhance EU Member State reporting on their planned/implemented adaptation measures, however they universally also apply to company/entity/ activity context.

Clarifying the starting point of the generic DNSH 5-year period for implementing adaptation solutions

Note: Please refer to the Draft FAQs published on November 28, 2024 where this question has been addressed, including Platform (and other) input: https://finance.ec.europa.eu/publications/frequently-asked-questions-eu-Taxonomy_en

The generic DNSH criteria for climate change adaptation state that the economic operator should implement physical and non-physical solutions ('adaptation solutions') for existing activities and new activities using existing physical assets, over a period of up to five years. Clarity needs to be provided on what is the starting point of the five year period.

The recent FAQs clarify that "The five year period starts from the day when the operator has finalized the climate risk and vulnerability assessment of the activity and identified the adaptation solution for the activity. "

The Platform is of the view that the period should start from the identification of the risk, rather than the identification of measure – there may be an incentive to complete risk assessment and delay the identification of measures otherwise.

The Platform also recommends providing further guidance on what happens when risk assessments are updated and new or increased severity or risks are identified requiring new adaptation measures – the 5 year period should then start from when the risk was first identified even if it did not happen in the first risk assessment.

Clarifying what is "robust" climate risk assessment

In general terms, the Platform considers an assessment robust, when it has complied with all requirements spelled out in the adaptation criteria (see previous sections for proposed improvement of those criteria). The Platform recommends guidance on this to be included in the Taxonomy Adaptation Support Tool proposed in the previous Sections.

"Adapted" vs "adapting" activities, "adaptation" activities

Situation:	Adaptation SC full alignment	Fulfilling adaptation DNSH	Implementing adaptation measures prior to full SC alignment (Type B CapEx)	Implementing individual adaptation measures that are CapEx based - Type C CapEx (Art. 8 DA)	Implementing individual adaptation measures that are OpEx based
Criteria text:	*The economic activity **has implemented** physical and non-physical solutions ('adaptation solutions') that **substantially reduce** the **most important physical climate risks** that are material to that activity.* *…* *The **adaptation solutions implemented**:* *a)…* *b)…*	*For **existing activities** and new **activities using existing physical assets**, the economic operator* ***implements physical and non-physical solutions** ('adaptation solutions')* *For **new activities** and existing **activities using newly-built physical assets**, the economic operator integrates the adaptation solutions that reduce the most important identified physical climate risks that* *are material to that activity at the time of design and construction and **has implemented them before the start of operations.***		*c) ...related to the purchase of output from Taxonomy-aligned economic activities and **individual measures enabling the target activities** to become low-carbon or to lead to greenhouse gas reductions*	

"Adapted" OR "Adapting"?	= **«adapted»**	**Existing activities = «adapting»**[24] but only those included under other objectives **New activities = «adapted»,** but only those included under other objectives	= **«adapting»**[25] **(with a plan to become «adapted»)**	= **«adapting»**[26]	= **«adapting»**[27]
What can be claimed as Taxonomy-aligned?	Taxonomy alignment: An activity becomes adapted (fulfils the SC criteria) only in the last year having implemented the planned adaptation measures (provided it continues to monitor climate change and implementing additional measures as needed), therefore in that last and subsequent years: **Adaptation-specific CapEx=Taxonomy aligned (Type A CapEx)**	Does not by itself determine Taxonomy alignment, but needs to be fulfilled for alignment under other objectives	**Adaptation-specific CapEx=Taxonomy aligned (Type A CapEx)**	* The FAQs should clarify the application to adaptation objective	* The FAQs should clarify the application to adaptation objective

[24] «Adapting» activities is not a formal term in Taxonomy. However,it is a concept used to denote activities that are not yet fully «adapted» (as per the TSCs), but are already implementing adaptation measures.

[25] As above

[26] As above

[27] As above

Notes:	Activities only aligned in the last year of measure implementation – i.e. when they reach «adapted» status	Only covers activities included in Taxonomy under other objectives	Could support other «adapting» activities i.e. – support adaptation «measures», but current wording excludes adaptation	The current definition of OpEx in Art. 8 DA excludes OpEx-type adaptation measures (e.g. insurance, training, adapted clothing/gear for staff or smaller equipment and supplies)

The term «adaptation activities» may be used as an umbrella term to denote all types of activities included in the Taxonomy under the adaptation objective, that is it includes «adapted», «adapted-enabling» and «enabling "activities – se next Section.

Clarification on "Adapted", "adapted-enabling" and adaption "enabling" activities

	«Adapted»	«Enabling»	«Adapted- enabling»
How many in Taxonomy?	99	5	14
Targets climate resilience of:	Own operations (inc. supply chains)	«of other people, of nature, of cultural heritage, of assets and of other economic activities»	Own operations (incl. supply chains) PLUS «of other people, of nature, of cultural heritage, of assets and of other economic activities»

Wording in activity description used to specify the type	N/A	"An economic activity in this category is an enabling activity as referred to in Article 11(1), point (b), of Regulation (EU) 2020/852 where it meets the technical screening criteria set out in this Section"	"Where an economic activity in this category complies with the substantial contribution criterion specified in point 5, the activity is an enabling activity as referred to in Article 11(1), point (b), of Regulation (EU) 2020/852, provided that it meets the technical screening criteria set out in this Section"
Type of criteria	Generic criteria points 1-4	Custom criteria	Generic criteria including point 5 «enabling criterion»[28]
What can be reported as «Taxonomy-aligned»	ONLY the CapEx and OpEx invested in adaptation measures	All turnover and all CapEx[29], all OpEx[30]	If only fulfils «adapted» criteria = ONLY the CapEx and OpEx invested in adaptation measures If ALSO fulfils enabling criterion = All turnover and all CapEx[203], all OpEx[204]
Rationale	All activities in the economy need to be adopted. If each takes care of their own resilience, the economy becomes resilient.	Activities with strong adaptation enabling effect need to be additionally promoted and supported as they have a broad Substantial Contribution.	Some activities can only be «enabling» if they are also «adapted». OR Activities in some cases have enabling effect (which needs to be proven and justified).

Guidance for assessing specific climate hazards

The Platform recommends guidance on how to assess specific climate hazards to be included in the Taxonomy Adaptation Support Tool proposed in the previous Sections.

[28] See section on Improving the usability of Adaptation generic criteria for our recommendations for simplified wording of criterion 5.

[29] CapEx as defined in the Disclosures Delegated Act

[30] OpEx as defined in the Disclosures Delegated Act

3. Reviews relevant for both Annexes - activity-specific

i. Review of differing activity titles and descriptions

The basis and rationale for the reviewOne of the known usability issues of the Taxonomy are existing discrepancies in activity titles and descriptions where similar/same activities are included under several environmental objectives. This causes difficulties with eligibility assessments for Taxonomy users.

This chapter puts forward recommendations for aligning the activity titles and descriptions across similar activities in Annex I and II of the Climate Delegated Act (noting that further alignment may be necessary with the Delegated Act for other environmental objectives).

Platform has identified three activities where this issue is currently present, when comparing Annex I and Annex II of the Climate Delegated Act. For the alignment work, the Platform followed the overarching principle of keeping the activity title and descriptions as general as possible, while delegating the specific aspects (which determine the activity as contributing to an objective) to the technical screening criteria where possible. This allows for the use of the same activity title and description across all objectives and therefore will lead to simplified and more consistent assessments of activity Taxonomy eligibility across all objectives.

Activity 6.15

Aligning activity title

(in red- identified current differences)

Original activity title Annex II: Infrastructure enabling road transport and public transport

Original activity title Annex I: Infrastructure enabling low-carbon road transport and public transport

Recommended activity title Annex I and II: Infrastructure for road transport and public transport

Aligning activity description

(in red- identified current differences)

Original Description Annex II: Construction, modernisation, maintenance and operation of motorways, streets, roads, other vehicular and pedestrian ways, surface work on streets, roads, highways, bridges or tunnels and construction of airfield runways, including the provision of architectural services, engineering services, drafting services, building inspection services and surveying and mapping services and the like as well as the performance of physical, chemical and other analytical testing of all types of materials and products, and excludes the installation of street lighting and electrical signals. The economic activities in this category could be classified under several NACE codes, in particular F42.11, F42.13, F71.1 and F71.20 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

Original Description Annex I: Construction, modernisation, maintenance and operation of infrastructure that is required for zero tailpipe CO 2 operation of zero-emissions road transport, as well as infrastructure dedicated to transshipment, and infrastructure required for operating urban transport. The economic activities in this category could be associated with several NACE codes, in particular F42.11, F42.13, F71.1 and F71.20 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

Recommended description Annex I and II: Construction, modernisation, maintenance and operation of infrastructure required for road transport as well as infrastructure dedicated to transhipment and operating urban road and public transport. The economic activities in this category could be associated with NACE codes, in particular F42.11, F42.13, F71.1. and F71.20 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

Adjusting DNSH for mitigation

Note: Any adjustments of mitigation criteria will require further thorough review by mitigation experts, the below are initial draft proposals

~~Strikethrough –~~ suggested removal of wording
In green – suggested added wording

Draft proposed change: The infrastructure is not dedicated to transportation or storage of fossil fuels. In case of new infrastructure or major renovation, the infrastructure has been climate proofed in accordance with the ~~appropriate climate proofing practice~~ technical guidance on climate proofing as issued by the European Commission[31], or equivalent guidance that includes carbon footprinting and clearly defined shadow cost of carbon. Such carbon footprinting covers scope 1-3 emissions, ~~and demonstrates that the infrastructure does not lead to additional relative greenhouse gas emissions~~, calculated on the basis of conservative assumptions, values and procedures. There should be no significant increases in GHG emissions within the transport system that is being constructed or renovated, and provisions for low carbon transport should be integrated.

Same adjustment should apply to activities 6.16, 6.17

Adjusting SC criteria for mitigation

When implementing this change, the Platform strongly recommends a review of the mitigation substantial contribution criteria to ensure that no relevant aspects of the activity scope definition and low-carbon nature are lost.

[31] Reference to technical guidance: EUR-Lex - 52021XC0916(03) - EN - EUR-Lex

Rationale

For title and activity alignment approach:
The activity titles and descriptions can be aligned and made more generic, which significantly facilitates the usability of the criteria, and granular asset specific aspects do not need to be included in the activity description as they are already covered by in the activity's technical screening criteria (Mitigation):

- the infrastructure is dedicated to the operation of vehicles with zero tailpipe CO 2 emissions: electric charging points, electricity grid connection upgrades, hydrogen fueling stations or electric road systems (ERS)
- the infrastructure and installations are dedicated to transhipping freight between the modes: terminal infra structure and superstructures for loading, unloading and transhipment of goods;
- the infrastructure and installations are dedicated to urban and suburban public passenger transport, including associated signalling systems for metro, tram and rail systems.

For mitigation DNSH adjustment:
The current statement in the mitigation DNSH criteria 'does not lead to additional relative greenhouse gas emissions' is a counterproductive for adaptation. This can be explained with an example. Consider a transport connection between two points running through a flood plain (e.g. a rail line). If this connection would be modified to run along another longer trajectory (not through the flood plain) then the relative emissions go up as the trains use more energy and thus emit more in the operational phase (this can be scope 1, 2 or 3 emissions) compared through running through the flood plain (shorter connection). In the cost benefit analysis this disbenefit is priced through the shadow cost of carbon and this disbenefit may outweigh the benefits of the longer trajectory. However, under the current wording the investment would not qualify as an investment that contributes to adaptation while the intention of the investment is to adapt.

Activity 6.16

Aligning activity title

(in red- identified current differences)

Original activity title Annex II: Infrastructure for water transport

Original activity title Annex I: Infrastructure enabling low-carbon water transport

Recommended activity title Annex I and II: Infrastructure for water transport

Aligning activity description

(in red- identified current differences)

Original Description Annex II: Construction, modernisation and operation of waterways, harbour and rivers works, pleasure ports, locks, dams and dykes and other, including the provision of architectural services,

engineering services, drafting services, building inspection services and surveying and mapping services and the like as well as the performance of physical, chemical and other analytical testing of all types of materials and products and excludes project management activities related to civil engineering works. The economic activities in this category exclude dredging of waterways. The economic activities in this category could be associated with several NACE codes, in particular F42.91, F71.1 or F71.20 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

Original Description Annex I: Construction, modernisation, operation and maintenance of infrastructure that is required for zero tailpipe CO 2 operation of vessels or the port's own operations, as well as infrastructure dedicated to transshipment and modal shift and service facilities, safety and traffic management systems. The economic activities in this category could be associated with several NACE codes, in particular F42.91, F71.1 or F71.20 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

Recommended description Annex I and II: Construction, modernisation, operation, maintenance of infrastructure that is required for the operation of vessels, a port's own operations, waterways, harbour and river works, pleasure ports, locks, dams, dykes and others as well as infrastructure dedicated to transhipment. The economic activities in this category exclude dredging* of waterways and project management activities related to civil engineering works. The economic acuities in this category could be associated with several NACE codes, in particular F42.91, F71.1 or F71.20 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

Note: Some Platform members are of the view that the dredging activities are integral part of the activity and therefore should not be excluded – this requires further analysis to conclude on this point and either retain or remove the exclusion.

Adjusting DNSH for Mitigation

Note: Any adjustments of mitigation criteria will require further thorough review by mitigation experts, the below are initial draft proposals

~~Strikethrough –~~ suggested removal of wording
In green – suggested added wording

Proposed change: The infrastructure is not dedicated to transportation or storage of fossil fuels. In case of new infrastructure or major renovation, the infrastructure has been climate proofed in accordance with ~~appropriate climate proofing practice~~ technical guidance on climate proofing as issued by the European Commission[32], or equivalent guidance that includes carbon footprinting and clearly defined shadow cost of carbon. Such carbon footprinting covers scope 1-3 emissions, ~~and demonstrates that the infrastructure does not lead to additional relative greenhouse gas emissions~~, calculated on the basis of conservative assumptions, values and procedures. There should be no significant increases in GHG emissions within the

[32] Reference to technical guidance: EUR-Lex - 52021XC0916(03) - EN - EUR-Lex

transport system that is being constructed or renovated, and provisions for low carbon transport should be integrated.

Same adjustment should apply to activities 6.15, 6.17

Adjusting SC criteria for Mitigation

Note: Any adjustments of mitigation criteria will require further thorough review by mitigation experts, the below are initial draft proposals

In green – suggested added wording

Draft proposed criteria:
1. The activity complies with one or more of the following criteria:
a.the infrastructure is dedicated to the operation of vessels with zero direct (tailpipe) CO2 emissions: electricity charging, hydrogen-based refuelling;
b.the infrastructure is dedicated to the provision of shore-side electrical power to vessels at berth;
c.the infrastructure is dedicated to the performance of the port's own operations with zero direct (tailpipe) CO2 emissions;
d.the infrastructure and installations are dedicated to transhipping freight between the modes (where one mode is a zero direct emissions mode): terminal infrastructure and superstructures, and inland waterway and port investments related to nautical access (such as port breakwaters, locks, etc.) necessary for loading, unloading and transhipment of goods;
e*.the modernisation of the existing infrastructure necessary to enable modal shift and fit for use by vessels with zero direct (tailpipe) CO2 emissions and that has been subject to a verified climate proofing assessment in accordance with Commission Notice — Technical guidance on the climate proofing of infrastructure in the period 2021-2027 (2021/C 373/01).
2. The infrastructure is not dedicated to the transport or storage of fossil fuels.

Note: Criterion 1.e is assessed to likewise require revisions, however the Platform had not arrived at a unified view at the time of this report

Rationale:

For title and activity alignment approach:
The activity titles and descriptions can be aligned and made more generic, which significantly facilitates the usability of the criteria, and granular asset specific aspects do not need to be included in the activity description as are already covered by in the activity's technical screening criteria (Mitigation):

- the infrastructure is dedicated to the operation of vessels with zero direct (tailpipe) CO 2 emissions: electricity charging, hydrogen-based refueling
- the infrastructure is dedicated to the provision of shore-side electrical power to vessels at berth;
- the infrastructure is dedicated to the performance of the port's own operations with zero direct (tailpipe) CO 2 emissions
- the infrastructure and installations are dedicated to transshipping freight between the modes: terminal infra structure and superstructures for loading, unloading and transshipment of goods

In the harmonised description we recommend to add the Adaptation specific types of supporting infrastructure the activity relates to, which does not affect the ambition level/safeguards under Mitigation (determined by the TSCs above, not the description).

For mitigation DNSH adjustment:
The current statement in the mitigation DNSH criteria 'does not lead to additional relative greenhouse gas emissions' is a counterproductive for adaptation. This can be explained with an example. Consider a transport connection between two points running through a flood plane (e.g. a rail line). If this connection would be modified to run along another longer trajectory (not through the flood plane) then the relative emissions go up as the trains use more energy and thus emit more in the operational phase (this can be scope 1, 2 or 3 emissions) compared through running through the flood plane (shorter connection). In the cost benefit analysis this disbenefit is priced through the shadow cost of carbon and this disbenefit may outweigh the benefits of the longer trajectory. However, under the current wording the investment would not qualify as an investment that contributes to adaptation while the intention of the investment is to adapt.

For mitigation SC adjustment:
As the "low carbon" aspect is removed from the activity title and description, it requires to be reflected in the SC criteria
Additional minor adjustments are to include important aspects of infrastructure, inclusion of which was not clear in the existing formulation of the criteria.

Activity 6.17

Aligning activity title

(in red- identified current differences)

Original activity title Annex II: **Airport infrastructure**

Original activity title Annex I: **Low carbon airport infrastructure**

Recommended activity title Annex I and II: Airport infrastructure Option 1	Option 2
Airport infrastructure	Low carbon airport infrastructure
Pros: Keeps the principle that activity descriptions and titles should best be generic and all objective-specific attributes (e.g. "low carbon" should be part of the TSCs)	Pros: Keeps the activity narrowly focused, clearly only covering a specific low-carbon sub-set of the activity. Lower risks.

Cons: Broadening the activity may potentially open loopholes for greenwashing risks in a very high emitting sector	Cons: Does not align with the principle of keeping titles and descriptions generic.

Aligning activity description

(in red- identified current differences)

Original Description Annex II: Construction, modernisation and operation of infrastructure that is required for zero tailpipe CO 2 operation of aircraft or the airport's own operations, as well as for provision of fixed electrical ground power and preconditioned air to stationary aircraft. The economic activities in this category could be classified under several NACE codes, in particular F41.20 and F42.99 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

Original Description Annex I: Construction, modernisation, maintenance and operation of infrastructure that is required for zero tailpipe CO 2 operation of aircraft or the airport's own operations, as well as for provision of fixed electrical ground power and preconditioned air to stationary aircraft as well as infrastructure dedicated to transshipment with rail and water transport. The economic activities in this category could be associated with several NACE codes, in particular F41.20 and F42.99 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

Recommended description Annex I and II:

Option 1	Option 2
Construction, modernisation, maintenance and operation of infrastructure that is required for ~~zero tailpipe CO 2~~ operation of aircraft or the airport's own operations, as well as for provision of fixed electrical ground power and preconditioned air to stationary aircraft as well as infrastructure dedicated to transshipment with rail and water transport. The economic activities in this category could be associated with several NACE codes, in particular F41.20 and F42.99 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.	Construction, modernisation, maintenance and operation of infrastructure that is required for zero tailpipe CO 2 operation of aircraft or the airport's own operations, as well as for provision of fixed electrical ground power and preconditioned air to stationary aircraft as well as infrastructure dedicated to transshipment with rail and water transport. The economic activities in this category could be associated with several NACE codes, in particular F41.20 and F42.99 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.
Pros: Keeps the principle that activity descriptions and titles should best be generic and all objective-specific attributes (e.g. "low carbon" should be part of the TSCs)	Pros: Keeps the activity narrowly focused, clearly only covering a specific low-carbon sub-set of the activity. Lower risks to harm mitigation objective.

When included in the adaptation annex – the resilience of all airport infrastructure would be supported, which aligns with the overall approach for adaptation – all activities (apart from significantly harmful ones as defined by Taxonomy Regulation) need to be "adapted" Cons: Broadening the activity may potentially open loopholes in a very high emitting sector – risk to harm mitigation objective.	Cons: Does not align with the principle of keeping titles and descriptions generic. In adaptation Annex resilience of only the low-carbon infrastructure would be supported, not other airport infrastructure, which may also be highly vulnerable.

Adjusting DNSH for Mitigation

Note: Any adjustments of mitigation criteria will require further thorough review by mitigation experts, the below are initial draft proposals

~~Strikethrough –~~ suggested removal of wording
In green – suggested added wording

Proposed change: The infrastructure is not dedicated to transportation or storage of fossil fuels. In case of new infrastructure or major renovation, the infrastructure has been climate proofed in accordance with the ~~appropriate climate proofing practice~~ technical guidance on climate proofing as issued by the European Commission[33], or equivalent guidance that includes carbon footprinting and clearly defined shadow cost of carbon. Such carbon footprinting covers scope 1-3 emissions, ~~and demonstrates that the infrastructure does not lead to additional relative greenhouse gas emissions~~, calculated on the basis of conservative assumptions, values and procedures. There should be no significant increases in GHG emissions within the transport system that is being constructed or renovated, and provisions for low carbon transport should be integrated. There should be no significant increases in GHG emissions within the transport system that is being constructed or renovated, and provisions for low carbon transport should be integrated.

Same adjustment should apply to activities 6.15, 6.16

Rationale

For title and activity alignment approach:The Platform saw the possibility of two options and in the given time did not arrive and one preferred solution. As described above both options – Option 1 Making the

[33] Reference to technical guidance: EUR-Lex - 52021XC0916(03) - EN - EUR-Lex

activity more generic or Option 2 Keeping the activity narrowly focused on low carbon infrastructure only has both pros and cons.
Further analysis and discussion also considering the SC and DNSH criteria would be required to arrive at final conclusions.

Adding clarification that specific types of infrastructure are also included in scope does not negatively impact the ambition level under adaptation objective, the opposite - it may improve it.

For mitigation DNSH adjustment:

The current statement in the mitigation DNSH criteria 'does not lead to additional relative greenhouse gas emissions' is a counterproductive for adaptation. This can be explained with an example. Consider a transport connection between two points running through a flood plane (e.g. a rail line). If this connection would be modified to run along another longer trajectory (not through the flood plane) then the relative emissions go up as the trains use more energy and thus emit more in the operational phase (this can be scope 1, 2 or 3 emissions) compared through running through the flood plane (shorter connection). In the cost benefit analysis this disbenefit is priced through the shadow cost of carbon and this disbenefit may outweigh the benefits of the longer trajectory. However, under the current wording the investment would not qualify as an investment that contributes to adaptation while the intention of the investment is to adapt.

Usability, data and guidance

The proposed alignment of activity titles and descriptions resolves a major usability issue for eligibility assessments. Where previously similar activities had been included in the Taxonomy with differing descriptions under different Taxonomy objectives, an entity carrying out the activity may be eligible under one objective, but not others – the reporting templates are not tailored for reflecting this situation.

The usability of the simplified/harmonised activity descriptions should best be additionally consulted with users.

The proposed adjustments do not create any new reporting requirements, theferore no new documentation or data would be required to demonstrate compliance. On the contrary, the proposed harmosnisation should ease the use of the mandatory reporting templates.

Activity 3.7 Manufacture of Cement

The recommendations for this activity which are given in section “Manufacturing activities” under section “Review of Annex I – Climate Change Mitigation” are also recommended to apply to Annex II.

ii. Recommended future work: Addressing other potential issues with specific activities

The Platform Usability Taskforce undertook a usability scan of Taxonomy activities and the adaptation expert group analysed the potential issues flagged in the scan that relate to adaptation Annex of the Taxonomy. A total of 19 comments were recevied, out of those:

- Seven were higher level issues - repetitive comments on similar aspects relevant for all objectives, not only adaptation. The proposed solutions were however not practically implementable due to the limitations described in section “Usability of the technical screening criteria ”
- Four were identical repeated comments on four enabling activities, however the exact nature of the issue was not clearly presented – Platform recommends further dialogue and consideration whether amendments are required
- Two were identical repeated comments on the generic adaptation SC and DNSH criteria, which were taken on board in the generic criteria review presented in the previous sections
- The remaining six comments flagged potential issues with three activities: 8.4 Software enabling physical climate risk management and adaptation, 9.3 Consultancy for physical climate risk management and adaptation, 10.1 Non-life insurance: underwriting of climate-related perils. The Platform recommends further dialogue and deliberation on whether amendments are required.

iii. Recommended future work: Review of DNSH of Annex II activities not consulted with the Platform

As part of the review of Annex II of the Climate Delegated Act, activities that were included in the Delegated Act without prior consultation with the Platform (e.g. activities that were not proposed in the TEG report) were reviewed. For these activities, a high-level review of DNSH criteria was carried out, to check for issues with consistency and equal treatment of activities/technologies.

The outputs indicate whether the generic DNSH criteria or the absence of a DNSH criterion (‘n/a’) for those activities is appropriate or requires revision. The table below shows the results of the analysis and highlights the DNSH criteria for which the Platform experts suggest a revision. In total a revision of 27 DNSH criteria is proposed. DNSH criteria of the same activities in the mitigation Annex have to be checked for consistency after the revision.

Table: Overview of DNSH criteria assessment for Annex II activities that have not been previously consulted with the Platform

	SC criteria	DNSH									
DA1 Activities - Adaptation Annex		**CCM**	**comment**	**WAT**	**comment**	**CE**	**comment**	**PPC**	**comment**	**BIO**	**comment**
Restoration of wetlands	adapted-enabling	specific criteria		Appendix B	ok	specific criteria		specific criteria		specific criteria	
Manufacture of renewable energy technologies	adapted	n/a	consider addition of GHG emissions requirements/requirements for energy efficiency performance in next round of Climate Delegated Act review	Appendix B	ok	specific criteria		Appendix C	ok	Appendix D	ok
Manufacture of equipment for the production and use of hydrogen	adapted	n/a	consider addition of GHG emissions requirements/requirements for energy efficiency performance in next round of Climate Delegated Act review	Appendix B	ok	specific criteria		Appendix C	ok	Appendix D	ok
Manufacture of batteries	adapted	n/a	consider addition of GHG emissions requirements/requirements for energy efficiency performance in next round of Climate Delegated Act review	Appendix B	ok	specific criteria		Appendix C + specific criteria		Appendix D	ok
Manufacture of energy efficiency equipment for buildings	adapted	n/a	consider addition of GHG emissions requirements in next round of Climate Delegated Act review	Appendix B	ok	specific criteria		Appendix C	ok	Appendix D	ok
Construction, extension and operation of water collection, treatment and supply systems	adapted	n/a	consider addition of GHG emissions requirements/requirements for energy efficiency performance in next round of Climate Delegated Act review	Appendix B	ok	n/a	for construction, align to DNSH CE for construction of new buildings	n/a	Consider adding: Building components and materials used in the construction comply with the criteria set out in Appendix C to this Annex. appropriate management of any hazardous waste generated during the activity	Appendix D	ok
Renewal of waste water collection and treatment	adapted	specific criteria		Appendix B + specific criteria	ok	n/a	ok	specific criteria		Appendix D	ok
Underground permanent geological storage of CO2	adapted	specific criteria		Appendix B	ok	n/a	ok	specific criteria		Appendix D	ok

Operation of personal mobility devices, cycle logistics	adapted	n/a	ok	n/a	ok	specific criteria		n/a	Consider adding: The devices comply with DNSH for third manufacture: The activity complies with the criteria set out in Appendix C to this Annex. Where applicable, vehicles do not contain lead, mercury, hexavalent chromium and cadmium, in accordance with Directive 2000/53/EC.	n/a	ok
Retrofitting of inland water passenger and freight transport	adapted	specific criteria (exclude fossil fuel)	consider adding GHG emissions requirements/requirements for fuel use efficiency in next round of Climate Delegated Act review	Appendix B	ok	specific criteria		specific criteria		n/a	Should be aligned with Retrofitting sea and coastal freight
Sea and coastal freight water transport, vessels for port operations and auxiliary activities	adapted	specific criteria (exclude fossil fuel)	consider adding GHG emissions requirements/requirements for fuel use efficiency in next round of Climate Delegated Act review	Appendix B	ok	specific criteria		specific criteria		specific criteria	
Sea and coastal passenger water transport	adapted	n/a	consider adding GHG emissions requirements/requirements for fuel use efficiency in next round of Climate Delegated Act review	Appendix B	ok	specific criteria		specific criteria		specific criteria	
Retrofitting of sea and coastal freight and passenger water transport	adapted	specific criteria (exclude fossil fuel)	consider adding GHG emissions requirements/requirements for fuel use efficiency in next round of Climate Delegated Act review	Appendix B	ok	specific criteria		specific criteria		specific criteria	
Infrastructure for personal mobility, cycle logistics	adapted	n/a	Consider aligning with other activities that include similar infrastructure in next round of Climate Delegated Act review	Appendix B	ok	specific criteria		specific criteria		Appendix D	ok
Infrastructure for rail transport	adapted	specific criteria		Appendix B	ok	specific criteria		specific criteria		Appendix D	ok
Airport infrastructure	adapted	specific criteria		Appendix B	ok	specific criteria		specific criteria		Appendix D	ok
Installation, maintenance and repair of energy efficiency equipment	adapted	specific criteria		n/a	ok	n/a	should be aligned to Installation and operation of electric heat pumps	Appendix C + specific criteria		n/a	ok
Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings	adapted	specific criteria		n/a	ok	n/a	should be aligned to Installation and operation of electric heat pumps	n/a	Consider adding requirements for appropriate management of any hazardous waste generated during the activity	n/a	ok

Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance and buildings	adapted	specific criteria		n/a	ok	n/a	should be aligned to Installation and operation of electric heat pumps	n/a	Consider adding requirements for appropriate management of any hazardous waste generated during the activity	n/a	ok
Installation, maintenance and repair of renewable energy technologies	adapted	specific criteria		n/a	ok	n/a	should be aligned to Installation and operation of electric heat pumps	n/a	Consider adding requirements for appropriate management of any hazardous waste generated during the activity	n/a	ok
Acquisition and ownership of buildings	adapted	specific criteria		n/a	ok	n/a	ok	n/a	Consider adding requirements for measures to ensure Indoor Air Quality	n/a	Should be aligned with 7.1 and 7.2
Close to market research, development and innovation	specific enabling criteria	specific criteria		specific criteria		specific criteria		specific criteria		specific criteria	ok
Reinsurance	specific enabling criteria	specific criteria		n/a	ok	n/a	ok	n/a	ok	n/a	ok
Data processing, hosting and related activities	specific enabling criteria	specific criteria		Appendix B	ok	specific criteria		n/a	ok	n/a	ok
Residential care activities	adapted	n/a	Consider for next review of Climate Delegated Act: buildings should be clearly excluded from activity description or DNSH should be made consistent with buildings criteria (new buildings and renovation)	n/a	ok	n/a	ok	specific criteria		n/a	ok
Creative, arts and entertainment activities	adapted-enabling	n/a	Consider for next review of Climate Delegated Act: buildings should be clearly excluded from activity description or DNSH should be made consistent with buildings criteria (new buildings and renovation)	n/a	ok	n/a	ok	n/a	ok	n/a	ok
Libraries, archives, museums and cultural activities	adapted-enabling	n/a	Consider for next review of Climate Delegated Act: buildings should be clearly excluded from activity description or DNSH should be made consistent with buildings criteria (new buildings and renovation)	n/a	ok	n/a	ok	n/a	ok	n/a	ok
Motion picture, video and television programme production, sound recording and music publishing activities	adapted-enabling	n/a	Consider for next review of Climate Delegated Act: buildings should be clearly excluded from activity description or DNSH should be made consistent with	n/a	ok	n/a	ok	n/a	ok	n/a	ok

			buildings criteria (new buildings and renovation)								

iv. Recommended future work: Review of activities where the output of activity requires to be “adapted” in addition to the activity itself being “adapted”

While carrying out other tasks, namely the review of Building sector criteria and the identification of highly vulnerable sectors (see section below), a usability issue was identified for those activities where to enable resilience, not only the activity itself needs to be “adapted” (which is normally the case for all “adapted” activities – see section above clarifying the term “adapted”), but also the output of the activity – e.g. the product or asset. This is pertinent in the case of construction activities, where both the construction activity itself needs to be resilient to physical climate impacts, but also the buildings constructed to enable the resilience of the users of those buildings. Strict reading of the criteria and application aligned with all other adapted activities, would exclude the buildings from needing to be “adapted”, however this is not uniformly interpreted in the market and among sector organisations. It is likely the case for a number of other activities.

The Platform recommends further work to be undertaken to identify all activities where this is a relevant issue and to develop a harmonised suitable solution for both Substantial Contribution and DNSH for adaptation.

v. Recommended future work: DNSH Threshold updates for some “Manufacturing” activities

In line with the recommendation in the section "Recommendation for multiple activities" on Annex I, it is recommended to update all thresholds in Annex II which are the median value of the installations in 2016 and 2017 as soon as the median values of 2021 and 2022 will become available. This is expected in 2025 in the context of the EU ETS benchmark update.

This concerns the following activities in Annex II: 3.7 Manufacture of cement, 3.8 Manufacture of aluminium, 3.9 Manufacture of iron and steel, 3.11 Manufacture of carbon black, 3.12 Manufacture of soda ash, 3.14 Manufacture of organic basic chemicals, 3.15. Manufacture of anhydrous ammonia, 3.16 Manufacture of nitric acid.

All these thresholds in Annex II have the following footnote: "Reflecting the median value of the installations in 2016 and 2017 (t CO2 equivalents/t) of the data collected in the context of establishing the Commission Implementing Regulation (EU) 2021/447, determined on the basis of verified information on the greenhouse gas efficiency of installations reported pursuant to Article 11 of Directive 2003/87/EC."

For more information, see section "Recommendation for multiple activities" (in section “Manufacturing activities” under section “Review of Annex I – Climate Change Mitigation”).

III. Recommendations of new economic activities

Note: The recommendations in this chapter include references to the Climate Delegated Act. A review of and recommendations for updates of this Delegated Act are included in chapter II. The recommended updates also apply to the parts referenced in the present chapter.

1. Close to market research, development and innovation activities * BIODIVERSITY

i. Description of the activity

Research, applied research and experimental development of solutions, processes, technologies, business models, products or services (hereinafter referred to as 'research activity') that focus on at least one economic activity dedicated to

- protecting, conserving or restoring biodiversity or
- improving the condition of ecosystems, or
- achieving a good condition of ecosystems, or
- protecting ecosystems that are already in good condition

and might additionally serve the purpose of improving the capacity of ecosystems to provide services[34].

The ability of the research activity to contribute to at least one of the above listed purposes when applied to the target activity is being demonstrated in a relevant environment, corresponding to at least Technology Readiness Level (TRL) 6[35].

The economic activities in this category could be associated with several NACE codes, in particular M71.12 (Engineering activities and related technical consultancy), M71.2 (Technical testing and analysis) and M72.1 (Research and experimental development on natural sciences and engineering), or for research that is an integral part of those economic activities, for which technical screening criteria are specified in this Annex, the NACE codes set out in other Sections of this Annex in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

34 International classification of ecosystem services: https://cices.eu/

35 In line with Annex G of the General Annexes of HORIZON 2020 WORK PROGRAMME 2016-2017, p.29 (version of [adoption date] :). In the case of research, development and innovation activities aimed at non-technological solutions, processes, business models, products or services, the TRL concept applies with a corresponding logic.

An economic activity in this category is an *enabling* activity in accordance with Article 15(1), point (e), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

ii. Technical screening criteria

Substantial contribution to the protection and restoration of biodiversity and ecosystems

1. The research activity researches, develops or aims at innovating[36] technologies, products, services, business models or other solutions that are dedicated to one or more targeted economic activities (target activities) for which the technical screening criteria have been set out in this Annex[37]. The research activity has a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality.

2. The results of the research activity are expected to substantially contribute to the protection, maintenance and restoration of biodiversity and ecosystems as set out in Regulation (EU) 2024/1991)[38], Council Directive 92/43/EEC[39], Directive 2009/147/EC[40], the EU Biodiversity Strategy for 2030[41] or, for third countries, in applicable national law pursuing equivalent objectives[42], by fulfilling at least one of the following criteria:

   2.1 Where the target activity does not meet the technical screening criteria for substantial contribution specified in the applicable Section of this Annex[43], the research activity is aimed at enabling the target activity to meet[44] or exceed at least one of the respective

36 According to the OECD Oslo Manual (Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition | en | OECD) an innovation is a novelty that has proven its superior performance criteria: "Innovation is more than a new idea or an invention. An innovation requires implementation, either by being put into active use or by being made available for use by other parties, firms, individuals or organisations"

37 Annex IV (Biodiversity and ecosystems) of the Environmental Delegated Act of the EU Taxonomy Regulation

38 In particular in the Articles 4, 5, 8, 9, 10, 11 and 12 of the EU Nature Restoration Law ((Regulation (EU) 2024/1991),

39 Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (EU Habitats Directive). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31992L0043

40 Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (EU Birds Directive). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0147

41 Communication COM(2020) 380 final from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: EU Biodiversity Strategy for 2030. Bringing nature back into our lives. https://eur-lex.europa.eu/legal-content/CS/TXT/?uri=CELEX:52020DC0380

42 As per relevant international commitments, e.g. those made under the Kumming Montreal Global Biodiversity Protocol (https://www.cbd.int/gbf), including protecting, conserving or restoring biodiversity, improving the condition of ecosystems, achieving a good condition of ecosystems or protecting ecosystems that are already in good condition.

43 Annex IV (Biodiversity and ecosystems) of the Environmental Delegated Act of the EU Taxonomy Regulation

44 The goal of the activity is solving a bottleneck or overcoming one of the barriers for achieving the required performance for substantial contribution.

technical criteria for substantial contribution without compromising the compliance with the other technical screening criteria[45];

2.2 Where the target activity already meets the technical screening criteria for substantial contribution specified in the applicable Section of this Annex[46], the research activity focusses on at least one of the following without negatively affecting compliance with the technical screening criteria for substantial contribution of the target activity:

a. providing new significant advantages to the target activity, such as an increase in cost-benefit ratio, effectiveness, market penetration or reliability;

b. enhancing the level of environmental performance of the target activity beyond technical screening criteria for substantial contribution and for DNSH;

c. developing and enabling the shift towards the use of Nature-based Solutions[47] in the target activity.

3. The application of the results of the research activity does not prevent the target activity from complying with the DNSH criteria specified for the target activity.

4. Any potential risks to the good condition[48] or resilience of ecosystems or to achieving or maintaining the good environmental status or favourable conservation status of habitats and species, including those of Union interest, arising from the research activity or the application of its results, are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures, in order not to compromise the objectives of Regulation (EU) 2024/1991)[49] or of EU nature legislation, are implemented and declared, in accordance with Directive 2011/92/EU, 2009/147/EC, 92/43/EEC and with applicable law regulating the research activity and target activity and following relevant guidelines[50].

45 Both, the criteria for the substantial contribution as well as the do no significant harm criteria

46 Annex IV (Biodiversity and ecosystems) of the Environmental Delegated Act of the EU Taxonomy Regulation

47 The European Commission defines Nature-based Solutions as "Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions." https://research-and-innovation.ec.europa.eu/research-area/environment/nature-based-solutions_en
According to the definition by IUCN, Nature-based Solutions leverage nature and the power of healthy ecosystems to protect people, optimise infrastructure and safeguard a stable and biodiverse future. https://www.iucn.org/our-work/nature-based-solutions

48 As specified in Annex IV, activity 1.1. of the Environmental Delegated Act, 'good condition' means a state where the key characteristics of an ecosystem, namely its physical, chemical, compositional, structural and functional state, and its landscape and seascape characteristics, reflect the high level of ecological integrity, stability and resilience necessary to ensure its long-term maintenance, without prejudice to more specific definitions of 'good condition' under different legal frameworks.

49 EU Nature Restoration Law (Regulation (EU) 2024/1991), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401991

50 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

Do no significant harm ('DNSH')	
(1) Climate change mitigation	The activity is not undertaken for the purposes of fossil fuel[51] extraction, transport or use. Any potential risks to climate change mitigation arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process, based on the following steps: 1. A DNSH materiality assessment for the potential climate impact of the application of the results in the target activity is carried out[52]. 2. Where no material risk of increasing GHG emissions is identified, no further steps have to be taken. 3. Where a risk of increasing GHG emissions is considered material by the DNSH materiality assessment, the following steps are taken: a. The necessary mitigation solutions are included in the research activity and declared, in accordance with applicable law regulating the research activity and the target activity and following relevant guidelines[53], b. **Where DNSH criteria for the target activity are specified**, a GHG life cycle assessment, including the necessary mitigation measures as set out in step 3a) above is carried out in order to assess whether the DNSH criteria for CCM are still met after the application of the results of the research activity. c. **Where no DNSH criteria for the target activity are specified ("N/A"),** a GHG life cycle assessment is carried out in order to assess whether the application of the result of the research activity, including the necessary mitigation measures as set out in step 3a)

and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

51 According to EEA definition 'Coal, natural gas and petroleum products (such as oil) formed from the decayed bodies of animals and plants that died millions of years ago'; https://www.eea.europa.eu/help/glossary/eea-glossary/fossil-fuel

52 e.g. as specified in 'ANNEX IV: Worked out examples of how to implement the DNSH assessment' to the Technical guidance on the application of "do no significant harm" under the Recovery and Resilience Facility Regulation; https://commission.europa.eu/document/download/cce579e3-9347-4c28-ba0f-409bf35b09b4_en?filename=c_2023_6454_f1_annex_en.PDF

53 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

	above, does not lead to an increase in life-cycle GHG emissions of the target activity. d. Where the research activity is at i. TRL 8 or 9, life-cycle GHG emissions are quantified in accordance with Commission Recommendation 2021/2279/EU[54] or, alternatively, in accordance with ISO 14067:2018[55] or in accordance with ISO 14064:2018[56]. ii. TRL 6 or 7, life-cycle GHG emissions are either quantified as defined under (i) or assessed in simplified form and on a best-effort basis[57].
(2) Climate change adaptation	The research activity complies with the criteria set out in Appendix A to this Annex. Any potential risks to the climate change adaptation objectives arising from the application of the results of the research activity are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the research activity and target activity and following relevant guidelines[58].

54 In accordance with the provisions for the Product Environmental Footprint (PEF) for products and product-like services or solutions, and in accordance with the provisions of the Organisational Environmental Footprint (OEF) for organisations and projects, infrastructures and systemic solutions.

55 for products and product-like services or solutions

56 for organisations and projects, infrastructures and systems

57 For those research activities at TRL 6 and 7, for which a quantification of life-cycle GHG emissions in accordance with criterion 3.d.i) is not be possible, in order to fulfil this criterion, the entity that carries out the research activity might demonstrate that GHG emissions are not increasing by performing a self-assessment by following international recognized generic Life Cycle Assessment guidance, such us given in *ILCD Handbook General guide for LCA*, or self-assessment climate change tools accepted by national or regional authorities.

Alternatively, compliance with this requirement can be proven by providing

a) patent not older than 10 years associated with the technology, product or other solution, or
b) a permit obtained from a competent authority for operating the demonstration site associated with the innovative technology, product or other solution for the duration of the demonstration project

where information on GHG emissions is included and it can be clearly derived that GHG emissions are not increasing compared to peers.

Once a self-assessment tool for life-cycle GHG emissions of research activities and the application of their results to the target activity, developed or approved by the European Commission, will become available, this tool will be used for the assessment of GHG emissions instead of the above-mentioned options.

58 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

(3) Sustainable use and protection of water and marine resources	Any potential risks to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or to protected areas[59], or to the good environmental status of marine waters, or risks such as water stress arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the research activity and target activity and following relevant guidelines[60].
(4) Transition to a circular economy	Any potential risks to the circular economy objectives arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the research activity and target activity and following relevant guidelines[61], and by considering the types of potential significant harm as set out in Article 17(1), point. (d), of Regulation (EU) 2020/852.
(5) Pollution prevention and control	Any potential risks to generate an increase in the emissions of pollutants to air, water or land arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the research activity and target activity and following relevant guidelines[62].

59 as set out in Annex IV of Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (Water Framework Directive)

60 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

61 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

62 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

Appendix	**Technology Readiness Level**[63] • TRL 1 – basic principles observed • TRL 2 – technology, concept formulated • TRL 3 – experimental proof of concept • TRL 4 – technology validated in lab • TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies) • TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies) • TRL 7 – system prototype demonstration in operational environment • TRL 8 – system complete and qualified • TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

iii. Rationale

Rationale	Research, development and innovation (RDI) activities are critical priorities to achieving European Green Deal objectives. The Commission Staff Working Document SWD(2021) 152 final[64], states that 'Research, Development and Innovation (RD&I) activities should be considered as enabling activity under the Taxonomy, as they allow companies to shape the future of substantially contributing and other enabling activities to meet their respective climate change mitigation thresholds'[65]. For the development of the technical screening criteria, activity 9.1 Close to market research, development and innovation of Annex I of the first Climate DA was used as a role model.

63 In line with Annex G of the General Annexes of HORIZON 2020 WORK PROGRAMME 2016-2017, p.29 (version of [adoption date]: https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016-2017/annexes/h2020-wp1617-annex-ga_en.pdf). In the case of research, development and innovation activities aimed at non-technological solutions, processes, business models, products or services, the TRL concept applies with a corresponding logic.

64 https://ec.europa.eu/finance/docs/level-2-measures/Taxonomy-regulation-delegated-act-2021-2800-impact-assessment_en.pdf

65 This citation only refers to the climate objective, as it is included in the Commission SWD(2021) 152 final which accompanies the Climate Delegated Act of the EU Taxonomy. However, this statement also applies to the other environmental objectives of the Taxonomy.

1. Description of the activity (scope)

The scope of the 'Close to Market RD&I activities' is going beyond technologies and comprises solutions, processes, technologies, business models, products or services dedicated to substantially contributing to the protection and restoration of biodiversity and ecosystems.

The close to market research, development and innovation activity is aimed at

- protecting, conserving or restoring biodiversity or
- improving the condition of ecosystems, or
- achieving a good condition of ecosystems, or
- protecting ecosystems that are already in good condition.

Any of the items listed above might include the purpose of improving the capacity of ecosystems to provide services[66]. Figure 1 illustrates the various possible purposes of the close to market research, development and innovation activity.

Big circle (including small circle): activities within the scope

Small circle: activities improving the capacity of ecosystems to generate services

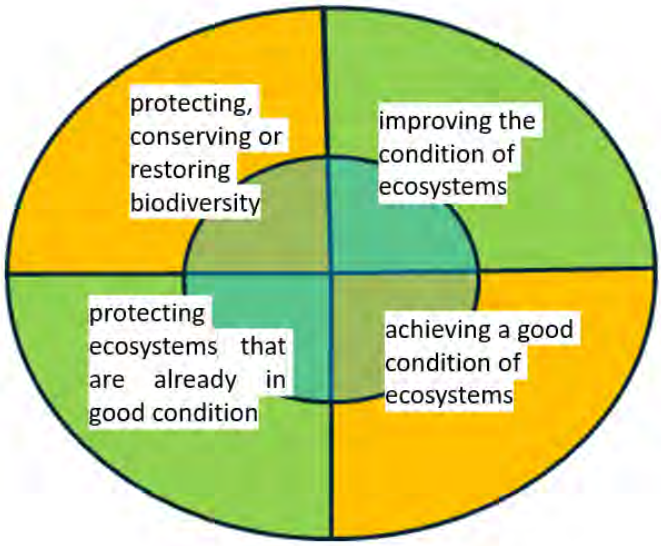

Figure 1: Dimensions of the various possible purposes of the close to market research, development and innovation activity. Visualisation by Bernabé Alonso Fariñas

A research activity that is at least being demonstrated in a relevant environment at pre-commercial stage (i.e., TRL 6 to 9 or a comparable logic for non-technological solutions,

66 International classification of ecosystem services: https://cices.eu/

processes, business models, products or services) is advanced and specific enough to meet in a verifiable manner the pertinent criteria for substantial contribution to the environmental objective, while respecting the relevant criteria for doing no significant harm.

The description of the activity is only defining the scope of eligible activities. As the demonstration of the result of technology-related research activity (or process innovation or product innovation) is part of the innovation process[67] itself, this provision does not compromise the eligibility for CapEx funding of the research activity, but is only narrowing the scope of the eligible research activities. Thus, if a research institute or a company operating one of the target activities is applying for funding, the evaluator of the research proposal is checking whether the 'demonstration of the results' is included in the research concept or not. If yes, the research activity is eligible, if no, it is not eligible and thus out of scope.

2. Substantial contribution criteria

Following the JRC methodology, the substantial contribution criteria were defined on the basis of the process based approach, as this is the most appropriate one with regard to the nature of research activities.

In relation to the requirements in Art. 19 of the Taxonomy Regulation:

- **Policy coherence and environmental integrity:** The proposed criteria are aligned with EU legislation for the protection and restoration of biodiversity and ecosystem, including the recently adopted *EU Nature Restoration Law* (Regulation (EU) 2024/1991)[68], which contains the following overarching aims in Recital (14) and in Article (1):

Recital (14)

It is appropriate to set an overarching objective for ecosystem restoration to foster economic and societal transformation, the creation of high-quality jobs and sustainable growth. Biodiverse ecosystems such as wetland, freshwater, forest as well as agricultural, sparsely vegetated, marine, coastal and urban ecosystems deliver, if in good condition, a range of essential ecosystem services, and the benefits of restoring degraded ecosystems to good condition in all land and sea areas far outweigh the costs of restoration. Those services contribute to a broad range of socio-economic benefits, depending on the economic, social, cultural, regional and local characteristics

67 According to the 'Oslo Manual 2018 – Guidelines for collecting, reporting and using data on innovation', research is the first stage of an innovation process

68 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401991EU

	Article 1: Subject matter *1. This Regulation lays down rules to contribute to:* *(a) the long-term and sustained recovery of biodiverse and resilient ecosystems across the Member States' land and sea areas through the restoration of degraded ecosystems;* *(b) achieving the Union's overarching objectives concerning climate change mitigation, climate change adaptation and land degradation neutrality;* *(c) enhancing food security;* *(d) meeting the Union's international commitments.* Moreover, by being orientated towards contributing to the *EU Nature Restoration Law*, there are also close links to the following international initiatives, which are addressed in Recitals 3-7: • (3) Convention on Biological Diversity • (4) Global Biodiversity Framework • (5) UN Sustainable Development Goals • (6) UN decade on ecosystem restoration • (7) EU Biodiversity Strategy for 2030 • **Environmental ambition and integrity** are addressed in 'substantial contribution' criteria 2.1 – 2.3. The DNSH criteria are based on the standard wording used in activity 9.1. of Annex I of the Climate DA. • **Level playing field**: The level of performance required in the criteria is completely technology neutral. **In relation to the requirements in Art. 16 of the Taxonomy Regulation:** The activity complies with the provisions of Article 16 as it follows the approach of the 'Horizontal Framework for Enabling Activities: Guidance for Platform Members – Enabling Framework' (Option 1) elaborated by the Platform 1.0, which is included in the 'Platform on Sustainable Finance's report with supplementary advice on methodology and technical screening criteria for the climate and environmental objectives of the EU Taxonomy'[69].

69 https://finance.ec.europa.eu/document/download/7599ea2d-975c-4b25-adca-de1d26533e99_en?filename=221128-sustainable-finance-platform-technical-working-group_en.pdf

	• **Re 1:**
	  o As this research activity is an 'enabling' activity, it has a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality. Thus, e.g. research activities on the improvement of specific components that are relevant for ecosystem restoration are covered, whereas research activities improving general/unspecific components (like e.g. screws) are not covered.
	
	• **Re 2.1:** for target activities that are not yet aligned:
	  o The goal of the RD&I activity is solving a 'bottleneck' for the target activity in order to meet the substantial contribution criteria. Taking into account long-term competitiveness is important as well, as - if the enabled activity would be less competitive after applying the researched solution – this will not happen, and investors would not be motivated to invest. However, it is likely that in the short-term, a new technology/solution is less competitive, but there should at least be a consideration of this aspect in the design phase of the research project, and a perspective that the enabled activity will be competitive in the long-term.
	  o Competitiveness could also be justified, e.g., by long-term benefits for environment and society, which could outweigh lower competitiveness in the short- to medium-term. This aspect is also important for philanthropic investors, for whom the primary purpose are not monetary aspects but environmental and social benefits. Thus, when considering competitiveness, it is important to also address the benefits for environment and society provided by the researched technology/solution by mitigating negative external effects, even if the costs of negative effects are not (yet) internalised and thus have still to be shouldered by society.
	  o If the target activity has to meet more than one criteria for substantial contribution, it is required that the research activity is aimed at enabling the target activity to achieve alignment with at least one of the respective technical criteria for substantial contribution without compromising the compliance with of the other technical screening criteria.
	
	• **Re 2.2:** Research activities that support target activities, which are already aligned, by providing new significant advantages to the target activities. Justification:
	  o Without the results of the research activity the substantial contribution of the target activity can be reached, but the target activity cannot be scaled while ensuring its substantial contribution.

- Without the results of the research activity the substantial contribution of the target activity can be reached, but at a significantly higher cost than with the results of the research activity, where the cost difference would impair market uptake of the target activity or use.
- Improving the cost-benefit ratio, effectiveness, market penetration or reliability of the target activity is a crucial prerequisite for scaling up the target activity and thus multiplying the positive environmental effect.
- Among others, the following indicators could be used to demonstrate the substantial contribution:
  - Cost-related: To demonstrate lower costs, the cost reduction shall be expressed in monetary terms (EUR).
  - Risk-related: Risk is defined as the product of the potential damage and the associated likelihood of occurrence. To demonstrate 'lower risks', based on a risk assessment, the reduction in the likelihood of occurrence and/or the reduction of the extent of the potential damage of the new technology/solution compared to the status quo shall be presented. It is important that the risk assessment focusses on those specific risks (e.g. critical raw material (CRM) supply risks) the reduction of which is enabled by the research activity.

- It is important to note that in addition to the research activity, other instrumental enabling activities may be necessary to make the target activity Taxonomy aligned. In other words: While the research activity must play an instrumental role in making the target activity Taxonomy aligned, it is possible that the target activity only becomes Taxonomy aligned by the interaction of several enabling activities.
  Or, to put it the other way round: Without this research activity, the criteria of the target activity for a 'substantial contribution' to the environmental objective
  - would not be met,
  - or would only be met at significantly higher costs,
  - or would only be met with a significant higher demand of (critical) raw materials.
- Moreover, the activity follows the approach proposed in the 'Guidance on the interpretation of the concept of enabling activities set out in Article 16 of the Taxonomy Regulation' (Option 2) of the Commission.

3. Do-no-significant-harm (DNSH) criteria

	For the development of the DNSH criteria for this activity, the DNSH criteria of Activity 9.1 of the Climate DA served as a blueprint. Individual specifications were added in order to increase clarity and usability. These clarifications therefore do not add burden but rather specify what is meant. With the DNSH criteria, different issues shall be covered: • When/after applying the results of the research activity, the target activity has to comply with its own DNSH criteria. However, the current DNSH criteria could contain criteria which are then o still applicable, o not applicable anymore; o and new risks could appear, which are not covered by the DNSH criteria of the target activity. In this case, guidance is needed how to deal with this for analysis and reporting. • The research activity itself has to comply with its own DNSH criteria. Main issue here is the heterogeneity of potential research activities. Therefore, generic criteria have to be defined, complemented by e.g. good practices and guidance documents for research activities. **CCM**: • The main focus of the DNSH criteria for climate change mitigation is to prevent an increase in GHG emissions when the result of the research activity is applied to the target activity. The reason for this is that one single research activity is very unlikely to lead to a significant increase in GHG emissions, whereas scaling up in the market by applying the results on the target activity might bear the risk of a significant increase. • In order to increase usability and clarity, the criteria provide a step-by-step guide covering various use cases. **CCA**: In the DNSH criteria for climate change adaptation, the following aspects were taken into account: • The research activity itself has to adapt its 'own operations' (facilities/infrastructures needed for carrying out the research activity like e.g. demonstration sites, pilot installations, laboratories etc.); • The result of the research activity, when applied to the target activity, does not adversely affect the adaptation efforts or the level of resilience to physical climate risks

	of other people, of nature, of cultural heritage, of assets and of other economic activities. Thus, in the development of the concept for the research activity, current and future climate conditions are taken into account in order to ensure resilience and functioning of the solution. Where this is not possible, the limitations on functionality under certain climatic conditions are declared and transparently communicated to users.

iv. Usability, Data and Guidance

- The technical screening criteria were developed together with experts from universities and industry as well as public sector experts for research funding and evaluators of research proposals. In addition, where appropriate, the comments submitted in the course of the Stakeholder Request Mechanism were taken into account.
- Data for the demonstration of compliance with the technical screening criteria can be derived from a research proposal that has been evaluated by independent evaluators or approved and subsidised by an EU funding program, from comparable research activities (e.g. scientific publications on emissions of comparable technologies), or, in the case of prototype or demonstration plants, from the permit obtained from the competent authority.
- For all criteria, the relevant guidance documents and standards are included and specified in the footnotes.
- For research activities at TRL 6-7, a simplified approach for the assessment of compliance with the climate change mitigation DNSH criteria is suggested.
- For research activities at TRL 8-9, the relevant guidance documents and standards are included in the criteria and information relevant for their application is specified in the footnotes.

v. Recommendations for future work

- For reasons of consistency, acceleration of Green Finance purposes and for the success of the Taxonomy, the Platform recommends developing Close to market research activities for all 6 objectives for target activities that are not yet included in the Annexes of the Climate DA or the Environmental DA.
- In addition, the Platform recommends that, as a next priority, basic research should also be included in the Taxonomy.
- In the review of the Climate DA the criteria for the 2 ‘Close to market RDI activities’ (9.1 of Annex I and 9.2 of Annex 2 of the Climate DA) should be amended according to the new ‘Close to market research, development and innovation activities’ defined for the other 4 environmental objectives.

2. Close to market research, development and innovation activities * CIRCULAR ECONOMY

i. Description of the activity

Research, applied research and experimental development of solutions, processes, technologies, business models, products or services (hereinafter referred to as 'research activity') that focus on at least one economic activity dedicated to facilitate and to accelerate the transition to a circular economy, including waste prevention, reducing consumption, re-use and recycling

The ability of the research activity to contribute to at least one of the above-mentioned purposes when applied to the target activity is being demonstrated in a relevant environment, corresponding to at least Technology Readiness Level (TRL) 6[70].

The economic activities in this category could be associated with several NACE codes, in particular M71.12 (Engineering activities and related technical consultancy), M71.2 (Technical testing and analysis) and M72.1 (Research and experimental development on natural sciences and engineering), or for research that is an integral part of those economic activities, for which technical screening criteria are specified in this Annex, the NACE codes set out in other Sections of this Annex in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an *enabling* activity in accordance with Article 13(1), point (l), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

ii. Technical screening criteria

Substantial contribution to the transition to a circular economy

1. The research activity researches, develops or aims at innovating[71] technologies, products, services, business models or other solutions that are dedicated to one or more targeted economic activities (target activities) for which the technical screening criteria have been set out in this Annex[72]. The research activity has a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality.

70 In line with Annex G of the General Annexes of HORIZON 2020 WORK PROGRAMME 2016-2017, p.29 (version of [adoption date] :). In the case of research, development and innovation activities aimed at non-technological solutions, processes, business models, products or services, the TRL concept applies with a corresponding logic.

71 According to the OECD Oslo Manual (Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition | en | OECD) an innovation is a novelty that has proven its superior performance criteria: "Innovation is more than a new idea or an invention. An innovation requires implementation, either by being put into active use or by being made available for use by other parties, firms, individuals or organisations"

72 Annex II (Circular Economy) of the Environmental Delegated Act of the EU Taxonomy Regulation

2. The results of the research activity are expected to substantially contribute to the transition to a circular economy by fulfilling at least one of the following criteria:

   2.1 Where the target activity does not meet the technical screening criteria for substantial contribution specified in the applicable Section of this Annex[73], the research activity is aimed at enabling the target activity to meet[74] or exceed at least one of the respective technical screening criteria for substantial contribution without compromising the compliance with the other technical screening criteria[75] ;

   2.2 Where the target activity already meets the technical screening criteria for substantial contribution specified in the applicable Section of this Annex[76], the research activity focusses on at least one of the following without negatively affecting compliance with the technical screening criteria for substantial contribution of the target activity:

      a. providing new significant advantages to the target activity, such as an increase in cost-benefit ratio, effectiveness, market penetration or reliability;

      b. enhancing the level of environmental performance of the target activity beyond technical screening criteria for substantial contribution and for DNSH;

      c. enabling the shift towards product-as-a-service and other circular use- and result-oriented service models aiming at the reduction of the environmental footprint.

3. The application of the results of the research activity does not prevent the target activity from complying with the DNSH criteria specified for the target activity.

4. Any potential risks to the circular economy objective, arising from the research activity or the application of its results, are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the researched activity and target activity and following relevant guidelines[77].

Do no significant harm ('DNSH')

73 Annex II (Circular Economy) of the Environmental Delegated Act of the EU Taxonomy Regulation

74 The aim of the activity is solving a bottleneck or overcoming one of the barriers for achieving the required performance for substantial contribution.

75 Both, the criteria for the substantial contribution as well as the do no significant harm criteria

76 Annex II (Circular Economy) of the Environmental Delegated Act of the EU Taxonomy Regulation

77 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

(1) Climate change mitigation	The activity is not undertaken for the purposes of fossil fuel[78] extraction, transport or use. Any potential risks to climate change mitigation arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process, based on the following steps: 1. A DNSH materiality assessment for the potential climate impact of the application of the results to the target activity is carried out[79]. 2. Where no material risk of increasing GHG emissions is identified, no further steps have to be taken. 3. Where a risk of increasing GHG emissions is considered material by the DNSH materiality assessment, the following steps are taken: a. The necessary mitigation solutions are included in the research activity and declared, in accordance with applicable law regulating the research activity and the target activity and following relevant guidelines[80], b. **Where DNSH criteria for the target activity are specified***, a* GHG life cycle assessment, including the necessary mitigation measures as set out in step 3a) above is carried out in order to assess whether the DNSH criteria for CCM are still met after the application of the results of the research activity. c. **Where no DNSH criteria for the target activity are specified ("N/A"),** a GHG life cycle assessment is carried out in order to assess whether the application of the result of the research activity, including the necessary mitigation measures as set out in step 3a) above, does not lead to an increase in life-cycle GHG emissions of the target activity. d. Where the research activity is at

78 According to EEA definition 'Coal, natural gas and petroleum products (such as oil) formed from the decayed bodies of animals and plants that died millions of years ago'; https://www.eea.europa.eu/help/glossary/eea-glossary/fossil-fuel

79 e.g. as specified in 'ANNEX IV: Worked out examples of how to implement the DNSH assessment' to the Technical guidance on the application of "do no significant harm" under the Recovery and Resilience Facility Regulation; https://commission.europa.eu/document/download/cce579e3-9347-4c28-ba0f-409bf35b09b4_en?filename=c_2023_6454_f1_annex_en.PDF

80 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

	i. TRL 8 or 9, life-cycle GHG emissions are quantified in accordance with Commission Recommendation 2021/2279/EU[81] or, alternatively, in accordance with ISO 14067:2018[82] or in accordance with ISO 14064:2018[83]. ii. TRL 6 or 7, life-cycle GHG emissions are either quantified as defined under (i) or assessed in simplified form and on a best-effort basis[84].
(2) Climate change adaptation	The research activity complies with the criteria set out in Appendix A to this Annex. Any potential risks to the climate change adaptation objectives arising from the application of the results of the research activity are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the research activity and target activity and following relevant guidelines[85].

81 In accordance with the provisions for the Product Environmental Footprint (PEF) for products and product-like services or solutions, and in accordance with the provisions of the Organisational Environmental Footprint (OEF) for organisations and projects, infrastructures and systemic solutions.

82 for products and product-like services or solutions

83 for organisations and projects, infrastructures and systems

84 For those research activities at TRL 6 and 7, for which a quantification of life-cycle GHG emissions in accordance with criterion 3.d.i) is not be possible, in order to fulfil this criterion, the entity that carries out the research activity might demonstrate that GHG emissions are not increasing by performing a self-assessment by following international recognized generic Life Cycle Assessment guidance, such us given in *ILCD Handbook General guide for LCA*, or self-assessment climate change tools accepted by national or regional authorities.

Alternatively, compliance with this requirement can be proven by providing

a) a patent not older than 10 years associated with the technology, product or other solution, or
b) a permit obtained from a competent authority for operating the demonstration site associated with the innovative technology, product or other solution for the duration of the demonstration project

where information on GHG emissions is included and it can be clearly derived that GHG emissions are not increasing compared to peers.

Once a self-assessment tool for life-cycle GHG emissions of research activities and the application of their results to the target activity, developed or approved by the European Commission, will become available, this tool will be used for the assessment of GHG emissions instead of the above-mentioned options.

85 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

(3) Sustainable use and protection of water and marine resources	Any potential risks to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or to protected areas[86], or to the good environmental status of marine waters, or risks such as water stress arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the researched activity and target activity and following relevant guidelines[87].
(5) Pollution prevention and control	Any potential risks to generate an increase in the emissions of pollutants to air, water or land arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the researched activity and target activity and following relevant guidelines[88].
(6) Protection and restoration of biodiversity and ecosystems	Any potential risks to the good condition or resilience of ecosystems or to achieving or maintaining the good environmental status or favourable conservation status of habitats and species, including those of Union interest, arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures, in order not to compromise the objectives of Regulation (EU) 2024/1991)[89], are implemented and declared, in accordance with applicable law regulating the researched activity and target activity and following relevant guidelines[90].

86 as set out in Annex IV of Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (Water Framework Directive)

87 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

88 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

89 EU Nature Restoration Law (Regulation (EU) 2024/1991), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401991

90 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

Appendix	Technology Readiness Level[91] • TRL 1 – basic principles observed • TRL 2 – technology, concept formulated • TRL 3 – experimental proof of concept • TRL 4 – technology validated in lab • TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies) • TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies) • TRL 7 – system prototype demonstration in operational environment • TRL 8 – system complete and qualified • TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

iii. Rationale

Rationale	Research, development and innovation (RDI) activities are critical priorities to achieving European Green Deal objectives. The Commission Staff Working Document SWD(2021) 152 final[92] states that 'Research, Development and Innovation (RD&I) activities should be considered as enabling activity under the Taxonomy, as they allow companies to shape the future of substantially contributing and other enabling activities to meet their respective climate change mitigation thresholds'[93].

and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

91 In line with Annex G of the General Annexes of HORIZON 2020 WORK PROGRAMME 2016-2017, p.29 (version of [adoption date]: https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016-2017/annexes/h2020-wp1617-annex-ga_en.pdf). In the case of research, development and innovation activities aimed at non-technological solutions, processes, business models, products or services, the TRL concept applies with a corresponding logic.

92 https://ec.europa.eu/finance/docs/level-2-measures/Taxonomy-regulation-delegated-act-2021-2800-impact-assessment_en.pdf

93 This citation only refers to the climate objective, as it is included in the Commission SWD(2021) 152 final which accompanies the Climate Delegated Act of the EU Taxonomy. However, this statement also applies to the other environmental objectives of the Taxonomy.

	For the development of the technical screening criteria, activity 9.1 Close to market research, development and innovation of Annex I of the first Climate DA was used as a role model. **1. Description of the activity (scope)** The scope of the 'Close to Market RDI activities' is going beyond technologies and comprises solutions, processes, technologies, business models, products or services dedicated to facilitate and to accelerate the transition to a circular economy, including waste prevention, reducing consumption, re-use and recycling. It is worth mentioning that there is no need to explicitly exclude certain activities like e.g. incineration or landfilling of waste. Such exclusions would lead to an over-specification, since only those RDI activities are in scope, which are enabling target activities that are included in the Environmental DA (Annex II)[94]. In addition, criterion 4 of the criteria for a "substantial contribution" specifies that any potential risks to the circular economy objective must be assessed and addressed. A research activity that is at least being demonstrated in a relevant environment at pre-commercial stage (i.e., TRL 6 to 9 or a comparable logic for non-technological solutions, processes, business models, products or services) is advanced and specific enough to meet in a verifiable manner the pertinent criteria for substantial contribution to the environmental objective, while respecting the relevant criteria for doing no significant harm. The description of the activity is only defining the scope of eligible activities. As the demonstration of the result of technology-related research activity (or process innovation or product innovation) is part of the innovation process[95] itself, this provision does not compromise the eligibility for CapEx funding of the research activity, but is only narrowing the scope of the eligible research activities. Thus, if a research institute or a company operating one of the target activities is applying for funding, the evaluator of the research proposal is checking whether the 'demonstration of the results' is included in the research concept or not. If yes, the research activity is eligible, if no, it is not eligible and thus out of scope.

94 Environmental Delegated Act of the EU Taxonomy Regulation (Commission Delegated Regulation (EU) 2023/2486)

95 According to the 'Oslo Manual 2018 – Guidelines for collecting, reporting and using data on innovation', research is the first stage of an innovation process

2. Substantial contribution criteria

Following the JRC methodology, the substantial contribution criteria were defined on the basis of the process based approach, as this is the most appropriate one with regard to the nature of research activities.

In relation to the requirements in Art. 19 of the Taxonomy Regulation:

- **Policy coherence and environmental integrity:** The proposed criteria are aligned with EU legislation for circular economy.
- **Environmental ambition and integrity** are addressed in 'substantial contribution' criteria 2.1 – 2.3.
  The DNSH criteria are based on the standard wording used in activity 9.1. of Annex I of the Climate DA.
- **Level playing field**: The level of performance required in the criteria is completely technology neutral.

In relation to the requirements in Art. 16 of the Taxonomy Regulation:

The activity complies with the provisions of Article 16 as it follows the approach of the 'Horizontal Framework for Enabling Activities: Guidance for Platform Members – Enabling Framework' (Option 1) elaborated by the Platform 1.0, which is included in the 'Platform on Sustainable Finance's report with supplementary advice on methodology and technical screening criteria for the climate and environmental objectives of the EU Taxonomy'[96].

- **Re 1:**
  - As this research activity is an 'enabling' activity, it has a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality. Thus, e.g., research activities on the improvement of specific components that are relevant for circular economy infrastructures and solutions are covered, whereas research activities improving general/unspecific components (like e.g. screws) are not covered.
- **Re 2.1:** for target activities that are not yet aligned:
  - The goal of the RD&I activity is solving a 'bottleneck' for the target activity in order to meet the substantial contribution criteria. Taking into account long-term competitiveness is important as well, as - if the enabled activity would be less competitive after applying the researched solution – this will not happen, and investors would not be motivated to invest. However, it is likely

	that in the short-term, a new technology/solution is less competitive, but there should at least be a consideration of this aspect in the design phase of the research project, and a perspective that the enabled activity will be competitive in the long-term. o Competitiveness could also be justified, e.g., by long-term benefits for environment and society, which could outweigh lower competitiveness in the short- to medium-term. This aspect is also important for philanthropic investors, for whom the primary purpose are not monetary aspects but environmental and social benefits. Thus, when considering competitiveness, it is important to also address the benefits for environment and society provided by the researched technology/solution by mitigating negative external effects, even if the costs of negative effects are not (yet) internalised and thus have still to be shouldered by society. o If the target activity has to meet more than one criteria for substantial contribution, it is required that the research activity is aimed at enabling the target activity to achieve alignment with at least one of the respective technical criteria for substantial contribution without compromising the compliance with of the other technical screening criteria. • **Re 2.2**: Research activities that can support target activities, which are already aligned, by providing new significant advantages to the target activities. Justification: o Without the results of the research activity the substantial contribution of the target activity can be reached, but the target activity cannot be scaled while ensuring its substantial contribution. o Without the results of the research activity the substantial contribution of the target activity can be reached, but at a significantly higher cost than with the results of the research activity, where the cost difference would impair market uptake of the target activity or use. o Improving the cost-benefit ratio, effectiveness, market penetration or reliability of the target activity is a crucial prerequisite for scaling up the target activity and thus multiplying the positive environmental effect. o Among others, the following indicators could be used to demonstrate substantial contribution: ▪ Cost-related: To demonstrate lower costs, the cost reduction shall be expressed in monetary terms (EUR).

96 https://finance.ec.europa.eu/document/download/7599ea2d-975c-4b25-adca-de1d26533e99_en?filename=221128-sustainable-finance-platform-technical-working-group_en.pdf

- Risk-related: Risk is defined as the product of the potential damage and the associated likelihood of occurrence. To demonstrate 'lower risks', based on a risk assessment, the reduction in the likelihood of occurrence and/or the reduction of the extent of the potential damage of the new technology/solution compared to the status quo shall be presented. It is important that the risk assessment focusses on those specific risks (e.g. critical raw material (CRM) supply risks) the reduction of which is enabled by the research activity.

- It is important to note that in addition to the research activity, other instrumental enabling activities may be necessary to make the target activity Taxonomy aligned. In other words: While the research activity must play an instrumental role in making the target activity Taxonomy aligned, it is possible that the target activity only becomes Taxonomy aligned by the interaction of several enabling activities.
  Or, to put it the other way round: Without this research activity, the criteria of the target activity for a 'substantial contribution' to the environmental objective
  - would not be met,
  - or would only be met at significantly higher costs,
  - or would only be met with a significantly higher demand of (critical) raw materials.
- Moreover, the activity follows the approach proposed in the 'Guidance on the interpretation of the concept of enabling activities set out in Article 16 of the Taxonomy Regulation' (Option 2) of the Commission.

3. Do-no-significant-harm (DNSH) criteria

For the development of the DNSH criteria for this activity, the DNSH criteria of Activity 9.1 of the Climate DA served as a blueprint. Individual specifications were added in order to increase clarity and usability. These clarifications therefore do not add burden, but rather specify what is meant.

With the DNSH criteria, different issues shall be covered:

A. When/after applying the results of the research activity, the target activity has to comply with its own DNSH criteria.
   However, the current DNSH criteria could contain criteria which are then
   - still applicable,
   - not applicable anymore;
   - and new risks could appear which are not covered by the DNSH criteria of the target activity.

	In this case, guidance is needed how to deal with this for analysis and reporting. B. The research activity itself has to comply with its own DNSH criteria. Main issue here is the heterogeneity of potential research activities. Therefore, generic criteria have to be defined, complemented by e.g. good practices and guidance documents for research activities. **CCM**: • The main focus of the DNSH criteria for climate change mitigation is to prevent an increase in GHG emissions when the result of the research activity is applied to the target activity. The reason for this is that one single research activity is very unlikely to lead to a significant increase in GHG emissions, whereas scaling up in the market by applying the results on the target activity might bear the risk of a significant increase. • In order to increase usability and clarity, the criteria provide a step-by-step guide covering various use cases. **CCA**: In the DNSH criteria for climate change adaptation, the following aspects were taken into account: • The research activity itself has to adapt its 'own operations' (facilities/infrastructures needed for carrying out the research activity like e.g. demonstration sites, pilot installations, laboratories etc.); • The result of the research activity, when applied to the target activity, does not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities. • Thus, in the development of the concept for the research activity, current and future climate conditions are taken into account in order to ensure resilience and functioning of the solution. Where this is not possible, the limitations on functionality under certain climatic conditions are declared and transparently communicated to users.

iv. Usability, Data and Guidance

- The technical screening criteria were developed together with experts from universities and industry as well as public sector experts for research funding and evaluators of research proposals. . In addition, where appropriate, the comments submitted by stakeholders in the course of the Stakeholder Request Mechanism were taken into account.
- Data for the demonstration of compliance with the technical screening criteria can be derived from a research proposal that has been evaluated by independent evaluators or approved and subsidised by an EU funding program, from comparable research activities (e.g. scientific publications on emissions of comparable technologies), or, in the case of prototype or demonstration plants, from the permit obtained from the competent authority.
- For all criteria, the relevant guidance documents and standards are included and specified in the footnotes.
- For research activities at TRL 6-7, a simplified approach for the assessment of compliance with the climate change mitigation DNSH criteria is suggested.
- For research activities at TRL 8-9, the relevant guidance documents and standards are included in the criteria and information relevant for their application is specified in the footnotes,

v. Recommendations for future work

- For reasons of consistency, acceleration of Green Finance purposes and for the success of the Taxonomy, the Platform recommends developing the same approach as for the Close to market research activities for all 6 objectives for those target activities that are not yet included in the Annexes of the Climate DA or the Environmental DA.
- In addition, the Platform recommends that, as a next priority, basic research should also be included in the Taxonomy.
- In the review of the Climate DA the criteria for the 2 ‘Close to market RDI activities’ (9.1 of Annex I and 9.2 of Annex 2 of the Climate DA) should be amended according to the new ‘Close to market research, development and innovation activities’ defined for the other 4 environmental objectives.

3. Close to market research, development and innovation activities * PPC

i. Description of the activity

Research, applied research and experimental development of solutions, processes, technologies, business models, products or services (hereinafter referred to as ‘research activity’) that focus on at least one economic activity dedicated to environmental protection from pollution by

- preventing or, where that is not practicable, reducing pollutant emissions to air, water and soil,

- preventing or minimising any adverse impact on human health and the environment of the production, use or disposal of chemicals and
- de-polluting contaminated environment.

The ability of the research activity to contribute to at least one of the above listed purposes when applied to the target activity is being demonstrated in a relevant environment, corresponding to at least Technology Readiness Level (TRL) 6[97].

The economic activities in this category could be associated with several NACE codes, in particular M71.12 (Engineering activities and related technical consultancy), M71.2 (Technical testing and analysis) and M72.1 (Research and experimental development on natural sciences and engineering), or for research that is an integral part of those economic activities, for which technical screening criteria are specified in this Annex, the NACE codes set out in other Sections of this Annex in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an *enabling* activity in accordance with Article 14(1), point (e), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

ii. Technical screening criteria

Substantial contribution to pollution prevention and control

1. The research activity researches, develops or aims at innovating[98] technologies, products, services, business models or other solutions that are dedicated to one or more targeted economic activities (target activities) for which the technical screening criteria have been set out in this Annex[99]. The research activity has a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality.
2. The results of the research activity are expected to substantially contribute to environmental or health protection from pollution by fulfilling at least one of the following criteria:
   2.1 Where the target activity does not meet the technical screening criteria for substantial contribution specified in the applicable Section of this Annex[100], the research activity is

97 In line with Annex G of the General Annexes of HORIZON 2020 WORK PROGRAMME 2016-2017, p.29 (version of [adoption date]: https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016-2017/annexes/h2020-wp1617-annex-ga_en.pdf). In the case of research, development and innovation activities aimed at non-technological solutions, processes, business models, products or services, the TRL concept applies with a corresponding logic.

98 According to the OECD Oslo Manual (Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition | en | OECD) an innovation is a novelty that has proven its superior performance criteria: "Innovation is more than a new idea or an invention. An innovation requires implementation, either by being put into active use or by being made available for use by other parties, firms, individuals or organisations"

99 Annex III (Pollution prevention and control) of the Environmental Delegated Act of the EU Taxonomy Regulation

100 Annex III (Pollution prevention and control) of the Environmental Delegated Act of the EU Taxonomy Regulation

aimed at enabling the target activity to meet[101] or exceed at least one of the respective technical criteria for substantial contribution without compromising the compliance with the other technical screening criteria[102];

2.2 Where the target activity already meets the technical screening criteria for substantial contribution specified in the applicable Section of this Annex[103], the research activity focusses on at least one of the following without negatively affecting compliance with the technical screening criteria for substantial contribution of the target activity:

a. providing new significant advantages to the target activity, such as an increase in cost-benefit ratio, effectiveness, market penetration or reliability;

b. enhancing the level of environmental performance of the target activity beyond technical screening criteria for substantial contribution and for DNSH;

c. substituting substances of concern by other substances either with lower hazard or with a better toxicity profile;

d. developing and enabling the shift towards the use of Nature-based Solutions[104] in the target activities.

3. The application of the results of the research activity does not prevent the target activity from complying with the DNSH criteria specified for the target activity.

4. Any potential risks to the objective pollution prevention and control, arising from the research activity or the application of its results, are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the researched activity and target activity and following relevant guidelines[105].

101 The goal of the activity is solving a bottleneck or overcoming one of the barriers for achieving the required performance for substantial contribution

102 Both, the criteria for the substantial contribution as well as the do no significant harm criteria

103 Annex III (Pollution prevention and control) of the Environmental Delegated Act of the EU Taxonomy Regulation

104 The European Commission defines Nature-based Solutions as "Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions." https://research-and-innovation.ec.europa.eu/research-area/environment/nature-based-solutions_en
According to the definition by IUCN, Nature-based Solutions leverage nature and the power of healthy ecosystems to protect people, optimise infrastructure and safeguard a stable and biodiverse future. https://www.iucn.org/our-work/nature-based-solutions

105 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

Do no significant harm ('DNSH')	
(1) Climate change mitigation	The activity is not undertaken for the purposes of fossil fuel[106] extraction, transport or use. Any potential risks to climate change mitigation arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process, based on the following steps: 1. A DNSH materiality assessment for the potential climate impact of the application of the results in the target activity is carried out[107]. 2. Where no material risk of increasing GHG emissions is identified, no further steps have to be taken. 3. Where a risk of increasing GHG emissions is considered material by the DNSH materiality assessment, the following steps are taken: a. The necessary mitigation solutions are included in the research activity and declared, in accordance with applicable law regulating the research activity and the target activity and following relevant guidelines[108], b. **Where DNSH criteria for the target activity are specified**, a GHG life cycle assessment, including the necessary mitigation measures as set out in step 3a) above is carried out in order to assess whether the DNSH criteria for CCM are still met after the application of the results of the research activity. c. **Where no DNSH criteria for the target activity are specified ("N/A"),** a GHG life cycle assessment is carried out in order to assess whether the application of the result of the research activity, including the necessary mitigation measures as set out in step 3a) above, does not lead to an increase in life-cycle GHG emissions of the target activity.

106 According to EEA definition 'Coal, natural gas and petroleum products (such as oil) formed from the decayed bodies of animals and plants that died millions of years ago'; https://www.eea.europa.eu/help/glossary/eea-glossary/fossil-fuel

107 e.g. as specified in 'ANNEX IV: Worked out examples of how to implement the DNSH assessment' to the Technical guidance on the application of "do no significant harm" under the Recovery and Resilience Facility Regulation; https://commission.europa.eu/document/download/cce579e3-9347-4c28-ba0f-409bf35b09b4_en?filename=c_2023_6454_f1_annex_en.PDF

108 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

	d. Where the research activity is at i. TRL 8 or 9, life-cycle GHG emissions are quantified in accordance with Commission Recommendation 2021/2279/EU[109] or, alternatively, in accordance with ISO 14067:2018[110] or in accordance with ISO 14064:2018[111]. ii. TRL 6 or 7, life-cycle GHG emissions are either quantified as defined under (i) or assessed in simplified form and on a best-effort basis[112].
(2) Climate change adaptation	The research activity complies with the criteria set out in Appendix A to this Annex. Any potential risks to the climate change adaptation objectives arising from the application of the results of the research activity are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the research activity and target activity and following relevant guidelines[113].

109 In accordance with the provisions for the Product Environmental Footprint (PEF) for products and product-like services or solutions, and in accordance with the provisions of the Organisational Environmental Footprint (OEF) for organisations and projects, infrastructures and systemic solutions.

110 for products and product-like services or solutions

111 for organisations and projects, infrastructures and systems

112 For those research activities at TRL 6 and 7, for which a quantification of life-cycle GHG emissions in accordance with criterion 3.d.i) is not be possible, in order to fulfil this criterion, the entity that carries out the research activity might demonstrate that GHG emissions are not increasing by performing a self-assessment by following international recognized generic Life Cycle Assessment guidance, such us given in ILCD Handbook General guide for LCA, or self-assessment climate change tools accepted by national or regional authorities.

Alternatively, compliance with this requirement can be proven by providing

a) a patent not older than 10 years associated with the technology, product or other solution, or
b) a permit obtained from a competent authority for operating the demonstration site associated with the innovative technology, product or other solution for the duration of the demonstration pr

where information on GHG emissions is included and it can be clearly derived that GHG emissions are not increasing compared to peers.

Once a self-assessment tool for life-cycle GHG emissions of research activities and the application of their results to the target activity, developed or approved by the European Commission, will become available, this tool will be used for the assessment of GHG emissions instead of the above-mentioned options.

113 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

(3) Sustainable use and protection of water and marine resources	Any potential risks to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or to protected areas[114], or to the good environmental status of marine waters, or risks such as water stress arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the researched activity and target activity and following relevant guidelines[115].
(4) Transition to a circular economy	Any potential risks to the circular economy objectives arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the researched activity and target activity and following relevant guidelines[116], and by considering the types of potential significant harm as set out in Article 17(1), point. (d), of Regulation (EU) 2020/852.
(6) Protection and restoration of biodiversity and ecosystems	Any potential risks to the good condition or resilience of ecosystems or to achieving or maintaining the good environmental status or favourable conservation status of habitats and species, including those of Union interest, arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures, in order not to compromise the objectives of Regulation (EU) 2024/1991)[117], are implemented and declared, in accordance with applicable law regulating the researched activity and target activity and following relevant guidelines[118].

114 as set out in Annex IV of Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (Water Framework Directive)

115 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

116 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
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117 EU Nature Restoration Law (Regulation (EU) 2024/1991), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401991

118 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

Appendix	**Technology Readiness Level[119]** • TRL 1 – basic principles observed • TRL 2 – technology, concept formulated • TRL 3 – experimental proof of concept • TRL 4 – technology validated in lab • TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies) • TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies) • TRL 7 – system prototype demonstration in operational environment • TRL 8 – system complete and qualified • TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

iii. Rationale

Rationale	Research, development and innovation (RDI) activities are critical priorities to achieving European Green Deal objectives. The Commission Staff Working Document SWD(2021) 152 final[120] states that 'Research, Development and Innovation (RD&I) activities should be considered as enabling activity under the Taxonomy, as they allow companies to shape the future of substantially

and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

119 In line with Annex G of the General Annexes of HORIZON 2020 WORK PROGRAMME 2016-2017, p.29 (version of [adoption date]: https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016-2017/annexes/h2020-wp1617-annex-ga_en.pdf). In the case of research, development and innovation activities aimed at non-technological solutions, processes, business models, products or services, the TRL concept applies with a corresponding logic.

120 https://ec.europa.eu/finance/docs/level-2-measures/Taxonomy-regulation-delegated-act-2021-2800-impact-assessment_en.pdf

	contributing and other enabling activities to meet their respective climate change mitigation thresholds'[121]. For the development of the technical screening criteria, activity 9.1 Close to market research, development and innovation of Annex I of the first Climate DA was used as a role model. **1. Description of the activity (scope)** The scope of the 'Close to Market RDI activities' is going beyond technologies and comprises solutions, processes, technologies, business models, products or services dedicated to substantially contributing to pollution prevention and control. A research activity that is at least being demonstrated in a relevant environment at pre-commercial stage (i.e., TRL 6 to 9 or a comparable logic for non-technological solutions, processes, business models, products or services) is advanced and specific enough to meet in a verifiable manner the pertinent criteria for substantial contribution to the environmental objective, while respecting the relevant criteria for doing no significant harm. The description of the activity is only defining the scope of eligible activities. As the demonstration of the result of the technology-related research activity (or process innovation or product innovation) is part of the innovation process[122] itself, this provision does not compromise the eligibility for CapEx funding of the research activity but is only narrowing the scope of the eligible research activities. Thus, if a research institute or a company operating one of the target activities is applying for funding, the evaluator of the research proposal is checking whether the 'demonstration of the results' is included in the research concept or not. If yes, the research activity is eligible, if no, it is not eligible and thus out of scope. **2. Substantial contribution criteria**

121 This citation only refers to the climate objective, as it is included in the Commission SWD(2021) 152 final which accompanies the Climate Delegated Act of the EU Taxonomy. However, this statement also applies to the other environmental objectives of the Taxonomy.

122 According to the 'Oslo Manual 2018 – Guidelines for collecting, reporting and using data on innovation', research is the first stage of an innovation process

Following the JRC methodology, the substantial contribution criteria were defined on the basis of the process based approach, as this is the most appropriate one with regard to the nature of research activities.

In relation to the requirements in Art. 19 of the Taxonomy Regulation:

- **Policy coherence and environmental integrity:** The proposed criteria are aligned with EU legislation for pollution prevention and control.
- **Environmental ambition and integrity** are addressed in 'substantial contribution' criteria 2.1 – 2.3.
  The DNSH criteria are based on the standard wording used in activity 9.1. of Annex I of the Climate DA.
- **Level playing field**: The level of performance required in the criteria is completely technology neutral.

In relation to the requirements in Art. 16 of the Taxonomy Regulation:

The activity complies with the provisions of Article 16 as it follows the approach of the 'Horizontal Framework for Enabling Activities: Guidance for Platform Members – Enabling Framework' (Option 1) elaborated by the Platform 1.0, which is included in the 'Platform on Sustainable Finance's report with supplementary advice on methodology and technical screening criteria for the climate and environmental objectives of the EU Taxonomy'[123].

- **Re 1:**
  - As this research activity is an 'enabling' activity, it has a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality. Thus, research activities on the improvement of specific components that are relevant for the remediation of contaminated sites are covered, whereas research activities improving general/unspecific components (like e.g. screws) are not covered.

- **Re 2.1:** for target activities that are not yet aligned:
  - The goal of the RD&I activity is solving a 'bottleneck' for the target activity in order to meet the substantial contribution criteria. Taking into account long-term competitiveness is important as well, as - if the enabled activity would be less competitive after applying the researched solution – this will not happen, and investors would not be motivated to invest. However, it is likely that in the short-term, a new technology/solution is less competitive, but

	there should at least be a consideration of this aspect in the design phase of the research project, and a perspective that the enabled activity will be competitive in the long-term. o Competitiveness could also be justified, e.g., by long-term benefits for environment and society, which could outweigh lower competitiveness in the short- to medium-term. This aspect is also important for philanthropic investors, for whom the primary purpose are not monetary aspects but environmental and social benefits. Thus, when considering competitiveness, it is important to also address the benefits for environment and society provided by the researched technology/solution by mitigating negative external effects, even if the costs of negative effects are not (yet) internalised and thus have still to be shouldered by society. o If the target activity has to meet more than one criteria for substantial contribution, it is required that the research activity is aimed at enabling the target activity to achieve alignment with at least one of the respective technical criteria for substantial contribution without compromising the compliance with of the other technical screening criteria. • **Re 2.2**: Research activities that can support target activities which are already aligned, by providing new significant advantages to the target activities. Justification: o Without the results of the research activity the substantial contribution of the target activity can be reached, but the target activity cannot be scaled while ensuring its substantial contribution, o Without the results of the research activity the substantial contribution of the target activity can be reached, but at a significantly higher cost than with the results of the research activity, where the cost difference would impair market uptake of the target activity or use. o Improving the cost-benefit ratio, effectiveness, market penetration or reliability of the target activity is a crucial prerequisite for scaling up the target activity and thus multiplying the positive environmental effect. o Among others, the following indicators could be used to demonstrate substantial contribution indicators: ▪ Cost-related: To demonstrate lower costs, the cost reduction shall be expressed in monetary terms (EUR).

123 https://finance.ec.europa.eu/document/download/7599ea2d-975c-4b25-adca-de1d26533e99_en?filename=221128-sustainable-finance-platform-technical-working-group_en.pdf

- Risk-related: Risk is defined as the product of the potential damage and the associated likelihood of occurrence. To demonstrate 'lower risks', based on a risk assessment, the reduction in the likelihood of occurrence and/or the reduction of the extent of the potential damage of the new technology/solution compared to the status quo shall be presented. It is important that the risk assessment focusses on those specific risks (e.g. critical raw material (CRM) supply risks) the reduction of which is enabled by the research activity.

- It is important to note that in addition to the research activity, other instrumental enabling activities may be necessary to make the target activity Taxonomy aligned. In other words: While the research activity must play an instrumental role in making the target activity Taxonomy aligned, it is possible that the target activity only becomes Taxonomy aligned by the interaction of several enabling activities.
  Or, to put it the other way round: Without this research activity, the criteria of the target activity for a 'substantial contribution' to the environmental objective
  - would not be met,
  - or would only be met at significantly higher costs,
  - or would only be met with a significantly higher demand of (critical) raw materials.

- Moreover, the activity follows the approach proposed in the 'Guidance on the interpretation of the concept of enabling activities set out in Article 16 of the Taxonomy Regulation' (Option 2) of the Commission.

3. Do-no-significant-harm (DNSH) criteria

For the development of the DNSH criteria for this activity, the DNSH criteria of Activity 9.1 of the Climate DA served as a blueprint. Individual specifications were added in order to increase clarity and usability. These clarifications therefore do not add burden, but rather specify what is meant.

With the DNSH criteria, different issues shall be covered:

	A. When/after applying the results of the research activity, the target activity has to comply with its own DNSH criteria. However, the current DNSH criteria could contain criteria which are then ○ still applicable, ○ not applicable anymore; ○ and new risks could appear which are not covered by the DNSH criteria of the target activity. In this case, guidance is needed how to deal with this for analysis and reporting. B. The research activity itself has to comply with its own DNSH criteria. Main issue here is the heterogeneity of potential research activities. Therefore, generic criteria have to be defined, complemented by e.g. good practices and guidance documents for research activities. **CCM**: • The main focus of the DNSH criteria for climate change mitigation is to prevent an increase in GHG emissions when the result of the research activity is applied to the target activity. The reason for this is that one single research activity is very unlikely to lead to a significant increase in GHG emissions, whereas scaling up in the market by applying the results on the target activity might bear the risk of a significant increase. • In order to increase usability and clarity, the criteria provide a step-by-step guide covering various use cases. **CCA**: In the DNSH criteria for climate change adaptation, the following aspects were taken into account: • The research activity itself has to adapt its 'own operations' (facilities/infrastructures needed for carrying out the research activity like e.g. demonstration sites, pilot installations, laboratories etc.); • The result of the research activity, when applied to the target activity, does not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities. • Thus, in the development of the concept for the research activity, current and future climate conditions are taken into account in order to ensure resilience and functioning of the solution. Where this is not possible, the limitations on functionality under certain climatic conditions are declared and transparently communicated to users.

iv. Usability, Data and Guidance

- The technical screening criteria were developed together with experts from universities and industry as well as public sector experts for research funding and evaluators of research proposals. In addition, where appropriate, the comments submitted in the course of the Stakeholder Request Mechanism were taken into account.
- Data for the demonstration of compliance with the technical screening criteria can be derived from a research proposal that has been evaluated by independent evaluators or approved and subsidised by an EU funding program, from comparable research activities (e.g. scientific publications on emissions of comparable technologies), or, in the case of prototype or demonstration plants, from the permit obtained from the competent authority.
- For all criteria, the relevant guidance documents and standards are included and specified in the footnotes.
- For research activities at TRL 6-7, a simplified approach for the assessment of compliance with the climate change mitigation DNSH criteria is suggested.
- For research activities at TRL 8-9, the relevant guidance documents and standards are included in the criteria and information relevant for their application is specified in the footnotes,

v. Recommendations for future work

- For reasons of consistency, acceleration of Green Finance purposes and for the success of the Taxonomy, the Platform recommends developing the same approach as for the Close to market research activities for all 6 objectives for those target activities that are not yet included in the Annexes of the Climate DA or the Environmental DA.
- In addition, the Platform recommends that, as a next priority, basic research should also be included in the Taxonomy.
- In the review of the Climate DA the criteria for the 2 ‘Close to market RDI activities’ (9.1 of Annex I and 9.2 of Annex 2 of the Climate DA) should be amended according to the new ‘Close to market research, development and innovation activities’ defined for the other 4 environmental objectives.

4. Close to market research, development and innovation activities * WATER

i. Description of the activity

Research, applied research and experimental development of solutions, processes, technologies, business models, products or services (hereinafter referred to as ‘research activity’) that focus on at least one economic activity dedicated to:

- achieve the good status (good chemical and ecological status or potential for surface water and good chemical and quantitative status for groundwater) of bodies of water,

- prevent the deterioration of any status/potential of bodies of water that already have good status/potential,
- achieve the good environmental status of marine waters,
- prevent the deterioration of marine waters that are already in good environmental status,
- facilitate or enable the sustainable use and protection of water and marine resources or
- enhance water resilience of the water services sector or of a key water user sector.

The ability of the research activity to contribute to at least one of the above listed purposes when applied to the target activity is being demonstrated in a relevant environment, corresponding to at least Technology Readiness Level (TRL) 6[124].

The economic activities in this category could be associated with several NACE codes, in particular M71.12 (Engineering activities and related technical consultancy), M71.2 (Technical testing and analysis) and M72.1 (Research and experimental development on natural sciences and engineering), or for research that is an integral part of those economic activities for which technical screening criteria are specified in this Annex, the NACE codes set out in other Sections of this Annex in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an *enabling* activity in accordance with Article 12(1), point (e), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

ii. Technical screening criteria

Substantial contribution to the sustainable use and protection of water and marine resources

1. The research activity researches, develops or aims at innovating[125] technologies, products, services, business models or other solutions that are dedicated to one or more targeted economic activities (target activities) for which the technical screening criteria have been set out in this Annex[126]. The research activity has a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality.

124 In line with Annex G of the General Annexes of HORIZON 2020 WORK PROGRAMME 2016-2017, p.29 (version of [adoption date]: https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016-2017/annexes/h2020-wp1617-annex-ga_en.pdf). In the case of research, development and innovation activities aimed at non-technological solutions, processes, business models, products or services, the TRL concept applies with a corresponding logic.

125 According to the OECD Oslo Manual (Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition | en | OECD) an innovation is a novelty that has proven its superior performance criteria: "Innovation is more than a new idea or an invention. An innovation requires implementation, either by being put into active use or by being made available for use by other parties, firms, individuals or organisations"

126 Annex I (Water) of the Environmental Delegated Act of the EU Taxonomy Regulation

2. The results of the research activity are expected to substantially contribute to the sustainable use or governance of water and marine resources by fulfilling at least one of the following criteria:

   2.1 Where the target activity does not meet the technical screening criteria for substantial contribution specified in the applicable Section of this Annex[127], the research activity is aimed at enabling the target activity to meet[128] or exceed at least one of the respective technical criteria for substantial contribution without compromising the compliance with the other technical screening criteria[129];

   2.2 Where the target activity already meets the technical screening criteria for substantial contribution specified in the applicable Section of this Annex[130], the research activity focusses on at least one of the following without negatively affecting compliance with the technical screening criteria for substantial contribution of the target activity:

      a. providing new significant advantages to the target activity, such as an increase in cost-benefit ratio, effectiveness, market penetration or reliability;

      b. enhancing the level of environmental performance of the target activity beyond technical screening criteria for substantial contribution and for DNSH;

      c. developing and enabling the shift towards the use of Nature-based Solutions[131] in the target activity.

3. The application of the results of the research activity does not prevent the target activity from complying with the DNSH criteria specified for the target activity.

4. Any potential risks to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or to protected areas[132], or to the good environmental status of marine waters, or risks such as water stress, arising from the research activity or the application of its results, are evaluated, as early as possible in the research or

127 Annex I (Water) of the Environmental Delegated Act of the EU Taxonomy Regulation

128 The goal of the activity is solving a bottleneck or overcoming one of the barriers for achieving the required performance for substantial contribution

129 Both, the criteria for the substantial contribution as well as the do no significant harm criteria

130 Annex I (Water) of the Environmental Delegated Act of the EU Taxonomy Regulation

131 The European Commission defines Nature-based Solutions as "Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions." https://research-and-innovation.ec.europa.eu/research-area/environment/nature-based-solutions_en
According to the definition by IUCN, Nature-based Solutions leverage nature and the power of healthy ecosystems to protect people, optimise infrastructure and safeguard a stable and biodiverse future. https://www.iucn.org/our-work/nature-based-solutions

132 as set out in Annex IV of Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (Water Framework Directive)

	development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the research activity and the target activity and following relevant guidelines[133] in order to achieve or maintain a good status of water bodies or a good ecological potential as defined in Article 2, points (22) and (23), of Regulation (EU) 2020/852, in accordance with Directive 2000/60/EC, and in order to achieve or maintain good environmental status of marine waters as defined in point 5 of Article 3 of Directive 2008/56/EC and taking into account Commission Decision (EU) 2017/848[134].
Do no significant harm ('DNSH')	
(1) Climate change mitigation	The activity is not undertaken for the purposes of fossil fuel[135] extraction, transport or use. Any potential risks to climate change mitigation arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process, based on the following steps: 1. A DNSH materiality assessment for the potential climate impact of the application of the results to the target activity is carried out[136]. 2. Where no material risk of increasing GHG emissions is identified, no further steps have to be taken. 3. Where a risk of increasing GHG emissions is considered material by the DNSH materiality assessment, the following steps are taken: a. The necessary mitigation solutions are included in the research activity and declared, in accordance with applicable law regulating the research activity and the target activity and following relevant guidelines[137],

133 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

134 Commission Decision (EU) 2017/848 of 17 May 2017 laying down criteria and methodological standards on good environmental status of marine waters and specifications and standardised methods for monitoring and assessment, and repealing Decision 2010/477/EU. https://mcc.jrc.ec.europa.eu/documents/ComDec/Com_dec_GES_2017_848_EU.pdf

135 According to EEA definition 'Coal, natural gas and petroleum products (such as oil) formed from the decayed bodies of animals and plants that died millions of years ago'; https://www.eea.europa.eu/help/glossary/eea-glossary/fossil-fuel

136 e.g. as specified in 'ANNEX IV: Worked out examples of how to implement the DNSH assessment' to the Technical guidance on the application of "do no significant harm" under the Recovery and Resilience Facility Regulation; https://commission.europa.eu/document/download/cce579e3-9347-4c28-ba0f-409bf35b09b4_en?filename=c_2023_6454_f1_annex_en.PDF

137 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

	b. **Where DNSH criteria for the target activity are specified***,* a GHG life cycle assessment, including the necessary mitigation measures as set out in step 3a) above is carried out in order to assess whether the DNSH criteria for CCM are still met after the application of the results of the research activity. c. **Where no DNSH criteria for the target activity are specified ("N/A"),** a GHG life cycle assessment is carried out in order to assess whether the application of the result of the research activity, including the necessary mitigation measures as set out in step 3a) above, does not lead to an increase in life-cycle GHG emissions of the target activity. d. Where the research activity is at i. TRL 8 or 9, life-cycle GHG emissions are quantified in accordance with Commission Recommendation 2021/2279/EU[138] or, alternatively, in accordance with ISO 14067:2018[139] or in accordance with ISO 14064:2018[140]. ii. TRL 6 or 7, life-cycle GHG emissions are either quantified as defined under (i) or assessed in simplified form and on a best-effort basis[141].

and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

138 In accordance with the provisions for the Product Environmental Footprint (PEF) for products and product-like services or solutions, and in accordance with the provisions of the Organisational Environmental Footprint (OEF) for organisations and projects, infrastructures and systemic solutions.

139 for products and product-like services or solutions

140 for organisations and projects, infrastructures and systems

141 For those research activities at TRL 6 and 7, for which a quantification of life-cycle GHG emissions in accordance with criterion 3.d.i) is not be possible, in order to fulfil this criterion, the entity that carries out the research activity might demonstrate that GHG emissions are not increasing by performing a self-assessment by following international recognized generic Life Cycle Assessment guidance, such us given in ILCD Handbook General guide for LCA, or self-assessment climate change tools accepted by national or regional authorities.

Alternatively, compliance with this requirement can be proven by providing

a) a patent not older than 10 years associated with the technology, product or other solution, or
b) a permit obtained from a competent authority for operating the demonstration site associated with the innovative technology, product or other solution for the duration of the demonstration project

where information on GHG emissions is included and it can be clearly derived that GHG emissions are not increasing compared to peers.

Once a self-assessment tool for life-cycle GHG emissions of research activities and the application of their results to the target activity, developed or approved by the European Commission, will become available, this tool will be used for the assessment of GHG emissions instead of the above-mentioned options.

(2) Climate change adaptation	The research activity complies with the criteria set out in Appendix A to this Annex. Any potential risks to the climate change adaptation objectives arising from the application of the results of the research activity are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the research activity and target activity and following relevant guidelines[25].
(4) Transition to a circular economy	Any potential risks to the circular economy objectives arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the research activity and target activity and following relevant guidelines[142], and by considering the types of potential significant harm as set out in Article 17(1), point. (d), of Regulation (EU) 2020/852.
(5) Pollution prevention and control	Any potential risks to generate an increase in the emissions of pollutants to air, water or land arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures are implemented and declared, in accordance with applicable law regulating the research activity and target activity and following relevant guidelines[143].
(6) Protection and restoration of biodiversity and ecosystems	Any potential risks to the good condition or resilience of ecosystems or to achieving or maintaining the good environmental status or favourable conservation status of habitats and species, including those of Union interest, arising from the research activity or the application of its results are evaluated, as early as possible in the research or development process. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures, in order not to compromise the objectives of Regulation (EU) 2024/1991)[144], are implemented and declared, in accordance with applicable

142 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
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143 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
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144 EU Nature Restoration Law (Regulation (EU) 2024/1991), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401991

	law regulating the research activity and target activity and following relevant guidelines[145] .

Appendix	**Technology Readiness Level[146]** • TRL 1 – basic principles observed • TRL 2 – technology, concept formulated • TRL 3 – experimental proof of concept • TRL 4 – technology validated in lab • TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies) • TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies) • TRL 7 – system prototype demonstration in operational environment • TRL 8 – system complete and qualified • TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

iii. Rationale

Rationale	Research, development and innovation (RDI) activities are critical priorities to achieving European Green Deal objectives.

145 such as the Horizon Europe Programme Guide: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf
and the Guidelines on 'Identifying serious and complex ethics issues in EU-funded research' https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

146 In line with Annex G of the General Annexes of HORIZON 2020 WORK PROGRAMME 2016-2017, p.29 (version of [adoption date]: https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016-2017/annexes/h2020-wp1617-annex-ga_en.pdf). In the case of research, development and innovation activities aimed at non-technological solutions, processes, business models, products or services, the TRL concept applies with a corresponding logic.

	The Commission Staff Working Document SWD(2021) 152 final[147] states that 'Research, Development and Innovation (RD&I) activities should be considered as *enabling* activity under the Taxonomy, as they allow companies to shape the future of substantially contributing and other enabling activities to meet their respective climate change mitigation thresholds'[148]. For the development of the technical screening criteria, activity 9.1 Close to market research, development and innovation of Annex I of the first Climate DA was used as a role model. **1. Description of the activity (scope)** The scope of the 'Close to Market RDI activities' is going beyond technologies and comprises solutions, processes, technologies, business models, products or services dedicated to substantially contributing to the sustainable use and protection of water and marine resources. A research activity that is at least being demonstrated in a relevant environment at pre-commercial stage (i.e., TRL 6 to 9 or a comparable logic for non-technological solutions, processes, business models, products or services) is advanced and specific enough to meet in a verifiable manner the pertinent criteria for substantial contribution to the environmental objective, while respecting the relevant criteria for doing no significant harm. The description of the activity is only defining the scope of eligible activities. As the demonstration of the result of technology-related research activity (or process innovation or product innovation) is part of the innovation process[149] itself, this provision does not compromise the eligibility for CapEx funding of the research activity, but is only narrowing the scope of the eligible research activities to pre-commercial stage. Thus, if a research institute or a company operating one of the target activities is applying for funding (e.g. under Horizon Europe or other RDI funding instruments), the evaluator of the research proposal is checking whether the 'demonstration of the results' is included in the research concept or not. If yes, the research activity is eligible, if no, it is not eligible and thus out of scope.

147 https://ec.europa.eu/finance/docs/level-2-measures/Taxonomy-regulation-delegated-act-2021-2800-impact-assessment_en.pdf

148 This citation only refers to the climate objective, as it is included in the Commission SWD(2021) 152 final which accompanies the Climate Delegated Act of the EU Taxonomy. However, this statement also applies to the other environmental objectives of the Taxonomy

149 According to the 'Oslo Manual 2018 – Guidelines for collecting, reporting and using data on innovation', research is the first stage of an innovation process

2. Substantial contribution criteria

Following the JRC methodology, the substantial contribution criteria were defined on the basis of the process based approach, as this is the most appropriate one with regard to the nature of research activities.

In relation to the requirements in Art. 19 of the Taxonomy Regulation:

- **Policy coherence and environmental integrity:** The proposed criteria are aligned with EU legislation for water and marine resources, including the policy goals and specific targets and standards of the Water Framework Directive (2000/60/EC), the Marine Strategy Framework Directive (2008/56/EC), the Commission Decision (EU) 2017/848, the Bathing Water Directive 2006/7/EC[150], the Urban Waste Water Treatment Directive 91/271/EEC and the Drinking Water Directive (EU) 2020/2184.
- **Environmental ambition and integrity** are addressed in 'substantial contribution' criteria 2.1 – 2.3.
  The DNSH criteria are based on the standard wording used in activity 9.1. of Annex I of the Climate DA.
- **Level playing field**: The level of performance required in the criteria is completely technology neutral.

In relation to the requirements in Art. 16 of the Taxonomy Regulation:

The activity complies with the provisions of Article 16 as it follows the approach of the 'Horizontal Framework for Enabling Activities: Guidance for Platform Members – Enabling Framework' (Option 1) elaborated by the Platform 1.0, which is included in the 'Platform on Sustainable Finance's report with supplementary advice on methodology and technical screening criteria for the climate and environmental objectives of the EU Taxonomy'[151].

- **Re 1:**
  - As this research activity is an 'enabling' activity, it has a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality. Thus, research activities on the improvement of specific components that are relevant for sustainable water supply infrastructures are covered, whereas research activities improving general/unspecific components (like e.g. screws) are not covered.
- **Re 2.1:** for target activities that are not yet aligned:
  - The goal of the RD&I activity is solving a 'bottleneck' for the target activity in order to meet the substantial contribution criteria. Taking into account

	long-term competitiveness is important as well, as - if the enabled activity would be less competitive after applying the researched solution – this will not happen, and investors would not be motivated to invest. However, it is likely that in the short-term, a new technology/solution is less competitive, but there should at least be a consideration of this aspect in the design phase of the research project, and a perspective that the enabled activity will be competitive in the long-term. ○ Competitiveness could also be justified, e.g., by long-term benefits for environment and society, which could outweigh lower competitiveness in the short- to medium-term. This aspect is also important for philanthropic investors, for whom the primary purpose are not monetary aspects but environmental and social benefits. Thus, when considering competitiveness, it is important to also address the benefits for environment and society provided by the researched technology/solution by mitigating negative external effects, even if the costs of negative effects are not (yet) internalised and thus have still to be shouldered by society. ○ If the target activity has to meet more than one criteria for substantial contribution, it is required that the research activity is aimed at enabling the target activity to achieve alignment with at least one of the respective technical criteria for substantial contribution without compromising the compliance with of the other technical screening criteria. • **Re 2.2**: Research activities that can support target activities, which are already aligned, by providing new significant advantages to the target activities. Justification: ○ Without the results of the research activity the substantial contribution of the target activity can be reached, but the target activity cannot be scaled while ensuring its substantial contribution. ○ Without the results of the research activity the substantial contribution of the target activity can be reached, but at a significantly higher cost than with the results of the research activity, where the cost difference would impair market uptake of the target activity or use. ○ Improving the cost-benefit ratio, effectiveness, market penetration or reliability of the target activity is a crucial prerequisite for scaling up the target activity and thus multiplying the positive environmental effect. ○ Among others, the following indicators could be used to demonstrate substantial contribution:

150 https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:064:0037:0051:EN:PDF

151 https://finance.ec.europa.eu/document/download/7599ea2d-975c-4b25-adca-de1d26533e99_en?filename=221128-sustainable-finance-platform-technical-working-group_en.pdf

- Cost-related: To demonstrate lower costs, the cost reduction shall be expressed in monetary terms (EUR).
- Risk-related: Risk is defined as the product of the potential damage and the associated likelihood of occurrence. To demonstrate 'lower risks', based on a risk assessment, the reduction in the likelihood of occurrence and/or the reduction of the extent of the potential damage of the new technology/solution compared to the status quo shall be presented. It is important that the risk assessment focusses on those specific risks (e.g. critical raw material (CRM) supply risks) the reduction of which is enabled by the research activity.
- It is important to note that in addition to the research activity, other instrumental enabling activities may be necessary to make the target activity Taxonomy aligned. In other words: While the research activity must play an instrumental role in making the target activity Taxonomy aligned, it is possible that the target activity only becomes Taxonomy aligned by the interaction of several enabling activities.
  Or, to put it the other way round: Without this research activity, the criteria of the target activity for a 'substantial contribution' to the water objective would not be met,
- or would only be met at significantly higher costs,
- or would only be met with a significantly higher demand of (critical) raw materials.

- Moreover, the activity follows the approach proposed in the 'Guidance on the interpretation of the concept of enabling activities set out in Article 16 of the Taxonomy Regulation' (Option 2) of the Commission.

3. Do-no-significant-harm (DNSH) criteria

For the development of the DNSH criteria for this activity, the DNSH criteria of Activity 9.1 of the Climate DA served as a blueprint. Individual specifications were added in order to increase clarity and usability. These clarifications therefore do not add burden, but rather specify what is meant.

With the DNSH criteria, different issues shall be covered:

A. When/after applying the results of the research activity, the target activity has to comply with its own DNSH criteria.
   However, the current DNSH criteria could contain criteria which are then
   - still applicable,
   - not applicable anymore;

	○ and new risks could appear which are not covered by the DNSH criteria of the target activity. *In this case, guidance is needed how to deal with this for analysis and reporting.* B. The research activity itself has to comply with its own DNSH criteria. Main issue here is the heterogeneity of potential research activities. Therefore, generic criteria have to be defined, complemented by e.g. good practices and guidance documents for research activities. **CCM**: • The main focus of the DNSH criteria for climate change mitigation is to prevent an increase in GHG emissions when the result of the research activity is applied to the target activity. The reason for this is that one single research activity is very unlikely to lead to a significant increase in GHG emissions, whereas scaling up in the market by applying the results on the target activity might bear the risk of a significant increase. • In order to increase usability and clarity, the criteria provide a step-by-step guide covering various use cases. **CCA**: In the DNSH criteria for climate change adaptation, the following aspects were taken into account: • The research activity itself has to adapt its 'own operations' (facilities/infrastructures needed for carrying out the research activity like e.g. demonstration sites, pilot installations, laboratories etc.); • The result of the research activity, when applied to the target activity, does not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities. • Thus, in the development of the concept for the research activity, current and future climate conditions are taken into account in order to ensure resilience and functioning of the solution. Where this is not possible, the limitations on functionality under certain climatic conditions are declared and transparently communicated to users.

iv. Usability, Data and Guidance

- The technical screening criteria were developed together with experts from universities and industry as well as public sector experts for research funding and evaluators of research proposals.

In addition, where appropriate, the comments submitted in the course of the Stakeholder Request Mechanism were taken into account.

- Data for the demonstration of compliance with the technical screening criteria can be derived from a research proposal that has been evaluated by independent evaluators or approved and subsidised by an EU funding program, from comparable research activities (e.g. scientific publications on emissions of comparable technologies), or, in the case of prototype or demonstration plants, from the permit obtained from the competent authority..
- For all criteria, the relevant guidance documents and standards are included and specified in the footnotes.
- For research activities at TRL 6-7, a simplified approach for the assessment of compliance with the climate change mitigation DNSH criteria is suggested.
- For research activities at TRL 8-9, the relevant guidance documents and standards are included in the criteria and information relevant for their application is specified in the footnotes,

v. Recommendations for future work

- For reasons of consistency, acceleration of Green Finance purposes and for the success of the Taxonomy the Platform recommends developing the same approach as for the Close to market research activities for all 6 objectives for those target activities that are not yet included in the Annexes of the Climate DA or the Environmental DA.
- In addition, the Platform recommends that, as a next priority, basic research should also be included in the Taxonomy.
- In the review of the Climate DA the criteria for the 2 ‘Close to market RDI activities’ (9.1 of Annex I and 9.2 of Annex 2 of the Climate DA) should be amended according to the new ‘Close to market research, development and innovation activities’ defined for the other 4 environmental objectives.

5. Digital solutions and services for the protection and restoration of biodiversity and ecosystems

i. Description of activity

The activity develops, installs, deploys, maintains, repairs or provides digital solutions and services, including technical consulting for design or monitoring, software, data, information technology (IT) or operational technology (OT)[1] that are aimed at collecting, transmitting, storing and analysing data and at its modelling and use where those digital solutions and services are predominantly aimed at enabling the sustainability activities set out in EU Taxonomy EU 2023/2486, Annex IV.

The activity includes digital solutions and services exploiting space-based and ground-based data and services, or a combination of both as well as digitally controlled operational technologies. The manufacturing of any operational technology is excluded

The manufacturing or operation of equipment used to provide digital solutions and services, such as satellites, airplanes, helicopters, drones, vessels, data centres, or similar equipment are explicitly excluded from this activity.

Digital solutions and services may include the use, operation and control of digital solutions and services exclusively built and used for the purpose of retrieving and providing sustainability data and services, such as connectable products, sensors, remote sensing systems, environmental DNA, camera images, audio recordings and related ground data from terrestrial, freshwater, and marine ecosystems, decentralized technologies (i.e. distributed ledger technologies), Internet of Things (IoT), 5G and Artificial Intelligence.

Digital solutions and services include analytics, related modelling and software for the transmission, the display of data and system management and other digital solutions and data related services. Software development or programming activities include the provision of software for analysing, forecasting, projection, and monitoring of environment, and progress towards environmental objectives, as well as early warning systems for environmental risks and solutions for risk management.

The activities in this category could be associated with several NACE codes, in particular J61, J62, J63 and M 71 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an *enabling* activity in accordance with Article 13(1), point (l), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

ii. Technical screening criteria

Substantial contribution for the protection and restoration of biodiversity and ecosystems
1. The digital solutions and services by any type of operator exclusively focus on the target activity's environmental sustainability performance as defined in their substantial contribution criteria and/or its related output, rather than on those components or aspects that are required for its general functionality[152]. Target activities are set out by EU 2023/2486, Annex IV.
2. Any potential risks to the good condition or resilience of ecosystems or to achieving or maintaining the good environmental status or favourable conservation status of habitats and species, including those of Union interest, arising from the used, operated and controlled equipment of the IT/OT activities are evaluated, as early as possible. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures, in order not to

[152] Digital solutions focusing on the SC criteria of the target activity instead of the general components are specialized digital solutions and services related to the restoration and protection of biodiversity and ecosystems, such as services monitoring the type and status of habitats, or High Resolution Layer Forest Type. Those digital solutions can be distinguished from generic digital solutions which are applied to the general operation of businesses, such as administrative and office related solutions or digital solutions. Digital solutions are not installed for generic business operations which also applicable to activities that do not substantially contribute to the restoration and protection of biodiversity and ecosystems.

compromise the objectives of Regulation (EU) 2024/1991)[2], are implemented and declared, in accordance with applicable law regulating the used, operated and controlled equipment of the IT/OT activities and the target activity and following relevant guidelines[26].

Do no significant harm ('DNSH')

(1) Climate change mitigation	N/A
(2) Climate change adaptation	The activity complies with the criteria set out in Appendix A to EU 2021/2139.
(3) Sustainable use and protection of water and marine resources	The activity complies with the criteria set out in Appendix B to EU 2021/2139.
(4) Transition to a circular economy	Measures are in place to manage and recycle waste at the end-of life for any equipment used for OT, including through decommissioning contractual agreements with recycling service providers, reflection in financial projections or official project documentation. These measures ensure that components and materials are segregated and treated to maximise recycling and reuse in accordance with the waste hierarchy, EU waste regulation principles and applicable regulations, through the reuse and recycling of batteries and electronics and the critical raw materials therein. These measures also include the control and management of hazardous materials. Preparation for re-use, recovery or recycling operations, or proper treatment, including the removal of all fluids and a selective treatment are performed in accordance with Annex VII to Directive 2012/19/EU of the European Parliament and of the Council[3].
(5) Pollution prevention and control	Where any equipment is used, it meets the requirements laid down in Directive 2009/125/EC of the European Parliament and of the Council[4] for servers and data storage products. The equipment used does not contain the restricted substances listed in Annex II to Directive 2011/65/EU of the European Parliament and of the Council[5], except where the concentration values by weight in homogeneous materials do not exceed the maximum values listed in that Annex.
(6) Protection and restoration of biodiversity and ecosystems	

iii. Rationale

Rationale	There are numerous studies showing that digital solutions and services enabling protection and restoration of healthy ecosystems are crucial for achieving the goals of

	the EU Green Deal. This includes contributions from the EU Commission[7] as well as studies with academic[8] and science-based backgrounds[9]. 1. **Description of the activity (scope)** The digital solutions and services are aimed at • protecting, conserving or restoring biodiversity or • improving the condition of ecosystems, or • achieving a good condition of ecosystems, or • protecting ecosystems that are already in good condition. • Any of the items listed above might include the purpose of improving the capacity of ecosystems to provide services[10]. In the era of digitalization, artificial intelligence and ubiquitous internet, digital solutions and services are key enables with data and digital services being identified as a bottleneck for companies. Digital solutions and services include Internet of Things (IoT), artificial intelligence (AI), solutions leveraging on space data and services, and data analytics (e.g., sustainability ratings) that are essential for helping companies identify, monitor and meet sustainability criteria and metrics like biodiversity indicators, carbon footprint, energy efficiency, and resource use. The goal of the activity is to enable the collection, application of data and the development of targeted digital solutions and services to solve this 'bottleneck' for the target activity and facilitate meeting the substantial contribution criteria. The activity encompasses all data and digital solutions and services, regardless of the data source, particularly irrespective of whether the data and services are exploiting ground-based or space-based data and services or any remote sensing system that exploits both sources. Digital solutions and services include IT and OT. However, the manufacturing or operation of equipment used to develop, install, deploy, maintain, repair or provide digital solutions and services, such as satellites airplanes, helicopters, drones, vessels, data centres, or similar equipment are explicitly excluded from this activity. Digital solutions and services may include the use, operation and control of digital solutions and services exclusively built and used for the purpose of retrieving sustainability data and services from remote monitoring and predictive maintenance, including systems for remotely collecting, processing, and transferring data including the space-based and ground-based and services, such as remote sensing data, environmental DNA, camera images, audio recordings and related ground data from terrestrial, freshwater, and marine ecosystems, related modelling, analytics, and services and decentralized technologies (i.e. distributed ledger technologies), Internet of Things (IoT), 5G and Artificial Intelligence. DNSH criteria are specifically referring to this used, operated and controlled specific equipment.

2. **Substantial contribution criteria**

Whereas digital solutions and services, data, IT, and OT are integral components of all economic activities, sustainable digital solutions and services are primarily used to enable the substantial contribution of the target activity and not used in general operations. Initially, only target activities already included in the official Taxonomy will be addressed. The long-term goal is to represent digital solutions and services that substantially improve the sustainability of an activity.

By discriminating between general digitalized services which are an integral part of the target activity itself, the substantial contribution criteria make sure that only those digital solutions and services are included which are unique for the target activity request to meet its substantial contribution criteria.

Thus, the substantial contribution criteria of digital solutions and services help producers of digital solutions and services to develop tailored solutions and services.

Developing substantial contribution criteria relates to

(1) Art. 19 of the Taxonomy Regulation:

- **Policy coherence and environmental integrity:** The proposed criteria are aligned with EU legislation for the protection and restoration of biodiversity and ecosystem.
- **Environmental ambition and integrity** are addressed in 'substantial contribution' criteria.

The DNSH criteria are based on the standard wording used in activity 8.2. of Annex I (EU) 2020/852, section split according to activity 4.1 of the section protection of water and marine resources, see EU 2023/2486, Annex I.

- **Level playing field**: The level of performance required in the criteria is completely technology neutral.

(2) Art. 16 of the Taxonomy Regulation:

- The activity complies with the provisions of Article 16 as it follows the approach of the 'Horizontal Framework for Enabling Activities: Guidance for Platform Members – Enabling Framework' (Option 1) elaborated by the Platform 1.0, which is included in the 'Platform on Sustainable Finance's report with supplementary advice on methodology and technical screening criteria for the climate and environmental objectives of the EU Taxonomy'.
- **Re 1:**
  - As those digital solutions and services are 'enabling' activities, they have a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality. Thus, e.g., digital solutions and services improving specific components that are relevant for preservation and restoration of biodiversity are covered, whereas digital solutions and services improving general/unspecific components (like e.g. office programs) are not covered.

	• It is important to note that in addition to the digital solutions and services, other instrumental enabling activities may be necessary to make the target activity Taxonomy aligned. In other words: While the digital solutions and services must play an instrumental role in making the target activity Taxonomy aligned, it is possible that the target activity only becomes Taxonomy aligned by the interaction of several enabling activities. Or, to put it the other way round: Without the digital solutions and services, the criteria of the target activity for a 'substantial contribution' to the environmental objective ▪ would not be met, ▪ or would only be met at significantly higher costs, ▪ or would only be met with a significant higher demand of (critical) raw materials. • Moreover, the activity follows the approach proposed in the 'Guidance on the interpretation of the concept of enabling activities set out in Article 16 of the Taxonomy Regulation' (Option 2) of the Commission. 3. **Do-no-significant-harm (DNSH) criteria** For the development of the DNSH criteria for this activity, activity no 8.2 "data-driven solutions for GHG emissions reductions", and no 8.4, "software enabling physical climate risk management and adaptation" were used as a role model. **CCM**: • Specialized digital solutions and services, IT and OT, were found to not significantly harming CCM. **CCA**: • In the DNSH criteria for climate change adaptation, activity no 8.2 "data-driven solutions for GHG emissions reductions" was used as role model. The DNSH refers to Appendix A of the Annex I of the Climate DA. **Water:** • The DNSH criteria are aligned with activity 8.2 (Data-driven solutions for GHG emissions reductions, see Annex I of (EU) 2020/852). **CE:** • Wording aligns with the ICT from EU 2023/2486, Annex I, on Circular Economy. Related part of the text has been put on CE, whereas the other parts of the text have been put on PPC. Splitting the DNSH is aligned with digital solutions and services already included in EU Taxonomy, such as activity 4.1 in section protection of water and marine resources, "Provision of IT/OT data-driven solutions for leakage reduction" (EU 2023/2486, Annex I). The new structure accounts for the inclusion of OT (Operational Technology) which is not included in activity 8.2 Data-driven solutions for GHG emissions reductions. **PPC:** • Wording aligns with the ICT from EU 2023/2486, Annex I, on PPC (Pollution Prevention and Control). Related part of the text has been put on PPC, whereas the other parts of the text have been put on CE. Splitting the DNSH is aligned

	with digital solutions and services already included in EU Taxonomy, such as activity 4.1 in section protection of water and marine resources, "Provision of IT/OT data-driven solutions for leakage reduction" (EU 2023/2486, Annex I). The new structure accounts for the inclusion of OT (Operational Technology) which is not included in activity 8.2 Data-driven solutions for GHG emissions reductions. **Biodiversity:** • Wording aligns with the criteria developed for the DNSH on biodiversity of applied research activities. The criteria refer to the used, operated and controlled equipment which has been exclusively built for and is used by sustainable digital solutions and services.

iv. Usability, Data and Guidance

The usability of the criteria has been tested with public, academic and private stakeholders, considering also literature and comments from consultations. Applicable comments have been integrated. The focus has been laid on specialized digital solutions and services to facilitate the development of tailored IT/OT and the needs of SMEs[153], which represent the largest share of European Earth Observations companies. Focusing on specialized digital solutions and services supports the market segments of sustainable IT/OTs, space-based and remote sensing technologies, data, and digital services, which offer substantial growth opportunities, particularly in environmental monitoring and sustainability applications[154].

Data for the demonstration of compliance with the technical screening criteria can be derived from product descriptions or comparable documentation, which might include, among others, the purpose of digital solutions and software, their features and functionalities, target audience and users, technical specifications, benefits and advantages, use cases or scenarios.

v. Recommendations for future work

For reasons of consistency, acceleration of Green Finance purposes and for the success of the Taxonomy, the Platform recommends aligning the criteria of the Digital Solutions and Services activities for all 6 objectives and extending them to activities that are not yet included in the Annexes of the Climate DA or the Environmental DA.

6. Digital solutions and services for the Transition to a Circular Economy

i. Description of activity

[153] According to EUSPA, SMEs and start-ups represent over 93% of European Earth Observation companies, see EUSPA (2024) EO and GNSS, Market Report, Issue 2, euspa_market_report_2024.pdf

[154] EUSPA (2024) EO and GNSS, Market Report, Issue 2, euspa_market_report_2024.pdf

The activity develops, installs, deploys, maintains, repairs or provides digital solutions and services, including technical consulting for design or monitoring, software, data, information technology (IT) or operational technology (OT)[1] that are aimed at collecting, transmitting, storing and analysing data and at its modelling and use where those digital solutions and services are predominantly aimed at enabling the sustainability activities set out in EU Taxonomy EU 2023/2486, Annex II.
The activity includes digital solutions and services exploiting space-based and ground-based data and services, or a combination of both as well as digitally controlled operational technologies. The manufacturing of any operational technology is excluded.
The manufacturing or operation of equipment used to provide digital solutions and services, such as satellites, airplanes, helicopters, drones, vessels, data centres, or similar equipment are explicitly excluded from this activity.

Digital solutions and services may include the use, operation and control of digital solutions and services exclusively built and used for the purpose of retrieving and providing sustainability data and services, such as connectable products, sensors, remote sensing systems, environmental DNA, camera images, audio recordings and related ground data from terrestrial, freshwater, and marine ecosystems, decentralized technologies (i.e. distributed ledger technologies), Internet of Things (IoT), 5G and Artificial Intelligence.
Digital solutions and services include analytics, related modelling and software for the transmission, the display of data and system management and other digital solutions and data related services. Software development or programming activities include the provision of software for analysing, forecasting, projection, and monitoring of environment, and progress towards environmental objectives, as well as early warning systems for environmental risks and solutions for risk management.

The activities in this category could be associated with several NACE codes, in particular J61, J62, J63 and M 71 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an *enabling* activity in accordance with Article 13(1), point (l), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

ii. Technical screening criteria

Substantial contribution to the transition to a circular economy

1. The digital solutions and services by any type of operator exclusively focus on the target activity's environmental sustainability performance as defined in their substantial contribution criteria and/or its related output, rather than on those components or aspects that are required for its general functionality[155]. Target activities are set out by EU 2023/2486, Annex II.

[155] Digital solutions focusing on the SC criteria of the target activity instead of the general components are specialized digital solutions and services related to the transition towards a circular economy, such as the management of natural resources and/or monitoring management of waste. Examples are Earth Observation for Resource Monitoring with satellite imagery enables precise tracking of natural resources, aiding in sustainable extraction and utilization. For instance, the European Space Agency's Copernicus Programme offers comprehensive data on land use, forestry, and agriculture, supporting efficient resource management, such as Land take

2. Measures are in place to manage and recycle waste at the end-of life for any equipment used, operated or controlled for IT/OT, including through decommissioning contractual agreements with recycling service providers, reflection in financial projections or official project documentation. These measures ensure that components and materials are segregated and treated to maximise recycling and reuse in accordance with the waste hierarchy, EU waste regulation principles and applicable regulations, through the reuse and recycling of batteries and electronics and the critical raw materials therein. These measures also include the control and management of hazardous materials. Preparation for re-use, recovery or recycling operations, or proper treatment, including the removal of all fluids and a selective treatment are performed in accordance with Annex VII to Directive 2012/19/EU of the European Parliament and of the Council[2].

Do no significant harm ('DNSH')	
(1) Climate change mitigation	N/A
(2) Climate change adaptation	The activity complies with the criteria set out in Appendix A to EU 2023/2486.
(3) Sustainable use and protection of water and marine resources	The activity complies with the criteria set out in Appendix B to EU 2021/2139.
(4) Transition to a circular economy	
(5) Pollution prevention and control	Where any equipment is used, it meets the requirements laid down in Directive 2009/125/EC of the European Parliament and of the Council[3] for servers and data storage products. The equipment used does not contain the restricted substances listed in Annex II to Directive 2011/65/EU of the European Parliament and of the Council[4], except where the concentration values by weight in homogeneous materials do not exceed the maximum values listed in that Annex.
(6) Protection and restoration of biodiversity and ecosystems	Any potential risks to the good condition or resilience of ecosystems or to achieving or maintaining the good environmental status or favourable conservation status of habitats and species, including those of Union interest, arising from the IT/OT activities are evaluated, as early as possible in the application of digital solutions and services. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures, in order not

intensity within NUTS3 regions. Those digital solutions can be distinguished from generic digital solutions which are applied for the general operation of businesses, such as administrative and office related solutions. Digital solutions are not installed for generic business operations which also applicable to activities that do not substantially contribute to the transition towards a circular economy, or the digital solution has specifically been developed for activities that do substantially contribute to the transition towards a circular economy.

	to compromise the objectives of Regulation (EU) 2024/1991)[5], are implemented and declared, in accordance with applicable law regulating the used, operated and controlled equipment and the target activity and following relevant guidelines.

iii. Rationale

Rationale	There are numerous studies showing that digital solutions and services enabling protection and restoration of healthy ecosystems are crucial for achieving the goals of the EU Green Deal. This includes contributions from the EU Commission[7] as well as studies with academic[8] and science-based backgrounds[9]. 1. **Description of the activity (scope)** The digital solutions and services are aimed at enabling the transition to a circular economy. In the era of digitalization, artificial intelligence and ubiquitous internet, digital solutions and services are key enables with data and digital services being identified as a bottleneck for companies. Digital solutions and services include Internet of Things (IoT), artificial intelligence (AI), solutions leveraging on space data and services, and data analytics (e.g., sustainability ratings) that are essential for helping companies identify, monitor and meet sustainability criteria and metrics like indicators on recycling rates, carbon footprint, energy efficiency, and resource use. The goal of the activity is to enable the collection, application of data and the development of targeted digital solutions and services to solve this 'bottleneck' for the target activity and facilitate meeting the substantial contribution criteria. The activity encompasses all data and digital solutions and services, regardless of the data source, particularly irrespective of whether the data and services are exploiting ground-based or space-based data and services or any remote sensing system that exploits both sources. Digital solutions and services include IT and OT. However, the manufacturing or operation of equipment used to develop, install, deploy, maintain, repair or provide digital solutions and services, such as satellites airplanes, helicopters, drones, vessels, data centres, or similar equipment are explicitly excluded from this activity. Digital solutions and services may include the use, operation and control of digital solutions and services exclusively built and used for the purpose of retrieving sustainability data and services from remote monitoring and predictive maintenance, including systems for remotely collecting, processing, and transferring data including the space-based and ground-based and services, such as remote sensing data, environmental DNA, camera images, audio recordings and related ground data from

terrestrial, freshwater, and marine ecosystems, related modelling, analytics, and services and decentralized technologies (i.e. distributed ledger technologies), Internet of Things (IoT), 5G and Artificial Intelligence. DNSH criteria are specifically referring to this used, operated and controlled specific equipment.

2. **Substantial contribution criteria**

Digital solutions and services, data, IT, and OT are integral components of all economic activities, sustainable digital solutions and services are primarily used to enable the substantial contribution of the target activity and not used in general operations. Initially, only target activities already included in the official Taxonomy will be addressed. The long-term goal is to represent digital solutions and services that substantially improve the sustainability of an activity.

By discriminating between general digitalized services which are an integral part of the target activity itself, the substantial contribution criteria make sure that only those digital solutions and services are included which are unique for the target activity request to meet its substantial contribution criteria.

Thus, the substantial contribution criteria of digital solutions and services help producers of digital solutions and services to develop tailored solutions and services.

Developing substantial contribution criteria relates to

(1) Art. 19 of the Taxonomy Regulation:

- **Policy coherence and environmental integrity:** The proposed criteria are aligned with EU legislation for circular economy.
- **Environmental ambition and integrity** are addressed in 'substantial contribution' criteria.

The DNSH criteria are based on the standard wording used in activity 8.2. of Annex I (EU) 2020/852, section split according to activity 4.1 of the section protection of water and marine resources, see EU 2023/2486, Annex I.

- **Level playing field**: The level of performance required in the criteria is completely technology neutral.

In relation to the requirements in Art. 16 of the Taxonomy Regulation:

- The activity complies with the provisions of Article 16 as it follows the approach of the 'Horizontal Framework for Enabling Activities: Guidance for Platform Members – Enabling Framework' (Option 1) elaborated by the Platform 1.0, which is included in the 'Platform on Sustainable Finance's report with supplementary advice on methodology and technical screening criteria for the climate and environmental objectives of the EU Taxonomy'.

- **Re 1:**

	○ As those digital solutions and services are 'enabling' activities, they have a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality. Thus, e.g., digital solutions and services improving specific components that are relevant for the transition to a circular economy are covered, whereas digital solutions and services improving general/unspecific components (like e.g. office programs) are not covered. • It is important to note that in addition to the digital solutions and services, other instrumental enabling activities may be necessary to make the target activity Taxonomy aligned. In other words: While the digital solutions and services must play an instrumental role in making the target activity Taxonomy aligned, it is possible that the target activity only becomes Taxonomy aligned by the interaction of several enabling activities. Or, to put it the other way round: Without the digital solutions and services, the criteria of the target activity for a 'substantial contribution' to the environmental objective ▪ would not be met, ▪ or would only be met at significantly higher costs, ▪ or would only be met with a significant higher demand of (critical) raw materials. 3. **Do-no-significant-harm (DNSH) criteria** For the development of the DNSH criteria for this activity, activity no 8.2 "data-driven solutions for GHG emissions reductions", and no 8.4, "software enabling physical climate risk management and adaptation" were used as a role model. **CCM**: • D Specialized digital solutions and services, IT and OT, were found to not significantly harming CCM. **CCA**: • In the DNSH criteria for climate change adaptation, activity no 8.2 "data-driven solutions for GHG emissions reductions" was used as role model. The DNSH refers to Appendix A of the Annex I of the Climate DA. **Water:** • The DNSH criteria are aligned with activity 8.2 (Data-driven solutions for GHG emissions reductions, see Annex I of (EU) 2020/852). **CE:** • Wording aligns with the ICT from EU 2023/2486, Annex I, on Circular Economy. Related part of the text has been put on CE, whereas the other parts of the text have been put on PPC. Splitting the DNSH is aligned with digital solutions and services already included in EU Taxonomy, such as activity 4.1 in section protection of water and marine resources, "Provision of IT/OT data-driven solutions for leakage reduction" (EU 2023/2486, Annex I). The new structure

	accounts for the inclusion of OT (Operational Technology) which is not included in activity 8.2 Data-driven solutions for GHG emissions reductions. **PPC:** • Wording aligns with the ICT from EU 2023/2486, Annex I, on PPC (Pollution Prevention and Control). Related part of the text has been put on PPC, whereas the other parts of the text have been put on CE. Splitting the DNSH is aligned with digital solutions and services already included in EU Taxonomy, such as activity 4.1 in section protection of water and marine resources, "Provision of IT/OT data-driven solutions for leakage reduction" (EU 2023/2486, Annex I). The new structure accounts for the inclusion of OT (Operational Technology) which is not included in activity 8.2 Data-driven solutions for GHG emissions reductions. **Biodiversity:** • Wording aligns with the criteria developed for the DNSH on biodiversity of applied research activities. The criteria refer to the used, operated and controlled equipment which has been exclusively built for and is used by sustainable digital solutions and services.

iv. Usability, Data and Guidance

The usability of the criteria has been tested with public, academic and private stakeholders, considering also literature and comments from consultations. Applicable comments have been integrated. The focus has been laid on specialized digital solutions and services to facilitate the development of tailored IT/OT and the needs of SMEs[156], which represent the largest share of European Earth Observations companies. Focusing on specialized digital solutions and services supports the market segments of sustainable IT/OTs, space-based and remote sensing technologies, data, and digital services, which offer substantial growth opportunities, particularly in environmental monitoring and sustainability applications[157].

Data for the demonstration of compliance with the technical screening criteria can be derived from product descriptions or comparable documentation, which might include, among others, the purpose of digital solutions and software, their features and functionalities, target audience and users, technical specifications, benefits and advantages, use cases or scenarios.

v. Recommendations for future work

- For reasons of consistency, acceleration of Green Finance purposes and for the success of the Taxonomy, the Platform recommends aligning the criteria of the Digital Solutions and Services activities for all 6 objectives and extending them to target activities that are not yet included in the Annexes of the Climate DA or the Environmental DA.

[156] According to EUSPA, SMEs and start-ups represent over 93% of European Earth Observation companies, see EUSPA (2024) EO and GNSS, Market Report, Issue 2, euspa_market_report_2024.pdf

[157] EUSPA (2024) EO and GNSS, Market Report, Issue 2, euspa_market_report_2024.pdf

7. Digital solutions and services for Pollution Prevention and Control

i. Description of activity

The activity develops, installs, deploys, maintains, repairs or provides digital solutions and services, including technical consulting for design or monitoring, software, data, information technology (IT) or operational technology (OT)[1] that are aimed at collecting, transmitting, storing and analysing data and at its modelling and use where those digital solutions and services are predominantly aimed at enabling the sustainability activities set out in EU Taxonomy EU 2023/2486, Annex III.

The activity includes digital solutions and services exploiting space-based and ground-based data and services, or a combination of both as well as digitally controlled operational technologies. The manufacturing of any operational technology is excluded.

The manufacturing or operation of equipment used to provide digital solutions and services, such as satellites, airplanes, helicopters, drones, vessels, data centres, or similar equipment are explicitly excluded from this activity.

Digital solutions and services may include the use, operation and control of digital solutions and services exclusively built and used for the purpose of retrieving and providing sustainability data and services, such as connectable products, sensors, remote sensing systems, environmental DNA, camera images, audio recordings and related ground data from terrestrial, freshwater, and marine ecosystems, decentralized technologies (i.e. distributed ledger technologies), Internet of Things (IoT), 5G and Artificial Intelligence.

Digital solutions and services include analytics, related modelling and software for the transmission, the display of data and system management and other digital solutions and data related services. Software development or programming activities include the provision of software for analysing, forecasting, projection, and monitoring of environment, and progress towards environmental objectives, as well as early warning systems for environmental risks and solutions for risk management.

The activities in this category could be associated with several NACE codes, in particular J61, J62, J63 and M 71 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an *enabling* activity in accordance with Article 13(1), point (l), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

ii. Technical screening criteria

Substantial contribution to pollution prevention and control
1. The digital solutions and services by any type of operator exclusively focus on the target activity's environmental sustainability performance as defined in their substantial contribution criteria and/or its related output, rather than on those components or aspects that are required for its general functionality[158]. Target activities are set out by EU 2023/2486, Annex III.

[158] Digital solutions and services focusing on the SC criteria of the target activity instead of the general components are specialized digital solutions and services related to prevention and controlling of pollution, such as Sentinel-5 Precursor (Sentinel-5P) which is part of the European Space Agency's Copernicus Programme, carrying the TROPOspheric Monitoring Instrument (TROPOMI), which monitors atmospheric gases such as ozone, methane, formaldehyde, aerosol, carbon monoxide, nitrogen dioxide, and sulfur dioxide. Those digital solutions can be distinguished from generic digital solutions which are applied for the general operation of businesses, such as administrative and office related solutions. Digital solutions are not installed for generic business operations which are also applicable to activities that do not substantially contribute to the pollution prevention and control, or the digital solution has specifically been developed for activities that do substantially contribute to pollution prevention and control.

2. Where any equipment is used, it meets the requirements laid down in Directive 2009/125/EC of the European Parliament and of the Council[2] for servers and data storage products. The equipment used does not contain the restricted substances listed in Annex II to Directive 2011/65/EU of the European Parliament and of the Council[3], except where the concentration values by weight in homogeneous materials do not exceed the maximum values listed in that Annex.

Do no significant harm ('DNSH')

(1) Climate change mitigation	N/A
(2) Climate change adaptation	The activity complies with the criteria set out in Appendix A to EU 2023/2486.
(3) Sustainable use and protection of water and marine resources	The activity complies with the criteria set out in Appendix B to EU 2021/2139.
(4) Transition to a circular economy	Measures are in place to manage and recycle waste at the end-of life for any equipment used, operated or controlled for IT/OT, including through decommissioning contractual agreements with recycling service providers, reflection in financial projections or official project documentation. These measures ensure that components and materials are segregated and treated to maximise recycling and reuse in accordance with the waste hierarchy, EU waste regulation principles and applicable regulations, through the reuse and recycling of batteries and electronics and the critical raw materials therein. These measures also include the control and management of hazardous materials. Preparation for re-use, recovery or recycling operations, or proper treatment, including the removal of all fluids and a selective treatment are performed in accordance with Annex VII to Directive 2012/19/EU of the European Parliament and of the Council[4].
(5) Pollution prevention and control	
(6) Protection and restoration of biodiversity and ecosystems	Any potential risks to the good condition or resilience of ecosystems or to achieving or maintaining the good environmental status or favourable conservation status of habitats and species, including those of Union interest, arising from the IT/OT activities are evaluated, as early as possible in the application of digital solutions and services. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures, in order not to compromise the objectives of Regulation (EU) 2024/1991)[5], are implemented and declared, in accordance with applicable law regulating the used, operated and controlled equipment and the target activity and following relevant guidelines.

iii. Rationale

Rationale	There are numerous studies showing that digital solutions and services enabling protection and restoration of healthy ecosystems are crucial for achieving the goals of the EU Green Deal. This includes contributions from the EU Commission[7] as well as studies with academic[8] and science-based backgrounds[9]. 1. **Description of the activity (scope)** The digital solutions and services are aimed at enabling pollution prevention and control. In the era of digitalization, artificial intelligence and ubiquitous internet, digital solutions and services are key enables with data and digital services being identified as a bottleneck for companies. Digital solutions and services include Internet of Things (IoT), artificial intelligence (AI), solutions leveraging on space data and services, and data analytics (e.g., sustainability ratings) that are essential for helping companies identify, monitor and meet sustainability criteria and metrics like indicators on recycling rates, carbon footprint, energy efficiency, and resource use. The goal of the activity is to enable the collection, application of data and the development of targeted digital solutions and services to solve this 'bottleneck' for the target activity and facilitate meeting the substantial contribution criteria. The activity encompasses all data and digital solutions and services, regardless of the data source, particularly irrespective of whether the data and services are exploiting ground-based or space-based data and services or any remote sensing system that exploits both sources. Digital solutions and services include IT and OT. However, the manufacturing or operation of equipment used to develop, install, deploy, maintain, repair or provide digital solutions and services, such as satellites airplanes, helicopters, drones, vessels, data centres, or similar equipment are explicitly excluded from this activity. Digital solutions and services may include the use, operation and control of digital solutions and services exclusively built and used for the purpose of retrieving sustainability data and services from remote monitoring and predictive maintenance, including systems for remotely collecting, processing, and transferring data including the space-based and ground-based and services, such as remote sensing data, environmental DNA, camera images, audio recordings and related ground data from terrestrial, freshwater, and marine ecosystems, related modelling, analytics, and services and decentralized technologies (i.e. distributed ledger technologies), Internet of Things (IoT), 5G and Artificial Intelligence. DNSH criteria are specifically referring to this used, operated and controlled specific equipment. 2. **Substantial contribution criteria**

	Digital solutions and services, data, IT, and OT are integral components of all economic activities, sustainable digital solutions and services are primarily used to enable the substantial contribution of the target activity and not used in general operations. Initially, only target activities already included in the official Taxonomy will be addressed. The long-term goal is to represent digital solutions and services that substantially improve the sustainability of an activity. By discriminating between general digitalized services which are an integral part of the target activity itself, the substantial contribution criteria make sure that only those digital solutions and services are included which are unique for the target activity request to meet its substantial contribution criteria. Thus, the substantial contribution criteria of digital solutions and services help producers of digital solutions and services to develop tailored solutions and services. **Developing substantial contribution criteria relates to** **(1) Art. 19 of the Taxonomy Regulation:** • **Policy coherence and environmental integrity:** The proposed criteria are aligned with EU legislation for pollution prevention and control. • **Environmental ambition and integrity** are addressed in 'substantial contribution' criteria. The DNSH criteria are based on the standard wording used in activity 8.2. of Annex I (EU) 2020/852, section split according to activity 4.1 of the section protection of water and marine resources, see EU 2023/2486, Annex I. • **Level playing field**: The level of performance required in the criteria is completely technology neutral. **In relation to the requirements in Art. 16 of the Taxonomy Regulation:** • The activity complies with the provisions of Article 16 as it follows the approach of the 'Horizontal Framework for Enabling Activities: Guidance for Platform Members – Enabling Framework' (Option 1) elaborated by the Platform 1.0, which is included in the 'Platform on Sustainable Finance's report with supplementary advice on methodology and technical screening criteria for the climate and environmental objectives of the EU Taxonomy'. • **Re 1:** o As those digital solutions and services are 'enabling' activities, they have a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality. Thus, e.g., digital solutions and services improving specific components that are relevant for the pollution prevention and control are covered, whereas digital solutions and services

improving general/unspecific components (like e.g. office programs) are not covered.

- It is important to note that in addition to the digital solutions and services, other instrumental enabling activities may be necessary to make the target activity Taxonomy aligned. In other words: While the digital solutions and services must play an instrumental role in making the target activity Taxonomy aligned, it is possible that the target activity only becomes Taxonomy aligned by the interaction of several enabling activities.

  Or, to put it the other way round: Without the digital solutions and services, the criteria of the target activity for a 'substantial contribution' to the environmental objective
  - would not be met,
  - or would only be met at significantly higher costs,
  - or would only be met with a significant higher demand of (critical) raw materials.

3. **Do-no-significant-harm (DNSH) criteria**

For the development of the DNSH criteria for this activity, activity no 8.2 "data-driven solutions for GHG emissions reductions", and no 8.4, "software enabling physical climate risk management and adaptation" were used as a role model.

CCM:

- Specialized digital solutions and services, IT and OT, were found to not significantly harming CCM.

CCA:

- In the DNSH criteria for climate change adaptation, activity no 8.2 "data-driven solutions for GHG emissions reductions" was used as role model. The DNSH refers to Appendix A of the Annex I of the Climate DA.

Water:

- The DNSH criteria are aligned with activity 8.2 (Data-driven solutions for GHG emissions reductions, see Annex I of (EU) 2020/852).

CE:

- Wording aligns with the ICT from EU 2023/2486, Annex I, on Circular Economy. Related part of the text has been put on CE, whereas the other parts of the text have been put on PPC. Splitting the DNSH is aligned with digital solutions and services already included in EU Taxonomy, such as activity 4.1 in section protection of water and marine resources, "Provision of IT/OT data-driven solutions for leakage reduction" (EU 2023/2486, Annex I). The new structure accounts for the inclusion of OT (Operational Technology) which is not included in activity 8.2 Data-driven solutions for GHG emissions reductions.

PPC:

- Wording aligns with the ICT from EU 2023/2486, Annex I, on PPC (Pollution Prevention and Control). Related part of the text has been put on PPC, whereas the other parts of the text have been put on CE. Splitting the DNSH is aligned

	with digital solutions and services already included in EU Taxonomy, such as activity 4.1 in section protection of water and marine resources, "Provision of IT/OT data-driven solutions for leakage reduction" (EU 2023/2486, Annex I). The new structure accounts for the inclusion of OT (Operational Technology) which is not included in activity 8.2 Data-driven solutions for GHG emissions reductions. **Biodiversity:** • Wording aligns with the criteria developed for the DNSH on biodiversity of applied research activities. The criteria refer to the used, operated and controlled equipment which has been exclusively built for and is used by sustainable digital solutions and services. 1.

iv. Usability, Data and Guidance

The usability of the criteria has been tested with public, academic and private stakeholders, considering also literature and comments from consultations. Applicable comments have been integrated. The focus has been laid on specialized digital solutions and services to facilitate the development of tailored IT/OT and the needs of SMEs[159], which represent the largest share of European Earth Observations companies. Focusing on specialized digital solutions and services supports the market segments of sustainable IT/OTs, space-based and remote sensing technologies, data, and digital services, which offer substantial growth opportunities, particularly in environmental monitoring and sustainability applications[160].

Data for the demonstration of compliance with the technical screening criteria can be derived from product descriptions or comparable documentation, which might include, among others, the purpose of digital solutions and software, their features and functionalities, target audience and users, technical specifications, benefits and advantages, use cases or scenarios.

v. Recommendations for future work

- For reasons of consistency, acceleration of Green Finance purposes and for the success of the Taxonomy the Platform recommends aligning criteria for all digital solutions and services for all 6 objectives for those economic activities or for activities that are not yet included in the Annexes of the Climate DA or the Environmental DA should be developed.

[159] According to EUSPA, SMEs and start-ups represent over 93% of European Earth Observation companies, see EUSPA (2024) EO and GNSS, Market Report, Issue 2, euspa_market_report_2024.pdf

[160] EUSPA (2024) EO and GNSS, Market Report, Issue 2, euspa_market_report_2024.pdf

8. Digital solutions and services for the Sustainable Use and Protection of Water and Marine Resources

i. Description of activity

The activity develops, installs, deploys, maintains, repairs or provides digital solutions and services, including technical consulting for design or monitoring, software, data, information technology (IT) or operational technology (OT)[1] that are aimed at collecting, transmitting, storing and analysing data and at its modelling and use where those digital solutions and services are predominantly aimed at enabling the sustainability activities set out in EU Taxonomy EU 2023/2486, Annex I.

The activity includes digital solutions and services exploiting space-based and ground-based data and services, or a combination of both as well as digitally controlled operational technologies. The manufacturing of any operational technology is excluded.

The manufacturing or operation of equipment used to provide digital solutions and services, such as satellites, airplanes, helicopters, drones, vessels, data centres, or similar equipment are explicitly excluded from this activity.

Digital solutions and services may include the use, operation and control of digital solutions and services exclusively built and used for the purpose of retrieving and providing sustainability data and services, such as connectable products, sensors, remote sensing systems, environmental DNA, camera images, audio recordings and related ground data from terrestrial, freshwater, and marine ecosystems, decentralized technologies (i.e. distributed ledger technologies), Internet of Things (IoT), 5G and Artificial Intelligence.

Digital solutions and services include analytics, related modelling and software for the transmission, the display of data and system management and other digital solutions and data related services. Software development or programming activities include the provision of software for analysing, forecasting, projection, and monitoring of environment, and progress towards environmental objectives, as well as early warning systems for environmental risks and solutions for risk management.

The activities in this category could be associated with several NACE codes, in particular J61, J62, J63 and M 71 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is an *enabling* activity in accordance with Article 13(1), point (l), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

ii. Technical screening criteria

Substantial contribution to the sustainable use and protection of water and marine resources
1. The digital solutions and services by any type of operator exclusively focus on the target activity's environmental sustainability performance as defined in their substantial contribution criteria and/or its related output, rather than on those components or aspects that are required for its general functionality[161]. Target activities are set out by EU 2023/2486, Annex I.

[161] Digital solutions and services focusing on the SC criteria of the target activity instead of the general components are specialized digital solutions and services related to the protection and sustainable use of water and marine resources, such as status of water resources related services, e.g. WaterSIM tools that can be deployed "as quickly as possible" to continuously survey the blue water (physical state) to support operational management as well as tactical and strategic planning anywhere on the world. Those digital solutions can be distinguished from generic digital solutions which are applied for the general operation of businesses, such as

2. Any environmental degradation risks related to preserving water quality and avoiding water stress are identified and addressed with the aim of achieving good water status and good ecological potential as defined in Article 2, points (22) and (23), of Regulation (EU) 2020/852, in accordance with Directive 2000/60/EC and a water use and protection management plan, developed thereunder for the potentially affected water body or bodies, in consultation with relevant stakeholders.

Do no significant harm ('DNSH')

(1) Climate change mitigation	N/A
(2) Climate change adaptation	The activity complies with the criteria set out in Appendix A to EU 2023/2486.
(3) Sustainable use and protection of water and marine resources	The activity complies with the criteria set out in Appendix B to EU 2021/2139.
(4) Transition to a circular economy	Measures are in place to manage and recycle waste at the end-of life for any equipment used, operated or controlled as OT, including through decommissioning contractual agreements with recycling service providers, reflection in financial projections or official project documentation. These measures ensure that components and materials are segregated and treated to maximise recycling and reuse in accordance with the waste hierarchy, EU waste regulation principles and applicable regulations, through the reuse and recycling of batteries and electronics and the critical raw materials therein. These measures also include the control and management of hazardous materials. Preparation for re-use, recovery or recycling operations, or proper treatment, including the removal of all fluids and a selective treatment are performed in accordance with Annex VII to Directive 2012/19/EU of the European Parliament and of the Council[2].
(5) Pollution prevention and control	Where any equipment is used, it meets the requirements laid down in Directive 2009/125/EC of the European Parliament and of the Council[3] for servers and data storage products. The equipment used does not contain the restricted substances listed in Annex II to Directive 2011/65/EU of the European Parliament and of the Council[4], except where the concentration values by weight in homogeneous materials do not exceed the maximum values listed in that Annex.
(6) Protection and restoration of biodiversity and ecosystems	Any potential risks to the good condition or resilience of ecosystems or to achieving or maintaining the good environmental status or favourable conservation status of habitats and species, including those of Union interest, arising from the IT/OT activities are evaluated, as early as possible in the

administrative and office related solutions. Digital solutions are not installed for generic business operations which are also applicable to activities that do not substantially contribute to the protection and sustainable use of water and marine resources or have specifically been developed for activities that do substantially contribute to the protection and sustainable use of water and marine resources.

	application of digital solutions and services. Where risks are identified, they are avoided or, if unavoidable, the necessary mitigation measures, in order not to compromise the objectives of Regulation (EU) 2024/1991)[5], are implemented and declared, in accordance with applicable law regulating the used, operated and controlled equipment and the target activity and following relevant guidelines.

iii. Rationale

Rationale	There are numerous studies showing that digital solutions and services enabling protection and restoration of healthy ecosystems are crucial for achieving the goals of the EU Green Deal. This includes contributions from the EU Commission[7] as well as studies with academic[8] and science-based backgrounds[9]. 1. **Description of the activity (scope)** The digital solutions and services are aimed at • achieve the good status of bodies of water, • prevent the deterioration of bodies of water that already have good status • achieve the good environmental status of marine waters, • prevent the deterioration of marine waters that are already in good environmental status • facilitate or enable the sustainable use and protection of water and marine resources • enhance water resilience of the water services sector or of a key water user sector. In the era of digitalization, artificial intelligence and ubiquitous internet, digital solutions and services are key enables with data and digital services being identified as a bottleneck for companies. Digital solutions and services include Internet of Things (IoT), artificial intelligence (AI), solutions leveraging on space data and services, and data analytics (e.g., sustainability ratings) that are essential for helping companies identify, monitor and meet sustainability criteria and metrics like freshwater indicators, carbon footprint, energy efficiency, and resource use. The goal of the activity is to enable the collection, application of data and the development of targeted digital solutions and services to solve this 'bottleneck' for the target activity and facilitate meeting the substantial contribution criteria. The activity encompasses all data and digital solutions and services, regardless of the data source, particularly irrespective of whether the data and services are exploiting ground-based or space-based data and services or any remote sensing system that exploits both sources.

	Digital solutions and services include IT and OT. However, the manufacturing or operation of equipment used to develop, install, deploy, maintain, repair or provide digital solutions and services, such as satellites airplanes, helicopters, drones, vessels, data centres, or similar equipment are explicitly excluded from this activity. Digital solutions and services may include the use, operation and control of digital solutions and services exclusively built and used for the purpose of retrieving sustainability data and services from remote monitoring and predictive maintenance, including systems for remotely collecting, processing, and transferring data including the space-based and ground-based and services, such as remote sensing data, environmental DNA, camera images, audio recordings and related ground data from terrestrial, freshwater, and marine ecosystems, related modelling, analytics, and services and decentralized technologies (i.e. distributed ledger technologies), Internet of Things (IoT), 5G and Artificial Intelligence. DNSH criteria are specifically referring to this used, operated and controlled specific equipment. 2. **Substantial contribution criteria** Digital solutions and services, data, IT, and OT are integral components of all economic activities, sustainable digital solutions and services are primarily used to enable the substantial contribution of the target activity and not used in general operations. Initially, only target activities already included in the official Taxonomy will be addressed. The long-term goal is to represent digital solutions and services that substantially improve the sustainability of an activity. By discriminating between general digitalized services which are an integral part of the target activity itself, the substantial contribution criteria make sure that only those digital solutions and services are included which are unique for the target activity request to meet its substantial contribution criteria. Thus, the substantial contribution criteria of digital solutions and services help producers of digital solutions and services to develop tailored solutions and services. **Developing substantial contribution criteria relates to** **(1) Art. 19 of the Taxonomy Regulation:** • **Policy coherence and environmental integrity:** The proposed criteria are aligned with EU legislation for the sustainable use and the protection of water and marine resources. • **Environmental ambition and integrity** are addressed in 'substantial contribution' criteria. The DNSH criteria are based on the standard wording used in activity 8.2. of Annex I (EU) 2020/852, section split according to activity 4.1 of the section protection of water and marine resources, see EU 2023/2486, Annex I.

	• **Level playing field**: The level of performance required in the criteria is completely technology neutral. **In relation to the requirements in Art. 16 of the Taxonomy Regulation:** • The activity complies with the provisions of Article 16 as it follows the approach of the 'Horizontal Framework for Enabling Activities: Guidance for Platform Members – Enabling Framework' (Option 1) elaborated by the Platform 1.0, which is included in the 'Platform on Sustainable Finance's report with supplementary advice on methodology and technical screening criteria for the climate and environmental objectives of the EU Taxonomy'. • **Re 1:** o As those digital solutions and services are 'enabling' activities, they have a clear focus on the target activity's environmental sustainability performance, including by upscaling the target activity, rather than on those components or aspects that are required for its general functionality. Thus, e.g., digital solutions and services improving specific components that are relevant for the sustainable use and protection of water and marine resources are covered, whereas digital solutions and services improving general/unspecific components (like e.g. office programs) are not covered. • It is important to note that in addition to the digital solutions and services, other instrumental enabling activities may be necessary to make the target activity Taxonomy aligned. In other words: While the digital solutions and services must play an instrumental role in making the target activity Taxonomy aligned, it is possible that the target activity only becomes Taxonomy aligned by the interaction of several enabling activities. • Or, to put it the other way round: Without the digital solutions and services, the criteria of the target activity for a 'substantial contribution' to the environmental objective ▪ would not be met, ▪ or would only be met at significantly higher costs, ▪ or would only be met with a significant higher demand of (critical) raw materials. 3. **Do-no-significant-harm (DNSH) criteria** For the development of the DNSH criteria for this activity, activity no 8.2 "data-driven solutions for GHG emissions reductions", and no 8.4, "software enabling physical climate risk management and adaptation" were used as a role model. **CCM**: • TSpecialized digital solutions and services, IT and OT, were found to not significantly harming CCM. **CCA**:

	• In the DNSH criteria for climate change adaptation, activity no 8.2 "data-driven solutions for GHG emissions reductions" was used as role model. The DNSH refers to Appendix A of the Annex I of the Climate DA. **Water:** • The DNSH criteria are aligned with activity 8.2 (Data-driven solutions for GHG emissions reductions, see Annex I of (EU) 2020/852). **CE:** • Wording aligns with the ICT from EU 2023/2486, Annex I, on Circular Economy. Related part of the text has been put on CE, whereas the other parts of the text have been put on PPC. Splitting the DNSH is aligned with digital solutions and services already included in EU Taxonomy, such as activity 4.1 in section protection of water and marine resources, "Provision of IT/OT data-driven solutions for leakage reduction" (EU 2023/2486, Annex I). The new structure accounts for the inclusion of OT (Operational Technology) which is not included in activity 8.2 Data-driven solutions for GHG emissions reductions. **PPC:** • Wording aligns with the ICT from EU 2023/2486, Annex I, on PPC (Pollution Prevention and Control). Related part of the text has been put on PPC, whereas the other parts of the text have been put on CE. Splitting the DNSH is aligned with digital solutions and services already included in EU Taxonomy, such as activity 4.1 in section protection of water and marine resources, "Provision of IT/OT data-driven solutions for leakage reduction" (EU 2023/2486, Annex I). The new structure accounts for the inclusion of OT (Operational Technology) which is not included in activity 8.2 Data-driven solutions for GHG emissions reductions. **Biodiversity:** • Wording aligns with the criteria developed for the DNSH on biodiversity of applied research activities. The criteria refer to the used, operated and controlled equipment which has been exclusively built for and is used by sustainable digital solutions and services.

iv. Usability, Data and Guidance

- The perspectives and needs of all main user groups have been considered. Moreover, the usability issues that were brought up by the Commission and by Platform members/observers, have been addressed accordingly.
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v. Recommendations

- For reasons of consistency, acceleration of Green Finance purposes and for the success of the Taxonomy, the Platform recommends aligning the criteria of the Digital Solutions and Services activities for all 6 objectives and extending them to target activities that are not yet included in the Annexes of the Climate DA or the Environmental.

9. Mining of Lithium, Nickel and Copper for Climate Change Mitigation

i. Description of the activity

Land-based mining and quarrying of minerals as well as the extraction of solids or liquids by different methods such as underground or surface mining, well operation, etc. and subsequent activities aimed at preparing the extracted materials for marketing, for example, crushing, grinding, cleaning, drying, sorting, and concentrating ores.

The activity is classified under NACE codes B07 and B08 and refers strictly to lithium, copper and nickel mining ringfenced for the downstream use of sustainable economic activities and excludes seabed mining as well as coal, lignite, crude oil/petroleum or natural gas extraction, or extraction of peat.

An activity in this category is an enabling activity in accordance with Article 10(1), point (i), of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

ii. Technical screening criteria

Substantial contribution to Climate Change Mitigation
i. The opening of lithium, copper and nickel mines shall be considered as a substantial contribution to climate change mitigation if the following conditions are both met: a. The opening of new mines or the expansion of existing mining sites have a percentage alignment directly proportional to the percentage of committed sales of ores over the licensed production volume towards the end-use activities in the list below (e.g. a mine which sells 80% of its lithium towards battery manufacturing is 80% aligned). Committed sales are evidenced by conditional as well as firm offtake agreements. b. The mine has an investment plan as well as a GHG-monitoring and evaluation system in place to reach the required GHG emission thresholds at the start of the production stage of the mine or mine expansion as per points ii.b and ii.c. below.
ii. The operation of existing lithium, copper and nickel mines shall be considered as a substantial contribution to climate change mitigation if all three conditions below are met: a. The operation of existing mining sites has a percentage alignment proportional to the percentage of committed sales of ores over the annual production volume towards the green activities in the list below. Committed sales are evidenced through traceability, conditional as well as firm offtake agreements. b. The mine meets the following Scope 1 + 2 GHG intensities, depending on mineral.

- Lithium rock mining: 1.23 tCO2e/tLCE before 2030
  0.615 tCO2e/tLCE from 2030
- Lithium brine: 1.23 tCO2e/tLCE before 2030
  0.615 tCO2e/tLCE from 2030
- Nickel sulfidic ore mining: 0.74 tCO2e/tNiEq before 2030
  0.37 tCO2e/tNiEq from 2030
- Nickel laterite ore mining: 0.68 tCO2e/tNiEq before 2030
  0.34 tCO2e/tNiEq from 2030
- Copper mining: 2.31 tCO2e/ContainedCu before 2030
  1.15 tCO2e/ ContainedCu from 2030

c. The average carbon intensity of the electricity does not exceed European Union Grid Average (direct emissions of 240 g CO2e/kWh until before 2030 and do not exceed 115 g CO2e/kWh from 2030onwards.

List of end-use economic activities referred to in i.a above:

- Manufacture of renewable energy technologies, where renewable energy is defined in Article 2(1) of Directive (EU) 2018/2001.
- Manufacture of equipment for the production and use of hydrogen
- Manufacture of any zero direct (tailpipe) CO2 emissions transport vehicles, rolling stock and vessels, including non-road mobile machinery and other automotive and mobility components of zero emissions mobility devices and systems.
- Manufacture of automotive and mobility components for zero tailpipe vehicles
- Manufacture of aircraft with zero direct (tailpipe) CO2 emissions.
- Manufacture of batteries.
- Manufacture of low, medium and or high electrical equipment for electrical transmission and distribution
- Manufacture of energy efficiency equipment for buildings meeting the substantial contribution criteria in Annex I of Delegated Regulation (EU) 2021/2139 of 4 June 2021 (Climate Delegated Act).

Do no significant harm (‘DNSH’)	
(2) Climate change adaptation	The activity complies with the criteria set out in Appendix A of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852.
(3) Sustainable use and protection of water and marine resources	See Appendix I to this activity.
(4) Transition to a circular economy	The activity complies with the provisions of the Extractive Waste Directive 2006/21, and publicly discloses how it has implemented the Best Available

	Techniques Conclusions from the Best Available Techniques Reference Document for the Management of Waste from Extractive Industries, in accordance with Directive 2006/21/EC, abbreviated as MWEI BREF. Measures are taken to prevent, predict, and rapidly respond to seepage from or failure of Tailing Management Facilities in accordance with Directive 2012/18/EU. The economic activity undertakes public disclosure under and implements the Global Industry Standard on Tailings Management (GISTM) or under equivalent national tailings standards. The activity publicly discloses how it complies any of the future certification scheme recognised under the EU's Critical Raw Materials Act.
(5) Pollution prevention and control	The activity complies with the provisions of the Industrial Emissions Directive (EU) 2024/1785, Industrial Emissions Portal Regulation and the Extractive Waste Directive 2006/21. The economic activity also demonstrates: The establishment and systematic implementation of an environmental management and monitoring system that: a. establishes a baseline of air, land, soil and water pollution (ground water, surface water and marine water) before the activity has started, or using similar background locations not affected by the operation if a pre-mining evaluation has not been conducted, b. predicts the potential effects of the activity on natural resources and implements an adaptive management plan to evaluate and respond to those effects, c. tracks and reports the effects of the activity's emissions of pollutants at a sufficient number of individual monitoring points relevant to the areas affected by the activity and its environmental risk profile,

	d. compares the measured results to baseline values or relevant standards, e. implements measures to prevent or reduce as much as technically and economically feasible the emissions of pollutants, taking into account existing Best Available Techniques, f. monitors systematically the effectiveness of the implemented measures, and implements corrective actions without undue delay, as necessary, g. and ensures that no environmental damage as defined in Directive 2004/35/CE, is caused by the activity's pollutant emissions. Any incidents of pollution are managed and reported promptly, and action is taken to prevent any resulting imminent threat of environmental damage and remediate the damage which has occurred. 2. The baseline measurements and subsequent performance across all relevant pollutants are publicly disclosed. 3. The assessment of the activity was covered by an Environmental Impact Assessment (EIA) in accordance with Directive 2011/92/EU of the European Parliament and of the Council. 4. All pollution prevention and control measures of the permit are adopted. 5. The activity's operating permit is not based on an exemption or derogation under Directive 2010/75/EC. The scope of conditions 1-5 above: 1. concerns all pollutant emissions during the full mine life cycle (exploration, construction, operation, closure, post-closure), 2. concerns point-source as well as diffuse emissions (e.g., from pits, voids, comminution, beneficiation or tailing management facilities, heaps, ponds), 3. concerns all pathways of pollutants to air, land/soil as well as ground, surface and marine waters (e.g., effluents, run-off, erosion, seepage, leakage, gaseous emissions, dust),

	4. applies especially to emissions of geogenic pollutants, including from acid rock and metalliferous drainage and emissions of radioisotopes. 5. applies especially to emissions of anthropogenic hazardous substances added by the economic activity (e.g., spills from transport, use and storage of chemicals, water quality effects from the use of blasting agents, xanthates or cyanide), as well as other processing chemicals that may be hazardous to terrestrial or aquatic life. 6. applies to wider pollution issues such as the management of noise and vibration. For non-EU mines not covered under IED transparency rules, the activity will publicly report annually on the total pollutant yearly mass, average monthly concentration and maximum allowable concentration of their permit and their actual performance across the pollutant list relevant for mining under the Industrial Emissions Directive (EU) 2024/1785. There is no marine, lake, riverine or other freshwater waterbodies tailings disposal.
(6) Protection and restoration of biodiversity and ecosystems	See Appendix II to this activity.

Appendix I – DNSH Sustainable use and protection of water and marine resources

The activities will be considered as doing no significant harm if they comply with all of the following criteria:

A I 1 Compliance with Water Framework Directive and Marine Strategy Framework Directive

2. The activity complies with the criteria set out in Appendix B to Commission Delegated Regulation EU 2021/2139. In addition, the activity ensures that water bodies that are already in good environmental status as defined by Directive 2000/60/EC (WFD) are kept in good environmental status, and waters in excellent condition are kept in excellent condition. Marine waters that are already in good environmental status as defined in point 5 of Article 3 of Directive 2008/56/EC of the European Parliament and of the Council and taking into account the Commission Decision (EU) 2017/848 are kept in good environmental status. If the water body within the impact area has not been classified

according to the WFD criteria, the assessment of WFD status is obtained with sufficient data on ecological and chemical status. The activity's permit is not granted on the basis of an exemption or derogation under Directive 2000/60/EC.

A I 2 Environmental Impact Assessment and Permit

1. An Environmental Impact Assessment (EIA) in accordance with Directive 2011/92/EU (2), Art. 6(3) of Directive 92/43/EEC and Directive 2009/147/EC and assessment under Art. 4(7) Directive of 2000/60/EC determines no unmitigated negative impacts of the activity on:

a. the status of water bodies in accordance with Directive 2000/60/EC and in line with a water use and protection management plan developed thereunder for the potentially affected surface and groundwater water bodies and for protected habitats and species sensitive to water pollution, in consultation with relevant stakeholders;
b. protected natural areas or other areas of high biodiversity conservation of nature with associated ecosystem services and cultural value (IUCN) or
c. areas which are defined as a protected area under Annex IV of the Directive 2000/60/EC.
d. areas reserved for nature restoration in accordance with (EU) 2024/1991 and the national restoration plan

2. The opinions expressed and the EIA decision are made publicly available.
3. The activity implements a management plan containing the indicators and measures necessary to monitor and ensure compliance with the permit, including under conditions of heavy rainfall/peak flood situations, persistent low rainfall and other exceptional water conditions. It covers the activity's opening, operational, closure and post-closure phases and includes an implementation time plan for measures to be taken in case of a breach of the criteria, to mitigate the effects and prevent further damage and corrective actions. The management plan is made publicly available.
5. The authorization of the mining site was preceded by public consultation guaranteeing, where appropriate, free prior and informed consent. If applicable, permits cover the abstraction of water from both surface and groundwater bodies, as well as the discharges of wastewater in surface and groundwater bodies, in line with Directive (2000/60/EC) and in line with the Marine Strategy Framework Directive (2008/56/EC).
6. The mine has a process water recirculation rate of at least 95 % or, in the case of sulfidic ores with the need to mitigate sulfate accumulation in the process water, at least 80 %.
7. The mine uses dry tailings deposition where the conditions allow so.
8. The activity causes no "environmental damage" as defined in Directive 2004/35/CE and further specified in the Section 4 of the Commission Notice Guidelines C/2021/1860, "Overview of Environmental Damage". The activity also causes no imminent risk of such damage occurring.

The activity's site is located outside of areas designated as drinking water protection zones as classified by Directive 2000/60/EC to safeguard the quality of groundwater. It complies with the threshold values set by the member states under the Directive 2006/118/EC.

A I 3 End of life

Sufficient financial guarantees that account for environmental risks also in the long term are provided to restore good environmental status of the mine site and all other effected environment after the mining activity has ended. They are updated every 5 years to reflect any changes incurred during the operational

phase and newest scientific evidence on environmental risks, impacts and restoration technologies and costs.

Appendix II – DNSH Protection and restoration of biodiversity and ecosystems

A II 1 The opening of new or expansion of existing lithium, copper or nickel mines

The activity will be considered as doing no significant harm if all of the following criteria are fulfilled:

1. An Environmental Impact Assessment (EIA) or screening according to Directive 2011/92/EU (2) and Art. 6(3) of Directive 92/43/EEC and Directive 2009/147/EC and appropriate assessment (AA) under Art. 4(7) Directive of 2000/60/EC determines no unmitigated negative impact on protected areas or other areas of high biodiversity value. The opinions expressed during the EIA and the EIA decision are made publicly available.
2. The activity does not convert natural and semi-natural habitats after the demarcation or identification of the protected areas or other areas with high biodiversity value which are incompatible with mining activities, or areas set aside for the restoration of such habitats in accordance with Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on nature restoration and amending Regulation (EU) 2022/869 or equivalent applicable national law or international standards.

a. The assessment of incompatibility considers the legal framework for the creation of the protected area and whether it is in alignment with the management instrument of the area.
b. These areas include land designated as Natura 2000, UNESCO World Heritage, Key Biodiversity Areas (KBAs) and Alliance for Zero Extinction sites (AZEs), Important Bird and Biodiversity Areas (IBA), Important Plant Areas (IPA), International Union for Conservation of Nature (IUCN) protected areas designated as protected area management category IV, Ramsar sites that are not IUCN protected area management categories I-III, Buffer zones of UNESCO biosphere reserves, areas that include habitats of endangered species listed on the European Red List and / or the IUCN Red List as well as populations of species protected under Directive 92/43/EEC and Directive 2009/147/EC of the European Parliament and of the Council at a favourable conservation status; World Heritage Sites (WHS), areas on a State Party's official Tentative List for WHS Inscription, the Habitats Directive (92/43/EEC) and the Birds Directive (2009/147/EC) or registered as a Protected Areas in the World Database of Protected Areas (WDPA) as well as 'protected areas' in the European Environment Agency's Common Database on Designated Areas (CDDA) or areas of high biodiversity value outside protected areas' (land with high biodiversity value as referred to in Article 7b(3) of Directive 98/70/EC of the European Parliament and of the Council).

3. The opening and expansion of new mines that is preceded by a process of degazettement, downgrading or downsizing of the protected area incompatible with the mining activity will be considered to cause significant harm to biodiversity. Exceptions apply in cases when the degazettement, downgrading or downsizing was motivated by irremediable loss of value of biodiversity and ecosystems caused by actions unrelated to the mining process.
4. The location of the activity does not cause a risk for reaching the favourable conservation status of threatened species and/or habitats.

5. The location of the activity does not cause a risk for areas reserved for nature restoration in accordance with (EU) 2024/1991 and the national restoration plan.

A II 2 The operation of lithium, copper or nickel mines

The activity will be considered as doing no significant harm if all of the following criteria are fulfilled:

1. An Environmental Impact Assessment (EIA) or screening according to Directive 2011/92/EU (2) and Art. 6(3) of Directive 92/43/EEC and assessment under Art. 4(7) Directive of 2000/60/EC before the opening of the mine determined no unmitigated negative impact on protected areas or other areas of high biodiversity value. The EIA report is made publicly available.
2. The environmental licensing process and respective independent third-party environmental studies and associated monitoring determine where:

a. In the area of direct influence of the activity, there is no loss of value of biodiversity and ecosystems considered irreplaceable at the regional and national levels.
b. In the area of indirect influence of the activity, there are no negative unmitigated impacts on protected areas or areas relevant to biodiversity as per point I 2(b)

3. The activity does not cause or potentially cause "environmental damage" as defined in Directive 2004/35/CE and further clarified in the Commission Notice Guidelines C/2021/1860, Section 4, "Overview of Environmental Damage". The mine also does not cause or potentially cause "damage to protected species and natural habitats" as defined in Directive 2004/35/CE and further clarified in the Commission Notice Guidelines C/2021/1860, Section 4, "Overview of Environmental Damage" in §47-129. For the purposes of determining environmental damage or degradation, administrative or judicial acts enforced against the operator should be considered.
4. **The operator or owner of the activity** demonstrates the ability to cover the financial security required to fulfil the obligations related to mining operations and environmental damage remediation, including any restoration measures necessary during the opening, operation, closure and post closure. The financial security required is to be calculated by an independent third party. Any adjustment or additional provision deemed necessary to meet environmental obligations and ensure effective remediation and restoration should be promptly addressed and documented for regulatory review with necessary updates concerning financial security.
5. The activity has **an environmental restoration plan** that fulfils the conditions attached to the environmental permit.

A II 3 Tailing Dams

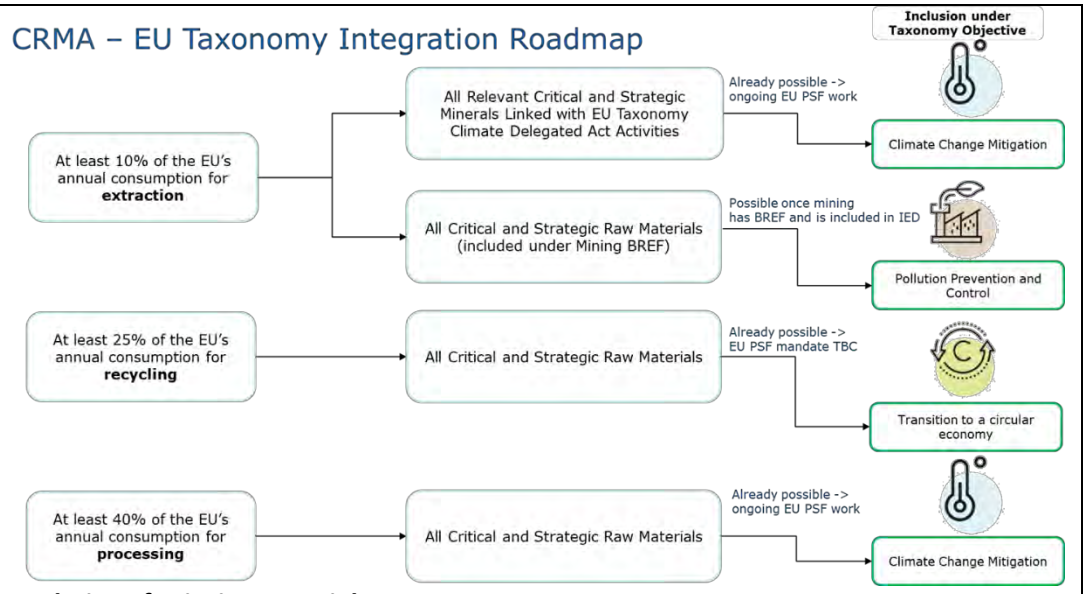
The location of new tailing dams must include a runout modelling, dam break, geotechnical monitoring systems and inundation mapping of its tailings dam to minimise the risk of environmental impacts in case of catastrophic events. The stability of the dam structures are verified by an independent third party.

A II 4 Deep sea mining

1. Deep sea is defined as regions lower than 200 meters under the sea level
5. Deep sea mining activities and beneficiation of ore extracted from deep sea will be considered to not meet do no significant harm under the EU Taxonomy.

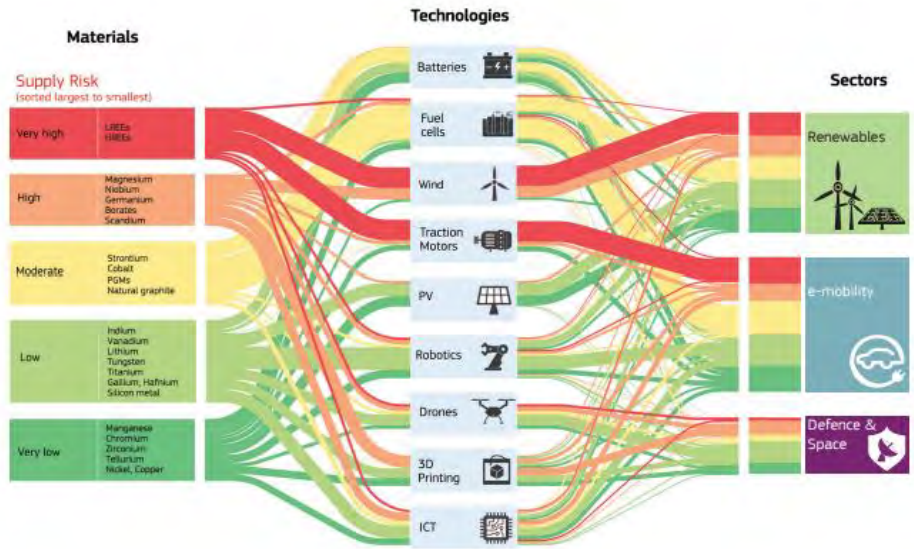
iii. Rationale

Rationale	2.1 Environmental objective chosen for substantial contribution and reasoning. 2.2 Choice of priority materials 2.3 Approach to determine substantial contribution: (the enabling approach) Description of the priority activity 2.5 Substantial Contribution Criteria Determination Logic 2.6 Do No Significant Harm (DNSH) **2.1 Environmental objective chosen for substantial contribution and reasoning.** **Pollution prevention and control considerations** The initial mandate of the platform was to investigate whether mining economic activities could provide a substantial contribution to the pollution prevention and control objective. After its investigation, the platform concluded that the Taxonomy legislation should not pre-empt the newly adopted Industrial Emissions Directive 2024/1785 (IED 2.0) which includes mining activities. The IED 2.0 will engage in the process of collecting pollution data from mines across the EU and define the Best Available Techniques (BAT) for certain mining activities which are currently not available. The BAT reference document (BREF) will showcase the distribution of pollution performance across different metals which would allow for an accurate benchmarking process. The Platform is advising that until this process is finalised, the data available for establishing substantial contribution criteria for pollution prevention and control under the EU Taxonomy is limited. The pollution impact is different for each material depending on the mineral type. e.g. sulfidic ores have more pollution due to discharged water downstream, oxidic minerals processing frequently use the 'leaching' route which is also polluting more to water, and the effect of uncontrolled pollution last much longer (centuries). This means that any criteria setting which considers mining holistically and has a data driven approach is not necessarily replicable for pollution from one mineral to the other. The data and benchmarks resulting from the IED would allow to bypass these challenges and allow for potential consideration of mining under the pollution objective. In the meantime, for a select group of minerals, the Platform believes that mining could be enabling towards reaching our net-zero goals. **Climate change mitigation** The Critical Raw Materials Act (CRMA) has been launched to ensure the resilience of value chains which underpin the growth in mineral demand triggered by the renewable energy as well as digital industry growth in Europe, thus enabling the 2030 and 2050 climate goals of the EU. In line with the Green Deal Industrial Plan, the Critical Raw Materials Act comes out alongside the Commission's Net Zero Industry Act, which aims to scale up the manufacture of key carbon-neutral technologies for clean energy supply chains. Given European policy objectives on critical raw materials and the heavy reliance of many technologies under the 1st Climate Delegated Act under the EU Taxonomy on select materials, the Platform has sought to frame this contribution of mining to meeting the demand of materials for low carbon technologies under the current technical screening criteria. While the current approach focuses on climate change mitigation, the Commission could extend the criteria for mining under the circular economy objective (for re-mining activities) and pollution prevention activities once the IED process is finalised.



2.2 Choice of priority materials

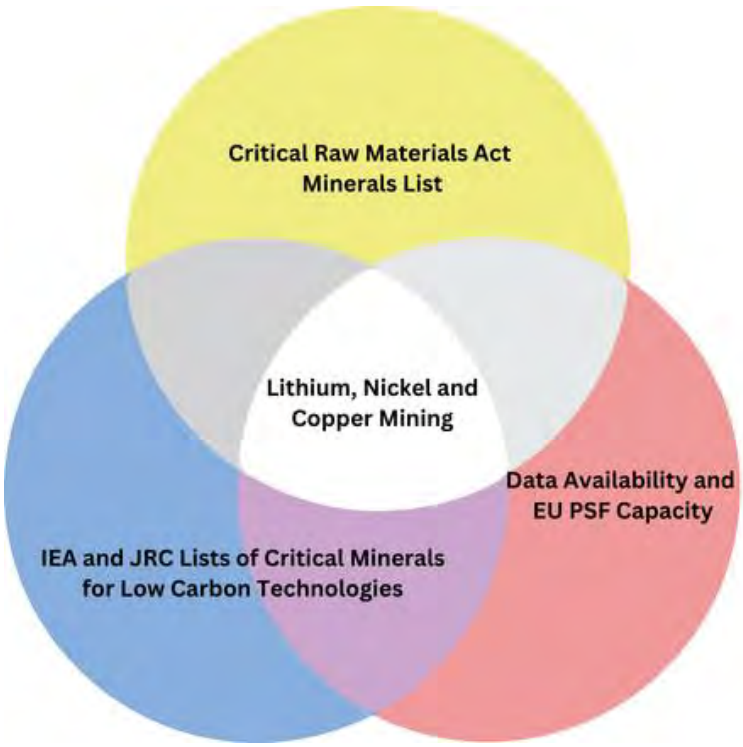
The Critical Raw Materials for Strategic Technologies and Sectors in the EU - Carrara et al. (2020) from the Joint Research Centre of the EU Commission, identifies critical raw materials (CRMs) which are indispensable for the development of strategic sectors such as renewable energy and electric mobility. Currently, EU industry depends heavily on imports for many raw materials and is, in some cases, significantly exposed to supply chain vulnerabilities. As the global energy transition progresses, the demand for metallic raw materials necessary for manufacturing wind turbines, PV panels, batteries, hydrogen production and storage, and other systems will increase significantly. The shift to e-mobility will also drive the need for batteries, fuel cells, and lightweight motors for various types of transport, including cars, e-bikes, scooters, and heavy-duty vehicles. A comprehensive analysis of supply chain dependencies was conducted for Li-ion batteries, fuel cells (FC), wind turbines, electric traction motors, photovoltaics (PV), as well as the digital and defence sectors which are outside the current scope of the EU Green Taxonomy.



Source: Carrara et al. (2020)

We intersect this particular list with the minerals for which the IEA has conducted a clean energy transition risk assessment, which include: lithium, nickel, copper, graphite, cobalt

and rare earths (IEA 2024). The Commission has also kindly ensured data access to WoodMackenzie, a specialist data provider, which provided detailed GHG intensity data for lithium, copper and nickel mines around the world. Thus, the Platform has decided to focus on lithium, nickel and copper to propose a blueprint based on which criteria for other minerals could be developed.



2.3 Approach to determine substantial contribution: (the enabling approach)

The EU's Critical Raw Materials Act, as well as other global critical minerals initiatives and legislations, frame minerals as indispensable enablers to the net-zero transition, including for including batteries, wind turbines, photovoltaic panels, electrolyzers, electric vehicles, and electricity grids. According to the International Energy Agency (IEA), under the Net Zero Emissions by 2050 (NZE) scenario, the demand for minerals for clean energy technologies is projected to almost double by 2030 (IEA, 2024). Metals such as copper, nickel, lithium, and cobalt are expected to see the largest increases in demand.

In seeking to reconcile the demand for minerals linked to the growth in green economic activities with the EU's Taxonomy legislation, the Platform has concluded that mining economic activities can be classified as enabling activities as referred in in Articles 10-15 of the Taxonomy Regulation. Mineral extraction stands at the beginning of various value chains and, by nature, has a relatively low concentration of Scope 1 and 2 greenhouse gas (GHG) emissions and a high concentration of Scope 3 emissions. This means that simply setting an own performance metric based on Scope 1 and 2 emissions for mining would not be suitable towards showing substantial contribution towards climate change mitigation. Instead, it is the actual use of the material in green economic activities downstream which makes a particular material enabling towards the green transition.

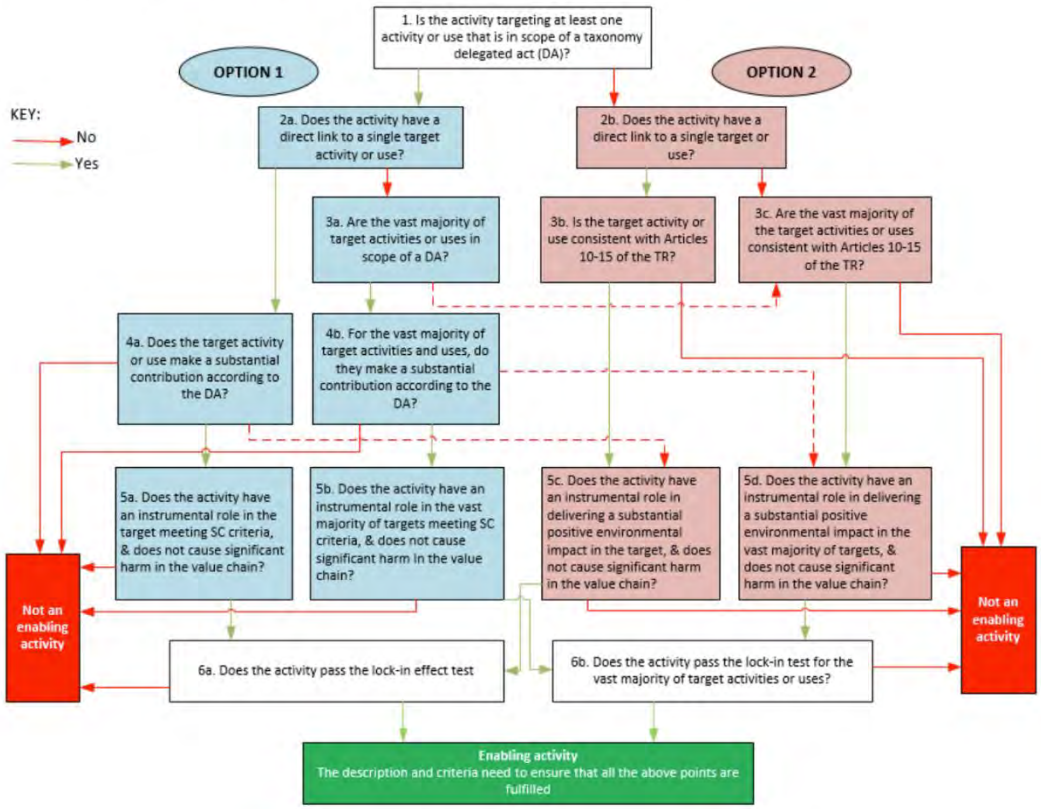
The Platform has followed its established methodology of setting substantial contribution criteria in accordance to the enabling framework, which has been detailed in the October 2022 Methodology document by the previous Platform mandate (Platform 2022). Enabling activities are defined in Article 16 of the Taxonomy Regulation as follows:

"An economic activity shall qualify as contributing substantially to one or more of the environmental objectives set out in Article 9 by directly enabling other activities to make a substantial contribution to one or more of those objectives, provided that such economic activity:
(a) does not lead to a lock-in of assets that undermine long-term environmental goals, considering the economic lifetime of those assets; and
(b) has a substantial positive environmental impact, on the basis of life-cycle considerations."

Thus, the Platform is emphasizing in the design of the criteria that a clear link between the enabling activity and the target, resulting in a substantial positive environmental impact of the target activity requires evidencing. In addition, do no significant harm criteria require that life cycle impacts of the enabling activity are fully considered on all other environmental objectives, as well as preventing more broadly a lock-in of assets s that could be detrimental to long-term environmental goals.

In defining the substantial contribution criteria for mining, the Platform has followed the decision tree below.

FIGURE 1: DECISION TREE



1. Is the activity targeting at least one activity or use that is in scope of a Taxonomy Delegated Act?

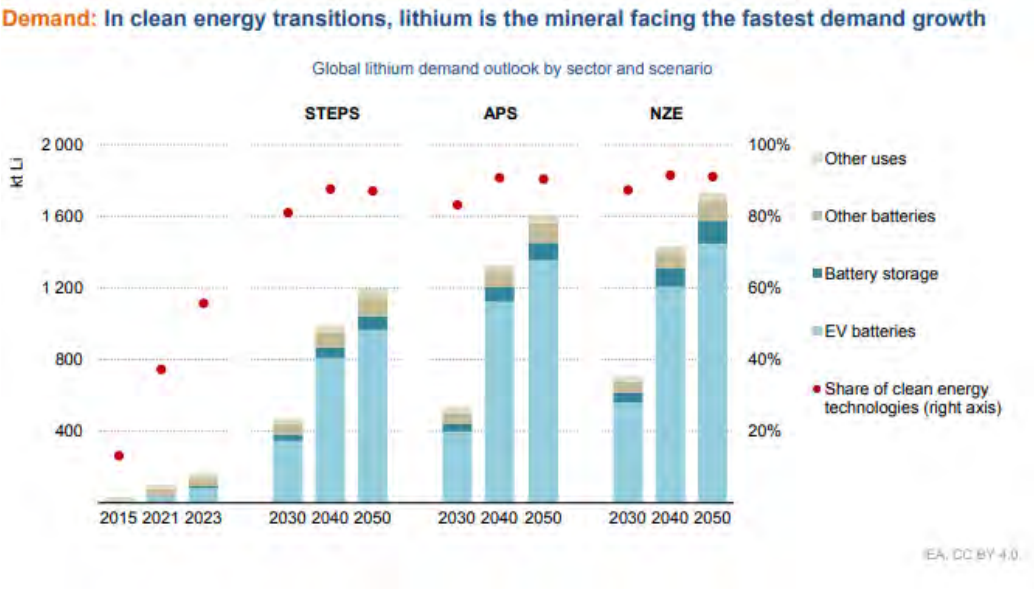
Yes, these include: the manufacture of renewable energy technologies, manufacture of any zero direct (tailpipe) CO2 emissions transport vehicles or aircraft, rolling stock and vessels, including non-road mobile machinery and other automotive and mobility components of zero emissions mobility devices and systems, manufacture of batteries, manufacture of low, medium and or high electrical equipment for electrical transmission and distribution and use.

2a. Does the activity have a direct link to a single target activity or use?

No, it has links to several target activities.

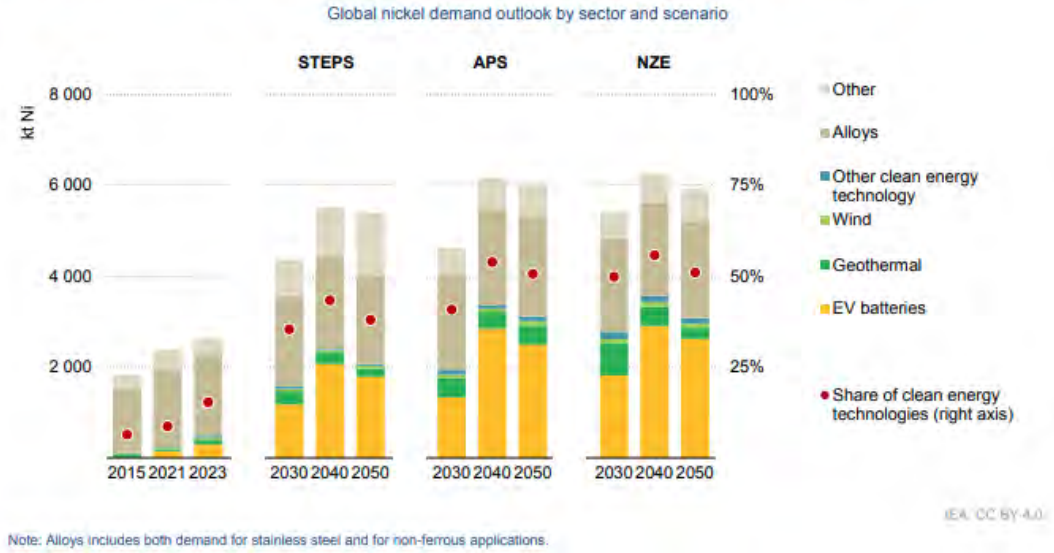
3a. Are the vast majority of target activities or uses in scope of a DA?

By investigating the different types of uses across different minerals, the Platform concluded that while currently there are many uses for the minerals targeted, over time, some minerals are forecasted to experience significant demand growth from downstream economic activities. Such is the case of lithium, where current uses include battery manufacturing (just under 60%), greases, glass/ceramic manufacturing, by 2040, more than 90% of lithium demand will be used towards batteries.



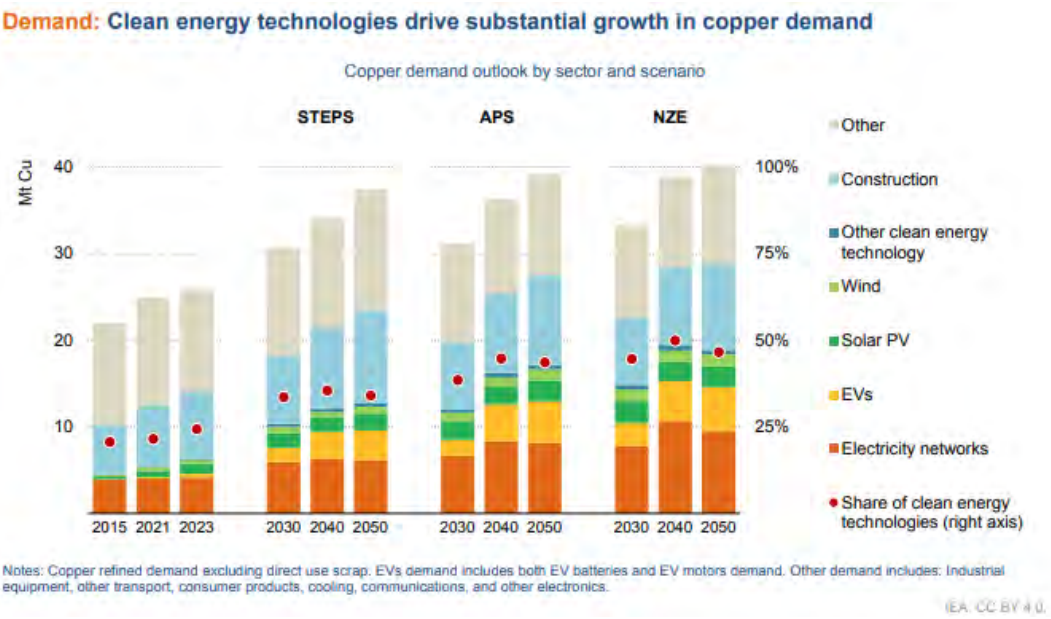
Source: IEA (2024)

For nickel, the share of clean energy applications in total demand crossed 15% in 2023. The growing use of nickel in clean energy technologies is a significant driver of overall nickel demand. Across all scenarios, the share of clean energy technologies in total nickel demand continues to rise, reaching approximately 55% by 2040. This share slightly declines afterward due to reduced reliance on nickel-rich chemistries. However, the primary factor behind nickel's demand growth remains EV batteries, with demand in this sector increasing nearly ninefold between now and 2050 (IEA 2024).



Source: IEA (2024)

Due to its unique combination of properties including conductivity, durability and resistance to corrosion, copper is a key enabler across the main renewable energy technologies: electric vehicles (EVs), solar photovoltaics (PV), wind power, and electricity networks. Copper downstream uses for clean energy technologies has reached 25% in 2023 and is expected to reach a maximum of 50% out of total downstream uses for the mineral by 2040.



Source: IEA (2024)

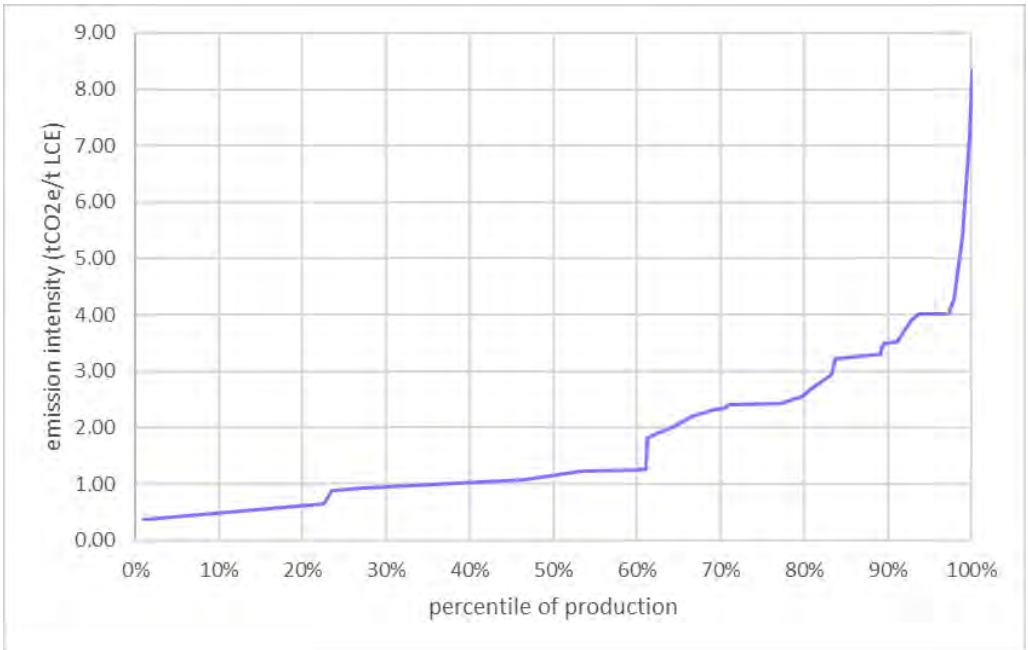
Given the evidence above, and to ensure that the criteria is set in a technology/mineral neutral manner, the Platform has deemed that mining criteria require downstream use restrictions to ensure that minerals flow indeed to green economic activities and that minerals are truly enabling to the net-zero transition.

	Without scope exclusions --> 3c: Are the vast majority of the target activities or uses consistent with Articles 10-15 of the TR? No, hence the downstream use requirement. **4b For the vast majority of target activities and uses, do they make a substantial contribution according to the DA?** Where relevant and possible, this should be ensured through scope exclusions. **if yes -->5b: Does the activity have an instrumental role in the vast majority of targets meeting SC criteria, and does not cause significant harm in the value chain?** **if no -->5d: Does the activity have an instrumental role in delivering a substantial positive environmental impact in the vast majority of targets, and does not cause significant harm in the value chain?** The instrumental role needs to be ensured through the relevant scope exclusions. NSH in the value chain needs to be ensured through DNSH – including supply chain effects – for all six environmental objectives. **6b: Does the activity pass the lock-in test for the vast majority of target activities and uses?** The downstream use requirement in essence hedges against lock-in and deems minerals as enabling as far as the market reality validates this view. **2.4 Description of the priority activity** Given the platform mandate, the activity is classified under NACE codes B07 & B08 and refers strictly to lithium, copper and nickel mining and excludes seabed mining. Deep sea mining is out of the scope as the do no significant harm criteria currently developed would not be fit for purpose. An activity in this category is an enabling activity in accordance with Article 10(1), point (i), of Regulation (EU) 2020/852. For the aforementioned reasons in Section 2.3, mining will be classified as an enabling economic activity to climate change mitigation. **2.5 Substantial Contribution Criteria Determination Logic** Given the rationale and framing of mining economic activities as enabling, the Platform emphasises as a key criterion, the percentage of sales that is sold to downstream sustainable economic activities as the actual alignment figure for either capex, opex or revenue. In the case of existing mines, calculating revenue and opex alignment can be done as a percentage of total revenue / opex from downstream green economic activities, either through track and trace / chain of custody, or through offtake agreements. For new mines which are not yet operational, a mine can calculate its capex/opex alignment as a % of its licensed production volume which is committed to downstream green economic activities. The Platform did a review of the eligible activities currently covered by the Taxonomy, and their respective links to lithium, nickel and copper materials demand, informed by the JRC's and IEA's analysis on critical minerals for the low carbon transition. This approach is in line with the current guidance for Strategic projects falling under the EU's CRMA (as of May 2024), which requires applicants of strategic minerals projects to evidence how they will source offtakers for the strategic raw materials projects and show

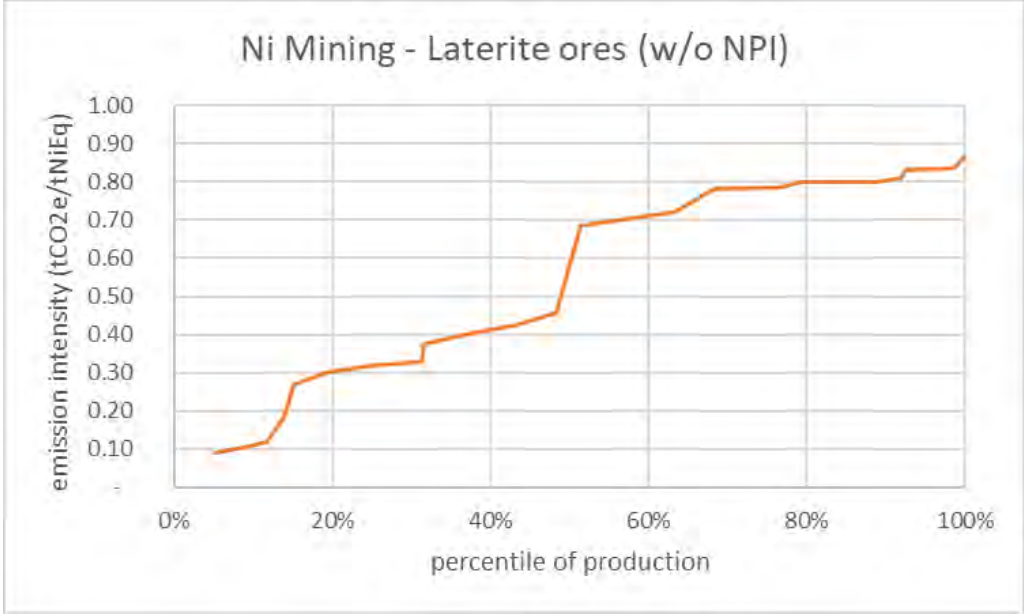
how these would end up on the European market. The CRMA requires strategic project owners to provide the ownership and location of offtakers as well as information on their level of commitment, the amounts involved and the time period covered – which would enable mining economic activities whether they are indeed contributing to green technologies or not. For projects in third countries or Overseas Countries and Territories (OCTs) the Commission emphasises that it is important to demonstrate how the project brings added value for the EU. Such benefits could be EU companies participating in the project, potential off-takers located in EU or positive effects on the availability of strategic raw materials for downstream users in the EU (EU Commission, 2024).

The Platform also acknowledges that mines themselves need to decarbonise, although they are not responsible for the majority of emissions in the minerals value chains. Thus, the platform recommends that only mines which meet the GHG Scope 1 and 2 threshold by mineral, which has been obtained by taking the world average of facilities according to the dataset provided by WoodMackenzie. From 2030 onwards, this average requires to reduce by 50%. In addition, for Scope 2 emissions, the platform requires mines to source or produce electricity at less than 100gCO2e/kWh.

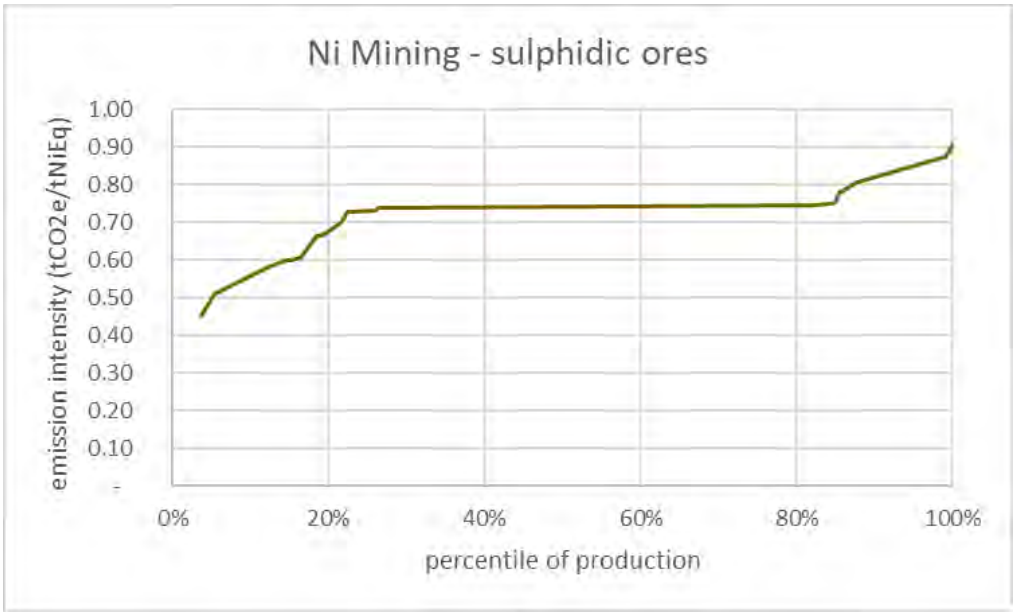
The 50th percentile has been calculated for lithium brine, lithium ores, nickel laterite and sulfidic ores and copper. Given that lithium brines and ores displayed very similar 50% percentile GHG intensities, these have been combined into one criteria.



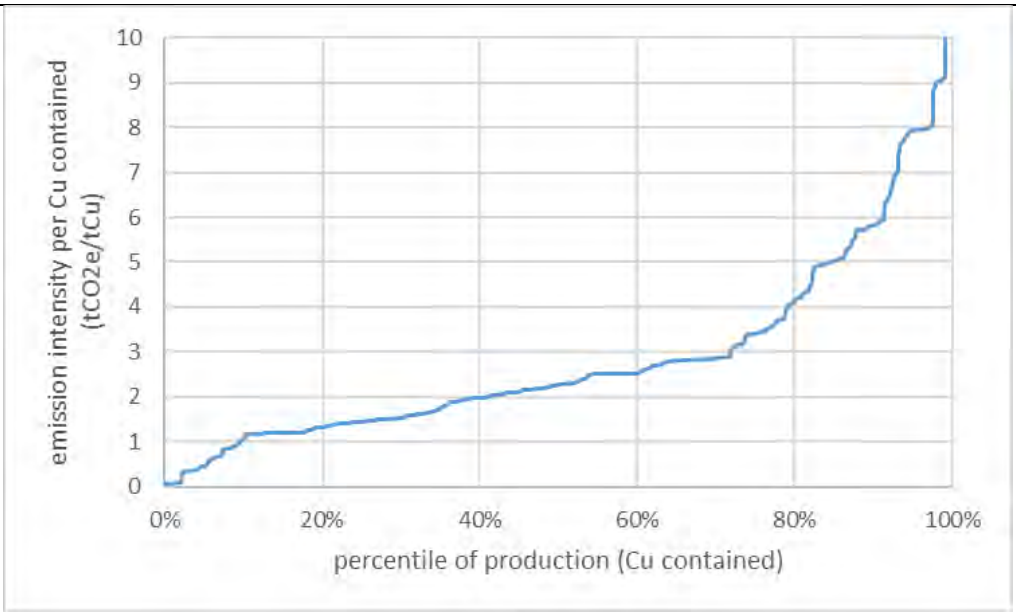
Lithium brine and ore mining GHG Scope 1 and 2 intensity – production curve. Source: EU Platform on Sustainable Finance (Data: WoodMackenzie for year 2023)



Nickel laterite ore mining GHG Scope 1 and 2 intensity – production curve. Source: EU Platform on Sustainable Finance (Data: WoodMackenzie for year 2023). The figure and calculation excludes nickel pig iron.



Nickel sulfidic ore mining GHG Scope 1 and 2 intensity – production curve. Source: EU Platform on Sustainable Finance (Data: WoodMackenzie for year 2023).



Copper mining GHG Scope 1 and 2 intensity per contained copper – production curve. Source: EU Platform on Sustainable Finance (Data: WoodMackenzie for year 2023)

The Platform emphasises that the key substantial contribution claim of mining is in its downstream use of the material towards green economic activities, and hence, the carbon intensity performance for the mines themselves have been set to the better than average carbon intensity globally.

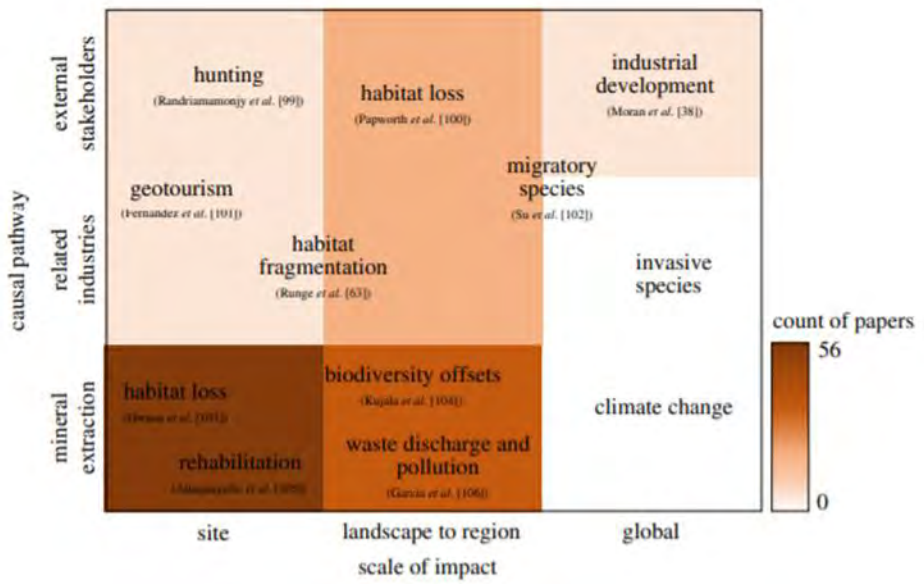
2.6 Do No Significant Harm (DNSH) Rationale

As an overarching ambition level, we have adopted Platform's recommendation that economic activities looking to prove Taxonomy alignment with respect to the biodiversity environmental objective should in the case of DNSH, not undermine the recovery of biodiversity by 2030 and should ensure the no deterioration in conservation trends and status of all protected habitats and species by 2030 in Europe. Globally, mining economic activities **(in relation to DNSH)** should not undermine the restauration efforts to a good ecological condition of the world's ecosystems by 2050.

To understand the impact pathways of mining activities on biodiversity, we have conducted a review of the literature, to understand the scale and magnitude of such impacts, and whether and how mining economic activities that claim DNSH in relation to biodiversity.

Given the impacts of mining at multiple spatial scales, both directly and indirectly on biodiversity, new mining activities in or near protected areas or areas of high biodiversity values would exert significant pressure on biodiversity and hence directly undermine the goal of no deterioration in conservation trends and status of protected habitats and species. Outside these areas, or their vicinity, the case could be made (on a case by case basis), that new or existing mining sites do no significant harm to biodiversity, through robust environmental impact assessments (both retroactively for existing mines and anticipated impacts for new mines, provided this has / will not cause environmental damage as defined in Directive 2004/35/CE). Below, we provide the evidence to justify the choice of criteria and approach undertaken:

Mining affects biodiversity at multiple spatial scales (site, landscape, regional and global) through direct (i.e. mineral extraction) and indirect processes (via industries supporting mining operations, and external stakeholders who gain access to biodiversity-rich areas as the result of mining).



Causal pathways for mining activity pressure and impacts on biodiversity. Constructed from a robust literature review of over 100 papers. Source: Sonter et al. (2018)

The figure above illustrates different types of impacts that mining activities have on biodiversity and the most typical scale at which they manifest themselves (compilation of scientific evidence in Appendix 1). Much of the research is focused on site-level impacts, as well as documenting mining as a key driver of regional decline in rare and threatened species and ecosystems. Negative impacts to biodiversity can also occur over great distances and can cumulate at the landscape and region-wide level, through direct and indirect pathways. Cumulative impacts occur when multiple mines cause more biodiversity loss than the sum of individual mines.

For both biodiversity and water DNSH objectives, the principle of non-deterioration has been closely observed, which led the Platform to suggest different approaches for new vs existing mines. The mine opening process is often very disruptive, and in the case of biodiversity the Platform deems that mining cannot guarantee DNSH when converting habitats in areas of high biodiversity value.

Regarding pollution performance expectations, the IED 2.0 will engage in the process of collecting pollution data from mines across the EU and define the Best Available Techniques reference documents (BREF) for mining economic activities which are currently not available. The IED will also require the public disclosure of pollution performance. In absence of the current pollution performance of mines, the Platform deems transparency of utmost importance for both European and in particular, non-EU mines looking for EU Taxonomy alignment.

Related to waste and tailings management, there is a current Best Available Techniques Reference Document for the Management of Waste from Extractive Industries, abbreviated as MWEI BREF, which has been incorporated as part of the licensing process of some EU Member States (e.g. Finland). The Platforms own outreach on the topic highlighted that transparency on how the BREF document's conclusions are implemented would be very important and generally already implemented in Member States with robust mining licensing processes.

Through its outreach, Platform has also learned that some of the largest EU copper, nickel and lithium mines are in the process of complying with the Global Industry Standard on

	Tailings Management (GISTM) or equivalent other national standards (e.g. TSM) which provides a level of transparency required by the largest asset managers and banks worldwide. On this basis, and as the Taxonomy is meant to connect capital flows with sustainable economic activities, the Platform advises the integration of conformance to GISTM or equivalent national standards in the Taxonomy as highly important.

iv. Usability, Data and Guidance

The Platform believes the usability of the proposed criteria to be of utmost importance. To tailor the criteria as much as possible to the relevant situations, the criteria differentiate between existing mining activities and new mining activities. This reflects the differences in the availability of data but also, the different impact profiles of the various stages of the development and operation of a mining site.

Substantial contribution criteria for the opening of a new mine or a mining site expansion are based primarily on the link that can be established between the mined mineral and its downstream use. The Platform recommends that contractual agreements with either applicable downstream economic activities or intermediary processing stages (e.g. smelters which can guarantee a particular downstream use by their clients) are used to determine whether the investments (capex) used to open or extend a mining site enable a substantial contribution to climate change mitigation. This approach reflects the current trend in the market for the three minerals in question, where sales agreements increasingly get concluded at an early stage.

At the opening stage of a mine, given that there is no revenue yet, it is hard to scale emissions to intensity-based measures, and equally hard to predict or prove carbon emission performance. Therefore, the Platform recommends that GHG intensity performance is used as a criterion at the operational stage only.

At the operational stage, the substantial contribution of the mine's own operations require compliance with Scope 1+2 GHG intensity criteria of the products, as well as Scope 2 GHG intensity criteria for the electricity used. These criteria reflect DNSH ambition levels for the mining process itself. Regarding the mine's role as enabling the substantial contribution of its target activities, the mine can either use track and trace for existing sales to downstream users, or show alignment through offtake agreements.

The Platform's targeted outreach unveiled that depending on the context, track and trace or offtake agreements can be straightforward to evidence, but this varies with mineral specific dynamics, different levels of vertical integration as well as financing structures which may or may not already require offtake contracts. The Platform welcomes additional views on how to evidence downstream use in sustainable economic activities of mined materials and fulfil the enabling character of critical raw materials for the green transition.

DNSH to climate change adaptation follows the generic criteria for adaptation which applies to other economic activities covered under the climate Delegated Act.

DNSH to the sustainable use and protection of water and marine resources is specified to ensure a uniform application of the Water Framework Directive in the permitting process and specifies that derogations from the Directive imply non-compliance with DNSH under the Taxonomy, as previously clarified by the European Commission's FAQ. Financial guarantees at the mine level are set and overseen by regulators, and hence the Platform does not specify this criterion further as long as guarantees are considered sufficient by the regulating authorities.

DNSH to the transition to a circular economy pertains to the waste and tailings management of mining sites. The Platform's outreach confirmed that in the EU, some permitting authorities already implement the Mining Waste BREF (MWEI BREF) conclusions in their permitting process. The expectation is that mining sites have a policy which explains whether and to what extent their own mining waste processes integrate the BAT referenced in the MWEI BREF conclusions, as far as they are applicable to a particular mining activity.

As far as tailings are concerned, compliance with Directive 2012/18/EU should not pose any usability issues. Further, many mining companies are already working towards compliance with the GISTM standard, as this has become a routine request from large infrastructure investors, banks and asset owners.

DNSH to pollution prevention and control requires mostly transparency around pollutants in accordance with the IED but also demonstration of robust processes to measure and minimise pollution. For the reasons discussed in the rationale, pollution thresholds could not be set at this particular point in time, hence the Platform emphasises the transparency element.

DNSH to the protection and restoration of biodiversity and ecosystems considers the different impact profiles of new vs existing mines, and while it recognises that existing mines may have caused significant harm when they were established, it mainly focuses on the present potential of harm. For new mining activities, the criteria are more stringent, and specify no-go zones for conversion of natural or semi-natural habitats by mining activities. The criteria also clarify the definition of "area of high biodiversity value" as well as the EU legislation and international protected area and species classifications, which can be used to demonstrate no significant harm to biodiversity. The Platform considers that the mine location, its overlay with areas of high biodiversity values, together with appropriate assessments under the Habitats Directive and robust permitting and EIA processes could be used to demonstrate DNSH under the Taxonomy, should no derogations to the existing legislation be exercised.

10. Manufacturing (Smelting and Refining) of Copper for Climate Change Mitigation

i. Description of the activity

Manufacture of Copper, copper alloys and copper compounds from primary or from secondary raw materials.

The economic activities in this category could be associated with NACE code C24.44 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is a transitional activity as referred to in Article 10(2) of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this section.

ii. Technical screening criteria

Substantial contribution to climate change mitigation

Copper manufacturing (smelting and refining) from ore concentrates obtained from Primary Resources such as sulfidic ores using pyrometallurgical or hydrometallurgical routes, and from sorted materials from Secondary Resources Streams resulting in copper cathodes, copper alloys and copper compounds fulfil all elements of TSC 1 or of TSC 2:

TSC 1. manufacturing (smelting and refining) copper cathode from ore concentrates:

Criterion A – The average GHG emissions intensity resulting from the consumed electricity and heat (including steam) does not exceed 100 g CO2e/kWh until 31.12.2029 and do not exceed 45 g CO2e/kWh from 1.1.2030. GHG emissions are the life-cycle greenhouse gas emissions produced from the generation of the electricity and heat (including steam) used for the manufacturing.
Criterion B – Carbon emissions associated with fossil fuels and reagents including reducing agents for processing and electricity/heat/steam generation are less than **236 kg CO2e /t Cu**. GHG emissions are quantified **including direct emissions from the activity and direct emissions from the generation of (self-produced or purchased) electricity and heat (including steam)** in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018, **or they are quantified including Scope 1 and Scope 2 in accordance with the Greenhouse Gas Protocol.**
. No thermal coal is used.

Criterion C – A forward looking Decarbonisation Roadmap, for the asset carrying the smelting and refining activity at each site of a company, for decreasing the remaining onsite carbon emissions intensity by 50%, from the base line year is **published** and the scope 3 emissions for 50% (by value) of upstream purchased materials and for upstream and downstream transport are **reported annually** thereafter.[162] Baseline year is 2023 or the year before the actual date of application for Sustainable Finance.

The forward-looking, *Decarbonisation Roadmap* will contain among other points, at least, a commitment to,

I. be Climate Neutral by 2050 as per Paris Agreement, 1.5°C scenario,
II. use of renewable and sustainable fossil free energy sources (as defined in Directive 2018/2001/EU)
III. annually report electricity intensity per ton of sold product.
IV. annually report the fossil energy consumption intensity per ton of sold product.
V. progressively replace all the purchased materials in upstream scope 3, having a high product carbon footprint by those having a lower carbon footprint.
VI. annually report the progress (actual reagents consumption intensity and associated CO2 emissions).
VII. describe the methodology to retrieve data and report the emissions of upstream suppliers of materials, fuels, and reagents.
VIII. describe methodology to retrieve data and to report emissions of upstream and downstream transport.

[162] Criterion C is fulfilled when the decarbonization pathway is published and the main components are present. The 50% reduction is aspirational, and it is not required for alignment. This would help the gathering of information while at the same time ensure that the criteria usable right now.

IX. report a comparison of the current environmental performance for the main impact categories given in copper life cycle assessment (e.g. Primary Energy Demand Non-renewable (PED), Global Warming Potential, Acidification Potential (AP), Eutrophication Potential, Photochemical Ozone Creation Potential (POCP), and Ozone Depletion Potential (ODP).

The forward-looking *Decarbonisation Roadmap* is verified by an independent third party, for the presence of the main elements of this roadmap, referred in criteria C, points I to VIII, such as climate neutrality commitment, electricity intensity per ton of sold product etc.

TSC 2: Refined Copper cathode and alloys produced from sorted materials from Secondary Resources Streams :

Criterion A – Copper cathode and alloys produced using secondary input materials (containing at least 0,1% by weight of copper that is sourced from e.g., electronic scrap, slags, and material streams from the tailing ponds), where the ratio of secondary input materials to Total input materials is higher than 80%, based on mass.

Criterion B – The average carbon intensity of the electricity does not exceed European Union Grid Average (direct emissions of 240 g CO2e/kWh until 31.12.2029 and do not exceed 115g CO2e/kWh from 1.1.2030 g CO2 e/kWh).

Criterion C – The obligations of the forward-looking *Decarbonisation Roadmap* mentioned under TSC1- Criterion C, for refining from primary resources, have to be complied with. Baseline year is 2023 or the year before the actual date of application for Sustainable Finance.

Do no significant harm ('DNSH')

(2) Climate change adaptation	DNSH as set out in Appendix A of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852.
(3) Sustainable use and protection of water and marine resources	DNSH as set out in Appendix B of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852.
(4) Transition to a circular economy	N/A
(5) Pollution prevention and control	The activity complies with the criteria set out in Appendix C of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852.

	The activity performance complies with provisions of NFM BREF conclusions - Commission Implementing Decision 2016/1032.
(6) Protection and restoration of biodiversity and ecosystems	DNSH as set out in Appendix D of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852.

iii. Rationale

The technical screening criteria for substantial contribution for the specific activity has been defined to strike the best balance between the different requirements in the Taxonomy regulation (Art. 19) and fulfilling the overall Taxonomy aims.

2.1 Background
2.2 Choice of priority materials
2.3 Approach to determine substantial contribution: (own performance or enabling)?
2.4 Environmental objective chosen for substantial contribution and reasoning.
2.5 Level of ambition and how to achieve it.
2.6 Description of the priority activity
2.7 Substantial Contribution Criteria Determination Logic
2.8 Do No Significant Harm (DNSH)

2.1 Background

This work has resulted from the continued development Platform 1.0 work for copper (report *page 261) and the need to develop a consistent methodological approach to determining Technical Screening Criteria for all the strategic and critical raw materials defined by the Critical Raw Materials Act (CRMA)* *Regulation*, while adhering to the principle of evidence based criteria setting and usability. Useability is considered by explaining steps of criteria design in subsections 2.1 to 2.7 in detail. In order to comply with the criteria, operators need to measure and report their associated CO2 emission in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018.

The CRMA covers a broad list that includes, among others, NACE code (24.4) Manufacture of basic precious and other non-ferrous metals, consisting of, (C 24.4.1) Precious metals production, C24.4.2 Aluminium production (C24.4.3)[163], Lead, zinc and tin production, (C24.4.4) Copper production, (C24.4.5) Other non-ferrous metal production (Si, Li, Ni, Co, Dy, Nd, Pr, Ag, B, Cd, Cr, Ga, Ge, In, Ir, Mn, Mo, Sc, Tb, Te, V) and other materials required for clean energy production and magnetic materials.

163 Already covered in the first EU Taxonomy climate Delegated Act.

In the Communication page 6, accompanying the EU Critical Raw-Materials Act, the Commission requests: "Under the Taxonomy Regulation, the Commission is empowered to compile a list of environmentally sustainable activities by defining technical screening criteria for each environmental objective through Delegated Acts. As a follow-up to the forthcoming environmental Delegated Act, which will cover recycling, the Commission will ask the Platform on Sustainable Finance 2.0 to develop Taxonomy criteria for mining and refining, building on the work started under the Platform 1.0, to be considered and later adopted by the Commission."

2.2 Choice of priority materials

The twin energy and digital transition is metal and material intensive (Metals-for-Clean-Energy, (pages 9-16,19), IEA report "The Role of Critical Minerals in Clean Energy Transitions. Electric vehicles, batteries, solar photovoltaic systems, wind turbines, and hydrogen technologies all require significantly more metals than their conventional alternatives to replace fossil fuel needs. The recent IEA, Global Critical Minerals Outlook 2024 (page 7), informs that the combined market value of key energy transition minerals – copper, lithium, nickel, cobalt, graphite and rare earth elements – more than doubles to reach USD 770 billion by 2040. Furthermore, this report (page 9) claims that the recycled quantities of copper and cobalt could reduce 2040 primary supply requirements by 30%, and 15% for lithium and nickel. Without the uptake of recycling and reuse, mining capital requirements would need to be one-third higher. The data for total supply and demand of different key minerals estimates are available from IEA (link).

In Europe, critical raw materials are required for strategic autonomy. For many of those materials, Europe is largely relying on outside sourcing. The critical raw materials act is providing a framework for boosting their production across the value chain. The primary processing of many critical raw materials is still under development and the associated environmental impact data is not publicly available because of their more limited use. Among the critical raw materials, the non-ferrous metals sector (aluminium, copper, nickel, etc.) has been developing extensively, however for many of the remaining materials the return flows at the "end-of-life" are not significant and needs to be improved. Non-ferrous metals form a fascinating eco-system across their value chains that connect one way or the other the base, precious, specialty and alloys production to each other. Most metal ores carry, next to the primary metals, various other metals in smaller concentrations. These latter are, when it is economically viable, extracted during the metallurgical process of the primary or 'carrier metal', including via recovery in slags or hydrometallurgical residues from among others tailing ponds. All base metals (ores) are carrier metals for a wide range of other base-metals, precious and specialty metals (as shown in figure below).

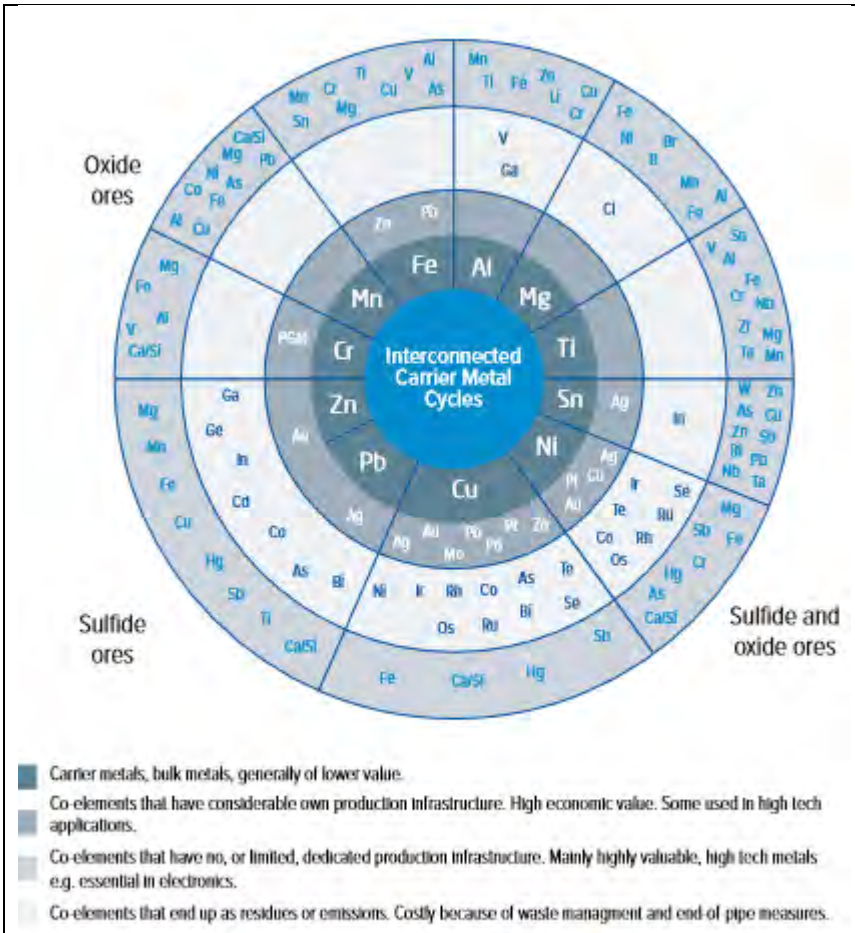


Figure 2: Non-ferrous metals sector interlinkages I Source: UNEP 2013[2]

Secondary processing results in significant value recovery of these biproducts or co-products which would otherwise be lost to landfills and helps extending the continued use of these materials by recycling and maintaining them in the society.

Among the critical raw materials, the work on copper was prioritised as a continuation of the work started in the first mandate of the platform. Nickel and Lithium were also considered given their criticality, but also thanks to the availability of data.

2.3 Approach to determine substantial contribution: (own performance versus enabling)

Reducing pressure on the environment, by reducing direct emissions of pollutants during on performance is considered more appropriate to have a maximum coverage. Enabling other activity such as renewable energy generation or e-mobility will only partially mitigate the environmental impact and will require developing other evidence elements such as tracking- and tracing.

Carbon emissions parameters measurement and reporting is now well established, so also from useability perspective, this option of “own performance” is to be preferred.

In other words, a substantial contribution can be achieved by improving emission performance of the refining production itself (whether the refined products are used for transition or for other purposes), by taking appropriate measures under its own control.

2.4 Environmental objective considered for substantial contribution and reasoning behind the choice.

Climate change mitigation (CCM) has been chosen as the Environmental Objective for substantial contribution.

Although significant improvement has been made in Europe, as mentioned in Metals-for-Climate Neutral Europe figure 21, page (29), more global efforts are needed to decrease the own scope 1 and 2 carbon emissions of the manufacturing (smelting and refining) operations to achieve alignment with the Paris Agreement 1.5°C scenario, and would be possible using the encouragement of Sustainable Finance.

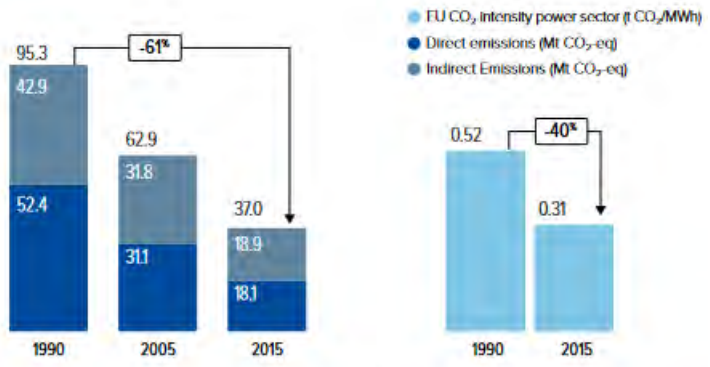
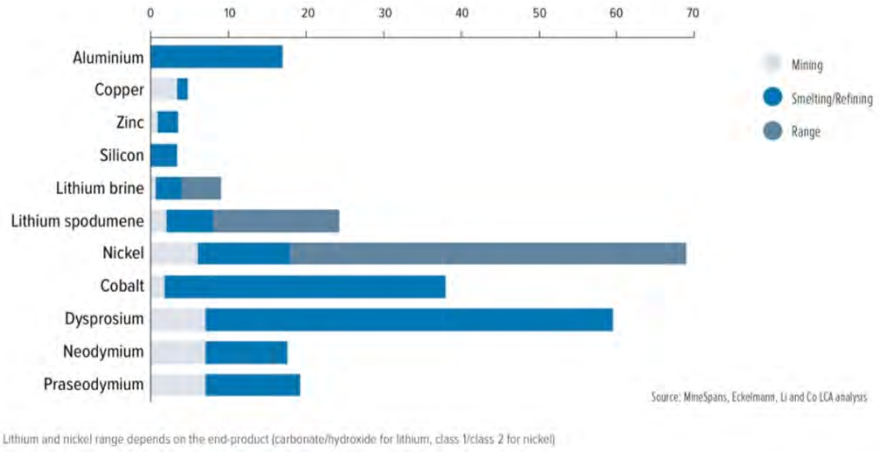


Figure 21: (left) GHG emissions (Mt-CO_2 - eq) of the non-ferrous metals industry (Sources: EEA (direct process emissions), Eurostat (direct emissions related to energy use) and EEA (indirect emissions using EU average CO_2 intensity of power production)[99] (right) Evolution of CO_2 intensity of the EU power production (t CO_2/MWh) (Source: EEA)[100]

Carbon emissions from manufacturing (smelting and refining) operations of critical raw materials are significant. Please see page 195 in IEA report "The Role of Critical Minerals in Clean Energy Transitions., or see metals-for-clean-energy, p95.

Figure 2. GWP primary metal production, split into mining and metal making steps (tonne CO_2/tonne metal, for lithium tonne CO_2/tonne LCE)



Lithium and nickel range depends on the end-product (carbonate/hydroxide for lithium, class 1/class 2 for nickel)

Metals production is an energy intensive process, which results in significant carbon emissions due to the use of fossil fuels and reagents during refining processing. Demand for significantly more materials for twin transition would require much more energy use resulting in many

more carbon emissions. Mineral processors and metal production operators can contribute to climate change mitigation by reducing pressure on environment by own performance, by decreasing carbon footprint of their own roasting, smelting and refining operation, decreasing the carbon footprint of the onsite consumed electricity, heat and steam, as well as by taking steps to monitor and report carbon emissions of upstream mining, specifically for the integrated operators carrying out mining, smelting and refining activities at the same site, up to the stage of concentrate.

It is important to reassure the investors about potential risks to other environmental objectives while transforming to achieve carbon neutrality. To this end investors are investing in LCA studies with some public disclosure. (e.g. Link). Furthermore, Life Cycle analysis studies sponsored by industry associations, such as that by copper, nickel and cobalt clarify the current average performance of the sector for among other parameters, Primary Energy Demand Non-renewable (PED), Global Warming Potential, Acidification Potential (AP), Eutrophication Potential, Photochemical Ozone Creation Potential (POCP), and Ozone Depletion Potential (ODP). This forms a good first step to determine environmental objectives for substantial contribution (SC) and do not significant harm (DNSH), and, also to determine the technical screening criteria (TSC) for the same and while preventing possible risks related to greenwashing and asset lock-in's. However, these studies are not yet available for many of the raw materials listed in Critical Raw Materials Act (CRMA Regulation).

When robust data and evidence are available, an identification of the priority environmental objectives for smelting and refining of the remaining strategic and critical raw materials can be made.
For a subset of these remaining materials[164], where the impact on environment due to carbon dioxide emissions can be proven to be the highest as compared to other environmental objectives, a similar approach as the one used for copper, nickel and lithium could be used for determining the Technical Screening Criteria for Climate Change Mitigation.

2.5 Level of ambition and how to achieve it

Climate Change Mitigation's headline ambition level is **to be compliant with requirement of carbon neutrality by 2050 as per Paris Agreement's 1,5°C scenario**.

The following **solutions and corresponding technologies** decrease the carbon intensity of metals production (t CO2e/t of metals) as informed by the Best Available Techniques (BAT) Reference Document for the Non-Ferrous Metals Industries. This can be achieved by using the electricity/steam/heat consumed on site by non-fossil resources or by using non-fossil reagents.

1. By improving energy efficiency
2. By use of more metal containing secondary materials
3. By electrification and consumption of renewable and fossil free electricity,
4. By use of non-fossil reduction agents and alternative fossil free fuels.
5. By roasting of carbon containing fraction of the infeed materials before it enters the smelting operation aided by carbon capture and storage or carbon capture and use.
5. Innovating in other breakthrough manufacturing technologies (Artificial intelligence, data mining etc.).

164 For which criteria are not developed yet.

More recently, the forward looking decarbonisation roadmaps, such as that by international copper association (link) and IFC-Columbia)link) help clarify with which levers such transformation could be achieved, what levels of investments would be required and which framework conditions need to be fulfilled.

In this document, the criteria have been proposed for copper production, which does not have an ETS Product Benchmark based Criteria because of lack of publicly available data, confidentiality of the performance information, heterogeneous raw materials, small number of installations and / or because of the use of heterogeneous technology routes used to process the raw materials.

Best performance is represented when the electricity/steam/ heat consumption is from non-fossil sources, and total emissions intensity of an asset are less than or equal to those of an asset on the 10th percentile value on a global distribution curve for 2023 of the total carbon emissions intensity (CO2e/t Cu), plotted over the cumulative production volume.

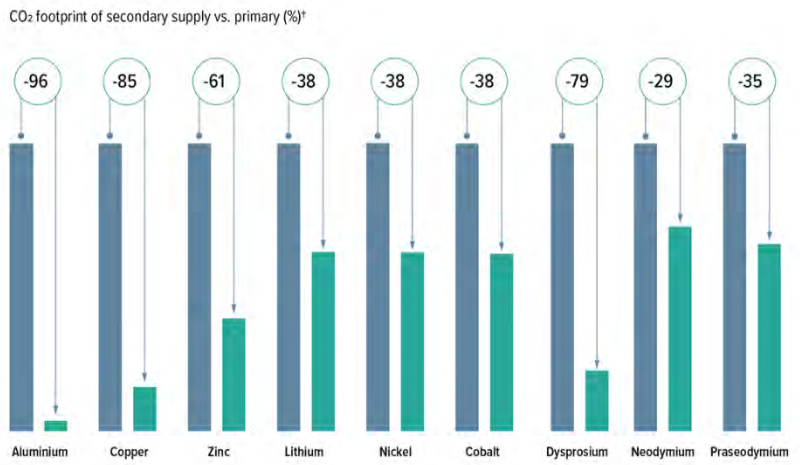
A decrease by 50% of the 2023 carbon emissions intensity value is likely to ensure that the asset would not become a stranded asset in the next foreseeable future and will remain on the trajectory to be carbon neutral in 2050.

2.6 Description of the priority activity

Manufacture of Copper (C24.4.4) – The activity is part of the NACE CODE C.24, manufacturing of non-ferrous metals from primary and from secondary raw materials.
The NACE code classification link refers to the statistical classification of economic activities established by Regulation (EC) No 1893/2006.
The activity is a transitional activity as referred to in Article 10(2) of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out.

Copper manufacturing includes roasting, smelting and refining from concentrates obtained from Primary Resources such as sulfidic ores by mining or leaching, and using pyrometallurgical or hydrometallurgical routes, or from secondary resources such as pre-consumer materials, post-consumer materials, slags and residues from, among others, tailing ponds, results in copper cathodes, copper alloys, fabrication of products and byproducts. All of these are energy intensive processes resulting in substantial greenhouse gas emissions.

The choice of the environmental objective of Climate Change Mitigation for manufacturing of copper and other critical raw materials **by secondary processing** is appropriate because the associated carbon footprint is lower than that from primary by between 29% to >85%. Refer to the report metals-clean-energy under topic, **Ensuring sustainability of Europe's metals supply chains:**



While non-ferrous metals production already processes a significant amount of secondary raw materials (e.g. pre-consumer metal scrap), a significant potential still exists to increase the recovery of metals from e.g. sludges and slags from metals production and post-consumer metals scrap. Enabling higher recovery of metals from these streams will reduce or limit Europe's import dependence for metals. Furthermore, better treatment of waste streams (which are often landfilled) can reduce the risk of hazardous materials entering the environment. (p45, Metals for Climate Neutral Europe)

Production of copper from secondary resources depends heavily on the copper content of secondary raw material and its size distribution. It follows a similar process as of production of primary copper in removing impurities and copper recovery. Scrap quality has a high impact on the energy consumption and carbon emissions of smelting furnaces, i.e. production of copper from low quality scrap is more energy and CO2-intensive than from high quality scrap. Copper smelting from secondary resources leads to direct CO2 emissions due to fossil fuel input. Recycling of electronic scrap in particular leads to high CO2 emissions, since electronic scrap contains a high share of carbon leading to additional process emissions. However, detailed information about carbon emissions from secondary processing is not publicly available. A more detailed explanation of the choices made is available below, in the dedicated section.

2.7 Substantial Contribution Criteria Determination Logic

In Platform 1.0, to determine the technical screening criteria (TSC) values, distribution curves for direct carbon emissions intensity for copper smelting and refining process stages, per site, on a global scale, were purchased from an external supplier. The performance of the "front-runners" was determined for 2021, using a 10-percentile value. The value was adjusted to reflect ambition required by Paris Agreement for 2030. In addition, an electricity emission intensity factor of 100g CO2e / kWh was introduced to be consistent with the climate DA. Separate criteria for secondary processing (recycling) activity were introduced based on ratio of input materials to total materials.

In Platform 2.0 this work has been taken forward for other materials from the CRMA list, to study the impact of smelting and refining activities on carbon emissions, relying on robust, good quality data.

Work started with studying the public literature (e.g. link1, link2, LCA Case study from Sweden link 4, company sustainability reports, that give some details for an operation. There are other interesting sources where some details are publicly available e.g. Link 5, SKARN, PWC, Minviro, Chordia, Vera et al, REE's, to determine the TSC's. Sectoral Life Cycle analysis studies such as those by copper/nickel/cobalt give comprehensive environmental impact information for economic activity sector operation's average performance. There needs also more transparency about scope 3 emissions from upstream purchased materials and upstream and downstream transport.

This does not allow us to determine the performance distribution curve for the whole sector, which is necessary to give guidance for redirecting the capital flows to enhance sustainability. Commercial data providers are regularly consulted by investors wishing to make finance available to extract and process CRMA materials including copper. So comparative aspects of LCA studies versus the data-access sold by commercial data vendors, as mentioned in the table below are interesting.

Comparison of LCA with a Purchased Data Report

Remarks	*LCA*	*Purchased Data Report*
General	*Cradle to Gate report contains mining, smelting & refining.* *Gate to Gate report contains metal smelting & refining.* *Data is collected from different operations and background data is used from data bases with some modelling.* *System boundaries need to be well documented.*	*Starting only since a few years, data vendors have started to provide data for economically important metals. The list is expanding. Quality is improving.* *Data collected from different operations and background data are used for some modelling.* *System boundaries need to be well documented.*
Pro-arguments	*The information is publicly available* *Information is Free of cost.* *LCA studies report performance of operations for different environmental impacts.* *Carbon Emissions are expressed as Global Warming Potential in almost all LCA studies.* *Allocation for byproducts is done transparently following standards (PEF, ISO)* *Data for fossil energy, renewable energy, electricity, transport, etc. is available.* *LCA studies for public disclosure are peer reviewed by independent external expert panel.*	*The data is very well segregated.* *Per site,* *Per process step,* *Per metal,* *Per technology route (pyro-, hydro-metallurgy)* *Data gives a distribution curve of intensity per site allowing determination of a 10-percentile value.* *The data is annually updated.* *Data uses specific emission factor of used electricity* *An anonymized detailed sub-set report for public distribution can be purchased.*
Contra-Arguments	*In most cases data reflects averages of a sector or several companies or technologies* *Data is updated only after a few years.* *LCA Studies are complex and costly and less segregated.* *The data for an individual site is generally not available.* *Comparing LCA studies requires the full study reports and critical review reports.*	*The data sets are to be purchased and costly.* *Data sets are available only for a limited number of metals, (Cu, Li, Ni, Co).* *The data sets are confidential.* *Allocation for byproducts needs more verification.* *General lack of transparency may affect the datasets.*

Considering all these aspects, an external data provider (Wood-Mackenzie), supplying more granular data, per asset, per process stage and per emissions source, has been used to determine the TSC criteria in Platform 2.0, only those metals for which reasonably robust, granular, data set was available, namely, copper, nickel, and lithium. It was possible to determine the first 2 TSC's, namely, 1. emission intensity criterion for electricity/heat/steam consumption and 2. total scope 1 and 2 emissions intensity. Since even with the commercial data access, not all the emissions sources are known in detail, with the required granularity particularly related to the direct emissions, a 3rd criterion, namely main elements of the "forward-looking *Decarbonisation Roadmap"* for the asset carrying the smelting and refining activity at each site of a company have been identified.

For enhancing transparency of environmental performance, it is desirable that in future the economic operators and their investors analyse information and report publicly a comparison of the current environmental performance for the main impact categories with those as given in copper life cycle assessment, while taking care to keep business confidential part accessible only to their 3rd party verifiers. This is also in line with the recommendation of IEA to strengthen the collection and reporting of granular and standardised data to enable benchmarking and progress tracking across the industry and throughout the supply chain. More recent, Global Critical Minerals Outlook 2024, IEA (page 10) reconfirms that

voluntary sustainability standards can help actors improve ESG performance, but greater transparency, due diligence, harmonised approaches to credibility and appropriate incentives are needed to tap their full potential.

Information from the decarbonisation Roadmaps about decarbonisation levers and associated climate and environmental impact on other environmental objectives for these and new critical raw materials would then form a basis for reviewing TSC for these materials or for determining TSC criteria for other critical raw materials for those cases where the environmental objective of climate change mitigation would be considered appropriate.

The economic activity's revenue would be considered Taxonomy aligned and substantially contributing to climate change mitigation objective when copper smelting and refining is carried out in accordance with all the elements included in each criteria set, depending on the raw material resource.

The determination of an electricity emission intensity factor of <100 g CO2e / kWh, is based on the advice by the TEG (Link, page 44), and is considered appropriate to promote the use of renewable or low carbon fossil free electricity. The 45 g CO2e / kWh is based on the recommendation of trajectory for net zero in line with climate goals as laid out in chapter II of the review of the Climate DA in this report. Criterion A covers both electricity and heat (including steam), because all these forms of energy are relevant in this industry. Purchased energy as well as on-site generation are included because both are used in this industry.

For the determination of Technical Screening Criteria for copper production, the improvement of "own performance" of the economic operations as related to carbon emissions has been determined as the main lever for the improvement of environmental pressure. In other words, the chosen environmental objective for substantial contribution is determined to be "Climate Change Mitigation".

The best performance for carbon emissions (criterion B) in the threshold values for TSC 1 is determined for onsite carbon emissions, including those for the electricity generation, is that for the asset at a particular percentile position of the production value, in the distribution curve of Wood Mackenzie data base in year 2023. This data base includes about 10% by production value of secondary processed copper. Therefore the 20th percentile asset's emissions value for smelting and 10th percentile asset's value for refining is determined for copper cathode production as the best performance value.

For refined copper this threshold value is, for smelting and refining, around 472kgCO2e/ t Cu. Please see the figures below. This value is adjusted considering that the total emissions in 2023 would need to reduce further by 50%, (i.e. 236 kgCO2e/t Cu), to ensure an alignment with the Paris Agreement (1,5°C) compliant transition trajectory while preventing lock-in or stranded assets. This adjustment is in line with the practice of providing sustainable finance by one of the current members of Platform. This is also in alignment with the recommendations for the level of ambition by Science Based Target Initiative (SBTI) for scope 1 and 2 targets, *namely, "at a minimum, scope 1 and scope 2 near-term targets must be consistent with the level of decarbonization required to keep global temperature increase to 1.5°C compared to pre-industrial temperatures".*

Permission to publish figures below needs to be validated by European Commission with WM.

Figure- Smelting of Copper, 2023, carbon emissions including those for electricity.

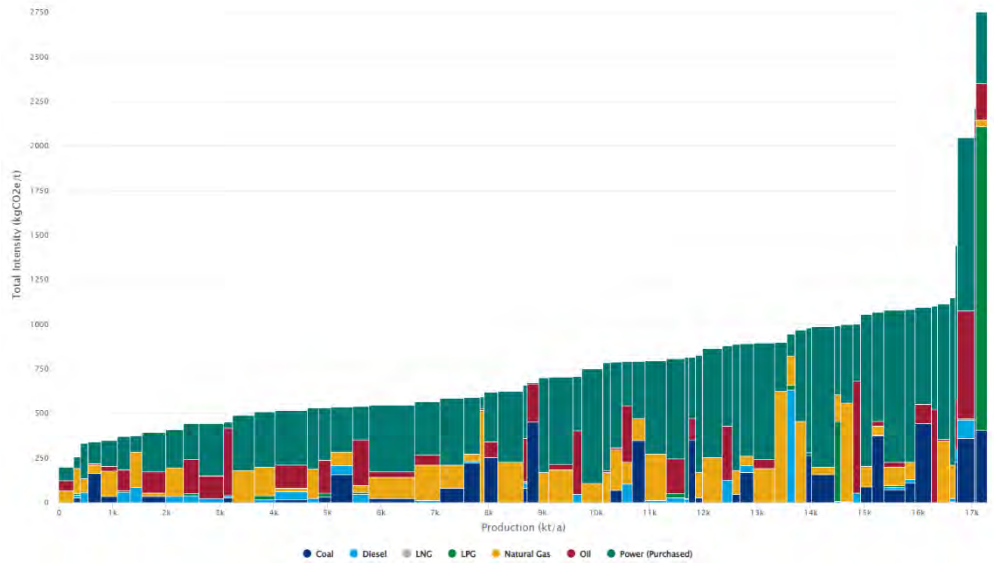
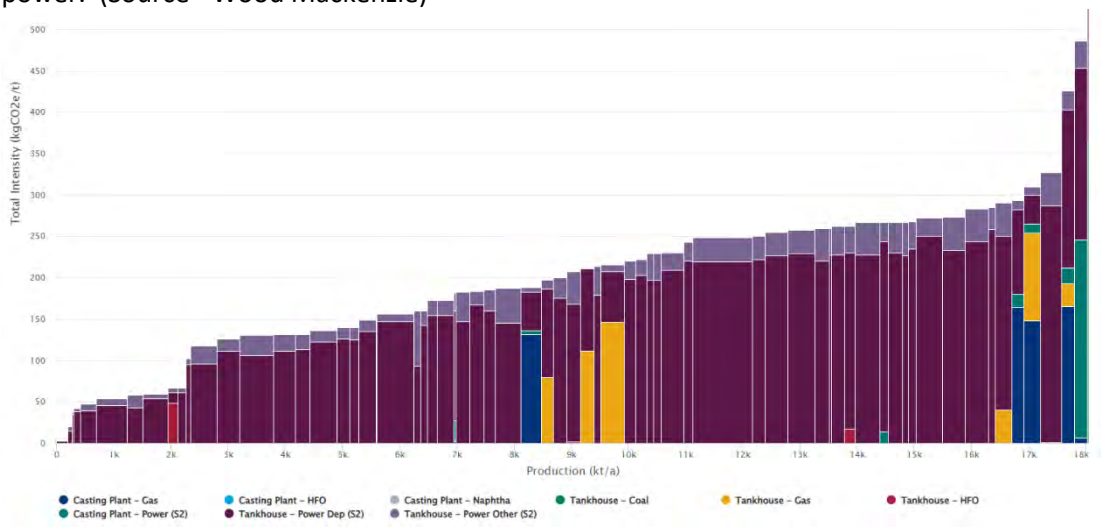


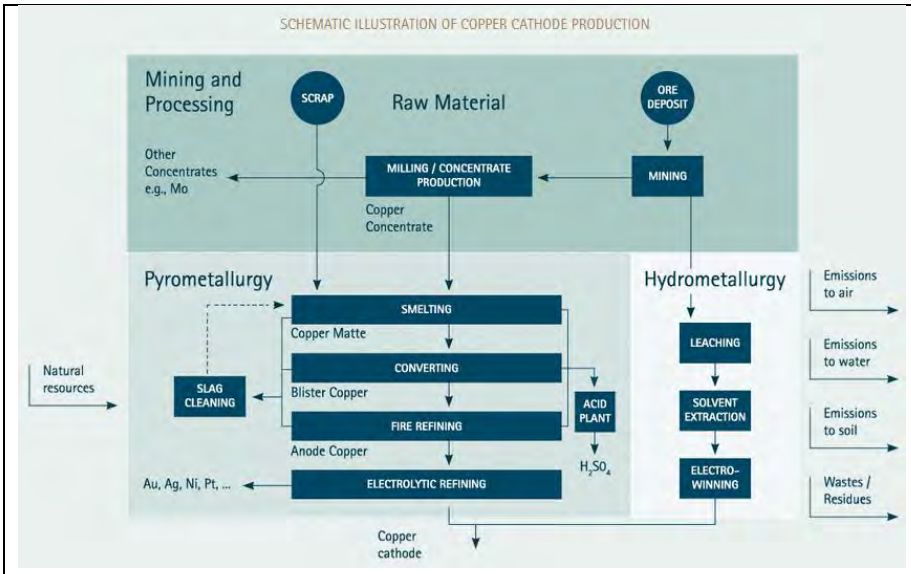
Figure- Refining of Copper, 2023, carbon emissions intensity including those for power. (Source - Wood Mackenzie)



Description of Manufacturing of Copper from Primary and Secondary materials

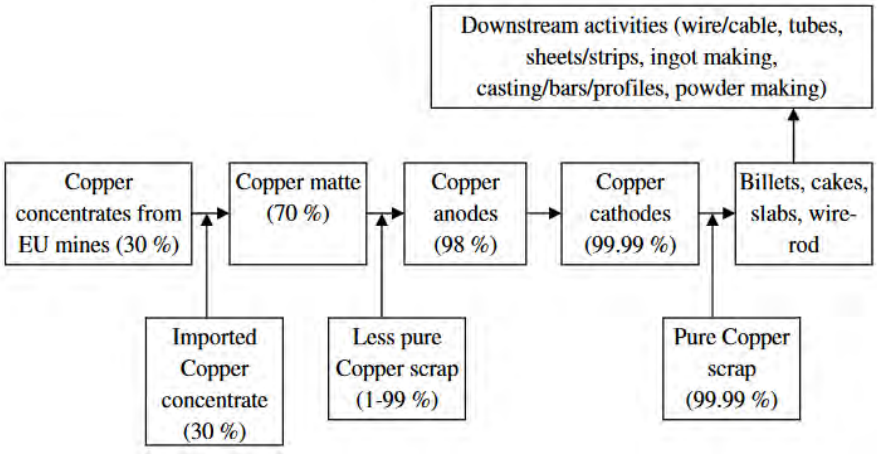
Primary Copper can be produced by pyrometallurgical or hydrometallurgical processes or a combination of both, into copper cathodes.

International Copper Alliance describes production of copper starting from natural resources as follows:



This document also gives the average environmental profile of the production and related results by categories such as, Primary Energy Demand Non-renewable (PED), Global Warming Potential, Acidification Potential (AP), Eutrophication Potential, Photochemical Ozone Creation Potential (POCP), and Ozone Depletion Potential (ODP).

The following figure schematically illustrates the copper content during the primary production of different copper products from copper ore concentrates using pyrometallurgical route.



Manufacturing of Copper - Secondary production (Production from secondary input materials)

The copper production from secondary resources (recycling processing) by pyrometallurgical route is also well known. (ref. BREF page 208) and it results in products of equivalent quality as those from the primary raw materials. It is described as treating a feedstock constituted of pre-consumer metals/alloy scrap, post-consumer metals/alloy scrap, complex end-of-life metal containing products or industrial metal containing residues, which produces refined metal (or alloy) at quality standards allowing for direct replacement of metal (or alloy) from primary sources. An indicative list of secondary raw materials and their sources for copper production can be found in NFM BREF (table 3.4, page 206). Already now, the electronic scrap

is becoming increasingly available. To be clear, the ores or concentrates are not to be considered as secondary materials.

In general, copper scrap containing less than 2% impurities would be considered as high-grade copper/alloy scrap. All the other copper containing materials would be considered medium/low grade scrap depending on the specific impurity involved and the percentage of impurities. The recycling activity maintains the intrinsic metal properties and only alters the physical form of a metal object so that new applications can be efficiently created from the recycled material. Commodity metals such as copper which operate with a fully developed recycling infrastructure - have among the highest recycling rates of all materials.

While the non-ferrous metals production already processes a significant amount of secondary raw materials (e.g. pre-consumer metal scrap), a significant potential still exists to increase the recovery of metals from e.g. sludges and slags from metals production and post-consumer metals scrap, electronic scrap, residues and materials streams from the tailing ponds. Enabling higher recovery of metals from these streams will reduce or limit Europe's import dependence for metals. Furthermore, better treatment of waste streams (which are often landfilled) can reduce the risk of hazardous materials entering the environment. (p45, Metals for Climate Neutral Europe).

As per Global Critical Minerals Outlook 2024, IEA, (page 122), one of the critical issues limiting copper recycling is the difficulty in economically sorting and separating copper and its alloy types from complex electronic post-consumer scrap, where the value of recovered copper is often not high enough to match the recycling cost. Second, collection infrastructure is often insufficient in many regions, with limited coordination between supply chain actors.

If we compare the carbon emissions of copper production (roasting, smelting, refining) from secondary sources versus from primary sources (including emissions from mining the primary materials), we notice significant carbon savings.

A recent (2017) paper: **A Review of the Carbon Footprint of Cu and Zn Production from Primary and Secondary Sources**, Link, summarized in the figure below, explains this further.

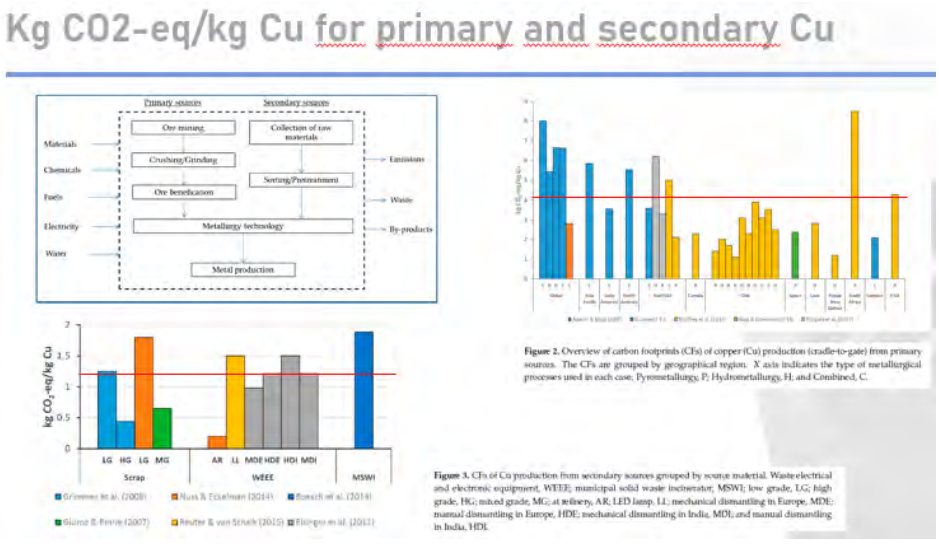


Figure 2. Overview of carbon footprints (CFs) of copper (Cu) production (cradle-to-gate) from primary sources. The CFs are grouped by geographical region. X axis indicates the type of metallurgical processes used in each case; Pyrometallurgy, P; Hydrometallurgy, H; and Combined, C.

Figure 3. CFs of Cu production from secondary sources grouped by source material. Waste electrical and electronic equipment, WEEE; municipal solid waste incinerator, MSWI; low grade, LG; high grade, HG; mixed grade, MG; at refinery, AR; LED lamp, LL; mechanical dismantling in Europe, MDE; manual dismantling in Europe, HDE; mechanical dismantling in India, MDI; and manual dismantling in India, HDI.

Essentially, depending on the quality of secondary materials, the CO2e values range between 0,5 t CO2e/ ton of refined copper for high grade (HG) scrap to 1,9 t/ton of refined copper for

low grade scrap. For producing metals from primary materials CO2e value, on average, is about 4,1 CO2e t/ton of copper. The refining stage using up to 80% secondary raw materials will result in a saving of, at least, 70% for production using high grade scrap and 43% for production using low grade scrap or residues, as compared to the use of only primary materials, as given in the table below.

Saving of carbon emissions by use of 80% secondary materials versus primary materials					
Resource type	Infeed mat	CO2 e kg/ t refined metal	CO2 saving versus primary	Using 100% secondary materials saving vs primary	Using 80% secondary materials saving vs primary
Primary Material	Concentrate	4100			
HG Sec Mat	HG Scrap	500	3600	88%	70%
LG Sec Mat	LG Scrap	1900	2200	54%	43%

The quality of the refined metal and alloys would be exactly the same as that produced using the primary materials. This criterion, referring to the use of secondary materials, is expected to encourage maximum investment going into increasing the use of secondary materials as a share of total input materials for producing the refined metals.

A separate benchmarks per metal, and per type of raw material (primary or secondary), is appropriate to encourage refining processing of more secondary materials with very low metal content.

Evidence / certification from the operator to support the claim of the share of secondary materials to total materials, as well as a 3rd party verification of the same, will be obligatory.

Collection, sorting and recycling of copper-containing waste need to be encouraged and incentivised to increase availability of secondary materials. Any additional barriers (e.g. a stricter electricity intensity factor) may lead to non-processing of low-quality materials and their loss to society by being land-filled, potentially leading to more pollution.

Therefore, the recommendation is to use a grid factor lower than the applicable EU Average (< 240 g CO2e/kWh until 31.12.2029 and do not exceed 115g CO2e/kWh from 1.1.2030 which is expected to further promote the contribution to the reduction of carbon emissions during secondary processing.

2.8 Do No Significant Harm (DNSH)

Major risk to make significant harm to any of the other environmental objectives:

Production of metals from primary or secondary sources must fulfil the legal minimum required as permit conditions in the EU to carry out the operations. Compliance with the permit conditions and fulfilment of general Taxonomy DNSH criteria (Appendices A, B C and D) would be expected to prevent any significantly harmful effects to the other environmental objectives:

- Sustainable use and protection of water and marine resources: no major damage to the risks related to the climate change adaptation such as those mentioned in Annex I of DA1 (Appendix B).

- Transition to Circular Economy: Metals are recyclable materials and by their nature contribute to the circular economy. However, during their processing waste streams are generated. These need to be managed well.
- Pollution prevention and control: The BREF criterion corresponds to the legal minimum required for installations in the EU. The current permits are granted on condition that the emissions of pollutants are within or lower than the emission levels associated with the best available techniques (BAT-AEL) ranges set out in the latest relevant best available techniques (BAT) conclusions, including the best available techniques (BAT) conclusions for the non-ferrous metals industries and no significant cross-media effects occur, as mentioned in in Annex I of DA1, (Appendix C). For those metals which are not specifically referred to in the respective Best available techniques document, (e.g. Li), only the "General BAT conclusions" apply.
- Protection and restoration of biodiversity and ecosystems: The current permits granted to perform the activity foresees that it would not cause any major damage to the risks related to the biodiversity and ecosystems by measures mentioned in Annex I of DA1 (Appendix D).

iv. Data, Usability and Guidance:

Data:

To comply with the criteria in TSC 1, operators need to measure and report their associated CO2 emission as follows:

For criterion A:
GHG emissions are the life-cycle greenhouse gas emissions produced from the generation of the electricity and heat (including steam) used for the manufacturing.

For criterion B:
GHG emissions are quantified including Scope 1 and Scope 2 in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018, excluding lifecycle data and emissions for Scope 2. Certification from 3rd party for not using Thermal Coal will be provided.

For criterion C:
This would be considered fulfilled when the decarbonization roadmap is published and the main components are present. The 50% reduction is aspirational, and it is not required for alignment. This would help the gathering of information while at the same time ensuring that the criteria are usable right now.

For TSC 2:
In addition to criteria C mentioned above, evidence / certification from the operator to support the claim of the share of secondary materials to total materials, as well as a 3rd party verification of the same, will be obligatory.

Usability

Considerations for the usability of the criteria are explained in detail in the different steps of criteria design in subsections 2.1 to 2.7 of the rationale. In order to test the applicability of the criteria determination

approach, targeted outreach workshops were carried out with relevant industry associations, the results of which were considered for the criteria design.

v. Recommendation for future work

Further investigation and analysis of available data and evidence needs to be carried out for other critical raw materials for which at the moment no commercial data is available.

Evidence based on the proposed criteria C points could guide investors to avoid lock-in effects during the future investments for primary and secondary refining of other critical raw materials.

The Platform also recommends the development of criteria for the recovery of critical raw material elements from secondary resources for which scientific evidence is available.

11. Manufacturing (Smelting and Refining) of Nickel * CCM

i. Description of the activity

Manufacturing of refined nickel, nickel alloys (including ferro-nickel) and nickel compounds from primary or secondary raw materials.

The economic activities in this category could be associated with NACE code C24.4.5 or C24.10.12.40 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

.

An economic activity in this category is a transitional activity as referred to in Article 10(2) of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this section.

ii. Technical screening criteria

Substantial contribution to climate change mitigation
Nickel refining from ore concentrates obtained from Primary Resources such as sulfidic or mixed ores using pyrometallurgical or hydrometallurgical routes, and from sorted materials from the Secondary Resource Streams resulting in refined nickel, nickel alloys and nickel compounds, where the economic activity complies with all elements of TSC 1 or 2 or 3.
TSC 1. producing refined nickel by refining from concentrates derived from Primary sulfidic ores or mixed sulfidic-oxidic ores:

Criterion A – The average GHG emissions intensity resulting from the consumed electricity and heat (including steam) does not exceed 100 g CO2e/kWh until 31.12.2029 and does not exceed 45 g CO2e/kWh from 1.1.2030. GHG emissions are the life-cycle greenhouse gas emissions produced from the generation of the electricity and heat (including steam) used for the manufacturing.

Criterion B – Carbon emissions associated with fossil fuels and reagents including reducing agents for processing and electricity/heat/steam generation are less than **854 kg CO2e /t Ni Eq**. GHG emissions are quantified **including direct emissions from the activity and postprocessing and direct emissions from the generation of (self-produced or purchased) electricity and heat (including steam)** used in the activity and in post-processing in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018, **or they are quantified including Scope 1 and Scope 2 for the activity and postprocessing in accordance with the Greenhouse Gas Protocol.**. No thermal coal is used.

Criterion C – A forward looking Decarbonisation Roadmap, for the asset carrying the carrying the smelting or refining activity at each site of a company, for decreasing the remaining onsite carbon emissions intensity by 50%, from the base line year is published and the scope 3 emissions for 50% (by value) of upstream purchased materials and for upstream and downstream transport are reported annually thereafter

The forward-looking, *Decarbonisation Roadmap* will contain among other points, at least, a commitment to:

I. be Climate Neutral by 2050 as per Paris Agreement, 1.5°C scenario,

II. use of renewable and sustainable fossil free energy sources (as defined in Directive 2018/2001/EU).

III. annually report electricity intensity per ton of sold product.

IV. annually report the fossil energy consumption intensity per ton of sold product.

V. progressively replace all the materials in upstream scope 3 having a high product carbon footprint progressively by those having a lower carbon footprint.

VI. annually report the progress (actual reagents consumption intensity and associated CO2 emissions)

VII. describe the methodology to retrieve data and report the emissions of upstream suppliers of materials, fuels, reagents.

VIII. describe methodology to retrieve data and to report emissions of upstream and downstream transport.

IX. report a comparison of the current environmental performance for the main impact categories given in nickel life cycle assessment is reported, such as global warming potential, primary energy demand, blue water consumption, scope 1-3 emissions, energy sources renewable versus non-renewables.

X. For nickel processed using leaching processes (e.g. HPAL and others), the impact on Pollution is to be described in detail.

The forward-looking *Decarbonisation Roadmap* is verified by an independent third party, for the presence of the main elements of this roadmap, referred in criterion C, points I to IX, such as climate neutrality commitment, electricity intensity per ton of sold product etc.

TSC 2: Proposed criteria for producing (smelting and refining) Ferro-Nickel from concentrates

Criterion A – The average GHG emissions intensity resulting from the consumed electricity and heat (including steam) does not exceed 100 g CO2e/kWh until 31.12.2029 and does not exceed 45 g CO2e/kWh from 1.1.2030. GHG emissions are the life-cycle greenhouse gas emissions produced from the generation of the electricity and heat (including steam) used for the manufacturing.

Criterion B – Carbon emissions associated with fossil fuels or reagents including reducing agents for processing and electricity/heat/steam generation for processing and electricity/heat/steam generation are less than **10 t CO2e /t Ni Eq**. GHG emissions are quantified **including direct emissions from the activity and in post processing and direct emissions from the generation of (self produced or purchased) electricity and heat (including steam)** used in the activity and in post-processing in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018, **or they are quantified including Scope 1 and Scope 2 for the activity and postprocessing in accordance with the Greenhouse Gas Protocol.** No thermal coal is used.

Criterion C – The obligations of the forward-looking *Decarbonisation Roadmap* mentioned under TSC1- Criterion C, hereabove, for producing refined nickel from primary resources, have to be complied with. Baseline year is 2023 or the year before the actual date of application for Sustainable Finance.

TSC 3: Refined Nickel and alloys produced from Secondary Resources:

Criterion A – Refined Nickel and alloys produced using secondary input materials (containing at least 0,1% by weight of nickel that is sourced from e.g., electronic scrap, slags, and material streams from the tailing ponds), where the ratio of secondary input materials to Total input materials is higher than 80%, based on mass,

Criterion B – The average carbon intensity of the electricity does not exceed European Union Grid Average (direct emissions of 240 g CO2e/kWh until 31.12.2029 and do not exceed 115g CO2e/kWh from 1.1.2030 240 g CO2e/kWh until 31.12.2029 and do not exceed 115g CO2e/kWh from 1.1.2030 g CO2 e/kWh). **Criterion C** – The obligations of the forward-looking *Decarbonisation Roadmap* mentioned under TSC1- Criterion C, for refining from primary resources, have to be complied with. Baseline year is 2023 or the year before the actual date of application for Sustainable Finance.

Do no significant harm ('DNSH')

(2) Climate change adaptation	DNSH as set out in Appendix A of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852.

(3) Sustainable use and protection of water and marine resources	DNSH as set out in Appendix B of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852.
(4) Transition to a circular economy	N/A
(5) Pollution prevention and control	The activity complies with the criteria set out in Appendix C of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852. The activity performance complies with provisions of NFM BREF conclusions - Commission Implementing Decision 2016/1032.
(6) Protection and restoration of biodiversity and ecosystems	DNSH as set out in Appendix D of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852.

iii. Rationale

The technical screening criteria for the specific activity has been defined to strike the best balance between the different requirements in the Taxonomy regulation (Art. 19) and fulfilling the overall Taxonomy aims.

The following description explains the rationale and logic behind the definition of the technical screening criteria for substantial contribution, on the hand of following specific elements.

2.1 Background
2.2 Choice of priority materials
2.3 Approach to determine substantial contribution: (own performance or enabling)?
2.4 Environmental objective chosen for substantial contribution and reasoning.
2.5 Level of ambition and how to achieve it.
2.6 Description of the priority activity
2.7 Substantial Contribution Criteria Determination Logic
2.8 Do-No-Significant-Harm

2.1 Background
This work has resulted from the continued development Platform 1.0 work for copper (report *page 261) and the need to develop a consistent methodological approach to*

determining Technical Screening Criteria for all the strategic and critical raw materials defined by the Critical Raw Materials Act (CRMA) Regulation, while adhering to the principle of evidence based criteria setting and usability. Useability is considered by explaining steps of criteria design in subsections 2.1 to 2.7 in detail. In order to comply with the criteria, operators need to measure and report their associated CO2 emission in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018..

The CRMA covers a broad list that includes, among others, NACE code (24.4) Manufacture of basic precious and other non-ferrous metals, consisting of, (C 24.4.1) Precious metals production, C24.4.2 Aluminium production (C24.4.3)[165], Lead, zinc and tin production, (C24.4.4) Copper production, (C24.4.5) Other non-ferrous metal production (Si, Li, Ni, Co, Dy, Nd, Pr, Ag, B, Cd, Cr, Ga, Ge, In, Ir, Mn, Mo, Sc, Tb, Te, V) and other materials required for clean energy production and magnetic materials.

In the Communication page 6, accompanying the EU Critical Raw-Materials Act, the Commission requests: "Under the Taxonomy Regulation, the Commission is empowered to compile a list of environmentally sustainable activities by defining technical screening criteria for each environmental objective through Delegated Acts. As a follow-up to the forthcoming environmental Delegated Act, which will cover recycling, the Commission will ask the Platform on Sustainable Finance 2.0 to develop Taxonomy criteria for mining and refining, building on the work started under the Platform 1.0, to be considered and later adopted by the Commission."

2.2 Choice of priority materials

The twin energy and digital transition is metal and material intensive (Metals-for-Clean-Energy, (pages 9-16,19), IEA report "The Role of Critical Minerals in Clean Energy Transitions. Electric vehicles, batteries, solar photovoltaic systems, wind turbines, and hydrogen technologies all require significantly more metals than their conventional alternatives to replace fossil fuel needs. The recent IEA, Global Critical Minerals Outlook 2024 (page 7), informs that the combined market value of key energy transition minerals – copper, lithium, nickel, cobalt, graphite and rare earth elements – more than doubles to reach USD 770 billion by 2040. Furthermore, this report (page 9) claims that the recycled quantities of copper and cobalt could reduce 2040 primary supply requirements by 30%, and 15% for lithium and nickel. Without the uptake of recycling and reuse, mining capital requirements would need to be one-third higher. The data for total supply and demand of different key minerals estimates are available from IEA (link).

In Europe, critical raw materials are required for strategic autonomy. For many of those materials, Europe is largely relying on outside sourcing. The critical raw materials act is providing a framework for boosting their production across the value chain. The primary processing of many critical raw materials is still under development and the associated environmental impact data is not publicly available because of their more limited use. Among the critical raw materials, the non-ferrous metals sector (aluminium, copper, nickel, etc.) has been developing extensively, however for many of the remaining materials the return flows at the "end-of-life" are not significant and needs to be improved. Non-ferrous metals form a fascinating eco-system across their value chains that connect one way or the other the base, precious, specialty and alloys production to each other. Most metal

165 Already covered in the first EU Taxonomy climate Delegated Act.

ores carry, next to the primary metals, various other metals in smaller concentrations. These latter are, when it is economically viable, extracted during the metallurgical process of the primary or 'carrier metal', including via recovery in slags or hydrometallurgical residues from among others tailing ponds. All base metals (ores) are carrier metals for a wide range of other base-metals, precious and specialty metals (as shown in figure below).

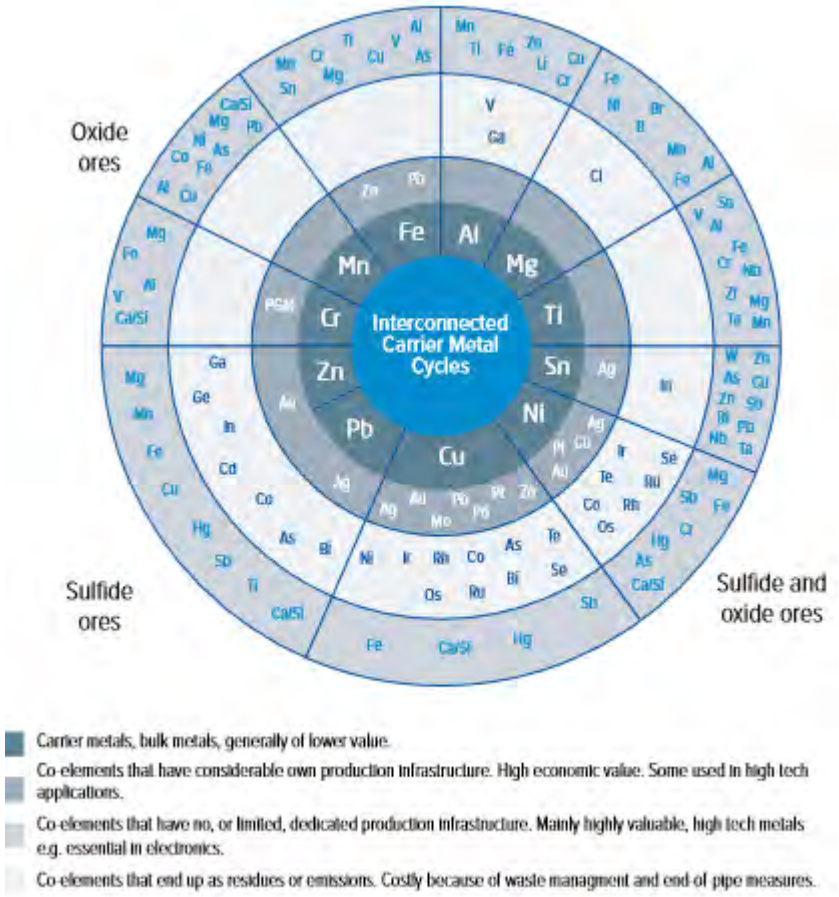


Figure 2: Non-ferrous metals sector interlinkages I Source: UNEP 2013[2]

Secondary processing results in significant value recovery of these biproducts or co-products which would otherwise be lost to landfills and helps extending the continued use of these materials by recycling and maintaining them in the society.

Among the critical raw materials, the work on copper was prioritised as a continuation of the work started in the first mandate of the platform. Nickel and Lithium were also considered given their criticality, but also thanks to the availability of data.

2.3 Approach to determine substantial contribution: (own performance versus enabling)

Reducing pressure on the environment, by reducing direct emissions of pollutants during on performance is considered more appropriate to have a maximum coverage. Enabling other activity such as renewable energy generation or e-mobility will only partially mitigate the environmental impact and will require developing other evidence elements such as tracking- and tracing.

Carbon emissions parameters measurement and reporting is now well established, so also from useability perspective, this option of "own performance" is to be preferred.

In other words, a substantial contribution can be achieved by improving emission performance of the refining production itself (whether the refined products are used for transition or for other purposes), by taking appropriate measures under its own control.

2.4 Environmental objective considered for substantial contribution and reasoning behind the choice.

Climate change mitigation (CCM) has been chosen as the Environmental Objective for substantial contribution.

Although significant improvement has been made in Europe, as mentioned in Metals-for-Climate Neutral Europe figure 21, page (29), more global efforts are needed to decrease the own scope 1 and 2 carbon emissions of the manufacturing (smelting and refining) operations to achieve alignment with the Paris Agreement 1.5°C scenario, and would be possible using the encouragement of Sustainable Finance.

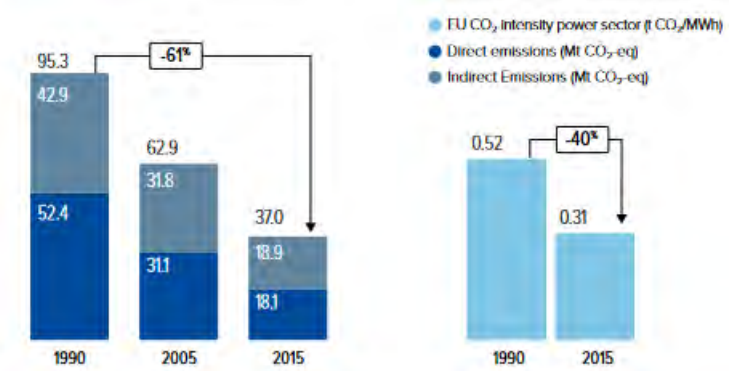
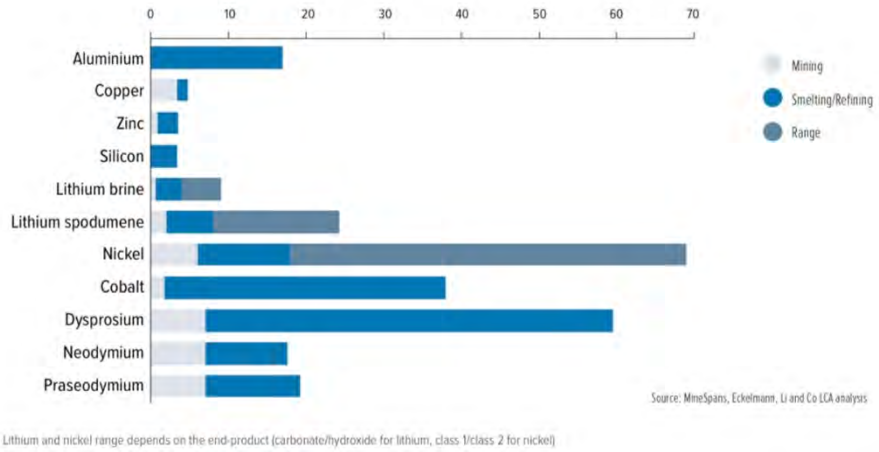


Figure 21: (left) GHG emissions (Mt-CO_2 - eq) of the non-ferrous metals industry (Sources: EEA (direct process emissions), Eurostat (direct emissions related to energy use) and EEA (indirect emissions using EU average CO_2 intensity of power production)[99] (right) Evolution of CO_2 intensity of the EU power production (t CO_2/MWh) (Source: EEA)[100]

Carbon emissions from manufacturing (smelting and refining) operations of critical raw materials are significant. Please see page 195 in IEA report "The Role of Critical Minerals in Clean Energy Transitions., or see metals-for-clean-energy, p95.

Figure 2. GWP primary metal production, split into mining and metal making steps (tonne CO_2/tonne metal, for lithium tonne CO_2/tonne LCE)



Lithium and nickel range depends on the end-product (carbonate/hydroxide for lithium, class 1/class 2 for nickel)

Metals production is an energy intensive process, which results in significant carbon emissions due to the use of fossil fuels and reagents during refining processing. Demand for significantly more materials for twin transition would require much more energy use resulting in many more carbon emissions. Mineral processors and metal production operators can contribute to climate change mitigation by reducing pressure on environment by own performance, by decreasing carbon footprint of their own roasting, smelting and refining operation, decreasing the carbon footprint of the onsite consumed electricity, heat and steam, as well as by taking steps to monitor and report carbon emissions of upstream mining, specifically for the integrated operators carrying out mining, smelting and refining activities at the same site, up to the stage of concentrate.

It is important to reassure the investors about potential risks to other environmental objectives while transforming to achieve carbon neutrality. To this end investors are investing in LCA studies with some public disclosure. (e.g. Link). Furthermore, Life Cycle analysis studies sponsored by industry associations, such as that by nickel1 and nickel2 clarify the current average performance of the sector for among other parameters, global warming potential, global warming potential, primary energy demand, blue water consumption, scope 1-3 emissions, energy sources renewable versus non-renewables. This forms a good first step to determine environmental objectives for substantial contribution (SC) and do not significant harm (DNSH), and, also to determine the technical screening criteria (TSC) for the same and while preventing possible risks related to greenwashing and asset lock-in's. However, these studies are not yet available for many of the raw materials listed in Critical Raw Materials Act (CRMA Regulation).

When robust data and evidence are available, an identification of the priority environmental objectives for smelting and refining of the remaining strategic and critical raw materials can be made.
For a subset of these remaining materials[166], where the impact on environment due to carbon dioxide emissions can be proven to be the highest as compared to other environmental objectives, a similar approach as the one used for copper, nickel and lithium could be used for determining the Technical Screening Criteria for Climate Change Mitigation.

166 For which criteria are not developed yet.

2.5 Level of ambition and how to achieve it

Climate Change Mitigation's headline ambition level is **to be compliant with requirement of carbon neutrality by 2050 as per Paris Agreement's 1,5°C scenario**. This can be achieved by using the electricity/steam/heat consumed on site by non-fossil resources or by using non-fossil reagents.

The following **solutions and corresponding technologies** decrease the carbon intensity of metals production (t CO2e/t of metals) as informed by the Best Available Techniques (BAT) Reference Document for the Non-Ferrous Metals Industries.

1. By improving energy efficiency
2. By use of more metal containing secondary materials
3. By electrification and consumption of renewable and fossil free electricity,
4. By use of non-fossil reduction agents and alternative fossil free fuels.
5. By roasting of carbon containing fraction of the infeed materials before it enters the smelting operation aided by carbon capture and storage or carbon capture and use.
5. Innovating in other breakthrough manufacturing technologies (Artificial intelligence, data mining etc.).

No specific sectoral decarbonization roadmap is currently available for Nickel.

In this document, the criteria have been proposed for nickel production, which does not have an ETS Product Benchmark based Criteria because of lack of publicly available data, confidentiality of the performance information, heterogeneous raw materials, small number of installations and / or because of the use of heterogeneous technology routes used to process the raw materials.

Best performance is represented when the electricity/steam/ heat consumption is from non-fossil sources, and total emissions intensity of an asset are less than or equal to those of an asset on the 10th percentile value on a global distribution curve for 2023 of the total carbon emissions intensity (CO2e/t Ni eq), plotted over the cumulative production volume.

A decrease by 50% of the 2023 carbon emissions intensity value is likely to ensure that the asset would not become a stranded asset in the next foreseeable future and will remain on the trajectory to be carbon neutral in 2050.

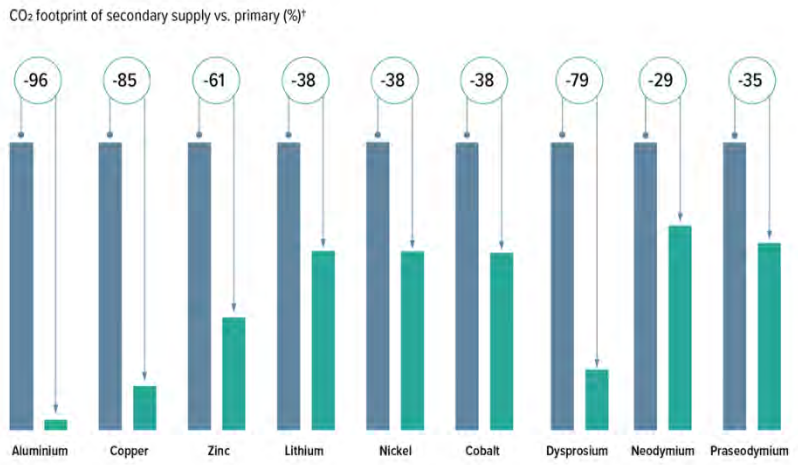
2.6 Description of the priority activity

Manufacturing of refined nickel, alloys and compounds (C24.4.5) is part of NACE CODE C24, manufacturing of non-ferrous metals from primary and secondary raw materials.
The NACE code classification (link) refers to the statistical classification of economic activities established by Regulation (EC) No 1893/2006.
The activity is a transitional activity as referred to in Article 10(2) of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section.

Nickel production including roasting, smelting and refining from concentrates obtained from Primary Resources such as sulphidic or laterite ores or other minerals, using pyrometallurgical or hydrometallurgical (e.g. high-pressure acid leaching) routes, results in products such as refined Class 1 Nickel (refined nickel), and Class 2 nickel (ferronickel, containing approximately 27% nickel, and pig nickel iron (PNI), containing 2-10%

nickel). Nickel chemicals such as nickel sulphate could also be produced as a product from primary and secondary materials such as intermediate materials from other non-ferrous metal production or from pre-consumer materials, post-consumer materials, slags, and residues from among others tailing ponds, where the economic activity would need to comply with all elements of TSC 1, TSC 2 or TSC 3.

The choice of the environmental objective of Climate Change Mitigation for manufacturing of nickel and other critical raw materials **by secondary processing** is appropriate because the associated carbon footprint is lower than that from primary by between 29% to >85%. Refer to report metals-clean-energy under topic, **Ensuring sustainability of Europe's metals supply chains:**



Currently, the largest amount of Nickel is recycled from batteries and stainless steel.

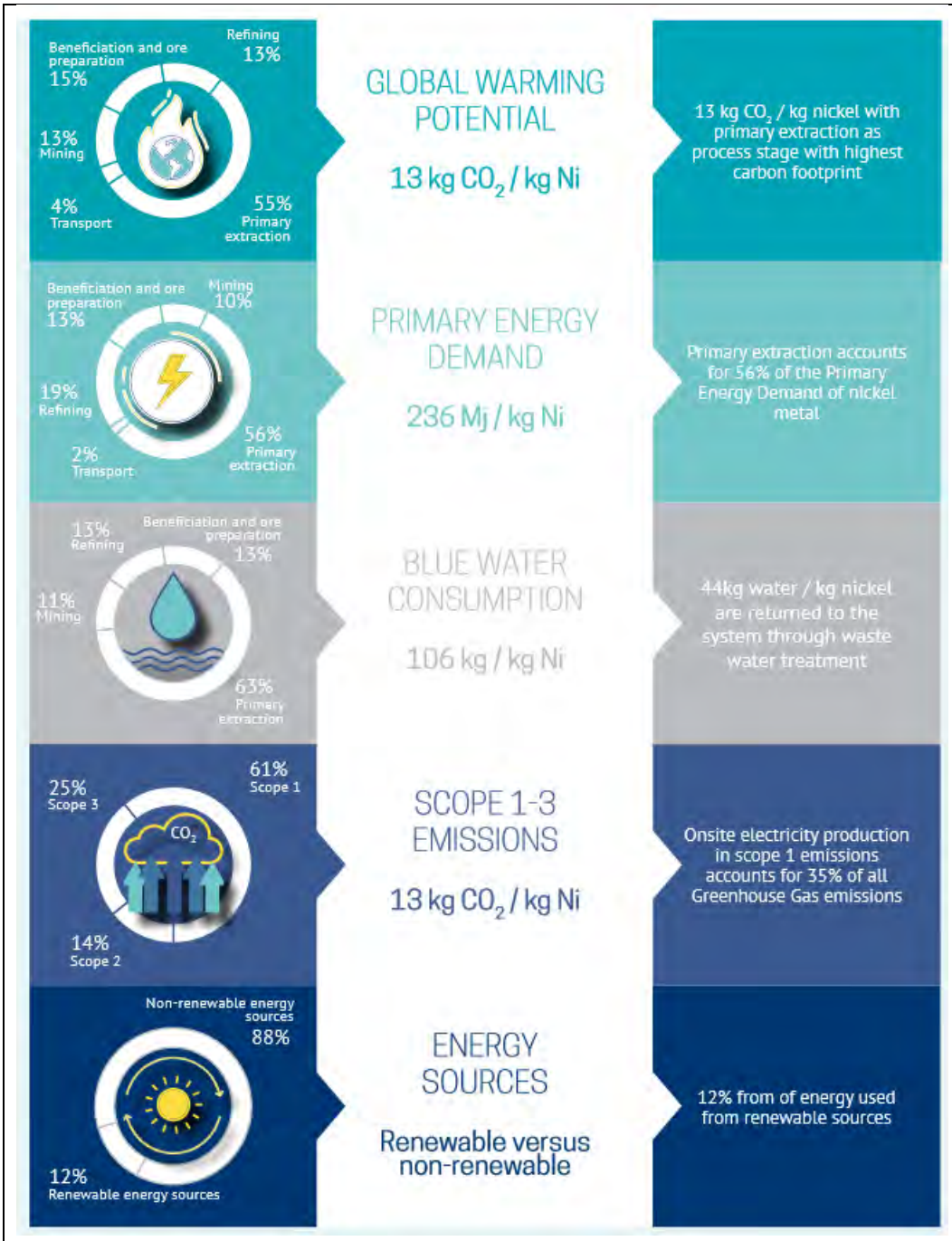
While non-ferrous metals production already processes a significant amount of secondary raw materials (e.g. pre-consumer metal scrap), a significant potential still exists to increase the recovery of metals from e.g. sludges and slags from metals production and post-consumer metals scrap. Enabling higher recovery of metals from these streams will reduce or limit Europe's import dependence for metals. Furthermore, better treatment of waste streams (which are often landfilled) can reduce the risk of hazardous materials entering the environment. (p45, Metals for Climate Neutral Europe)

Production of nickel from secondary resources depends on the nickel content of secondary raw material and its size distribution. It follows a similar process as of production of nickel from primary resources in removing impurities and nickel recovery. Scrap quality has a high impact on the energy consumption and carbon emissions of secondary nickel furnaces, i.e. production of nickel from low quality scrap is more energy and CO2-intensive than from high quality scrap. Nickel smelting from secondary resources leads to direct CO2 emissions due to fossil fuel input. Recycling of electronic scrap in particular leads to high CO2 emissions, since electronic scrap contains a high share of carbon leading to additional process emissions. However, detailed information about carbon emissions from processing of nickel from secondary resources is not publicly available.

2.7 Substantial Contribution Criteria Determination Logic

In Platform 1.0, to determine the technical screening criteria (TSC) values, distribution curves for direct carbon emissions intensity for nickel smelting and refining process stages, per site, on a global scale, were purchased from an external supplier. The performance of the "front-runners" was determined for 2021, using a 10-percentile value. The value was adjusted to reflect ambition required by Paris Agreement for 2030. In addition, an electricity emission intensity factor of 100g CO2e / kWh was introduced to be consistent with the climate DA. Separate criteria for secondary processing (recycling) activity were introduced based on ratio of input materials to total materials.

In Platform 2.0 this work has been taken forward for other materials from the CRMA list, to study the impact of smelting and refining activities on carbon emissions, relying on robust, good quality data.
Work started with studying the public literature (e.g. link1, link2, LCA Case study from Sweden link 4, company sustainability reports, that give some details for an operation. There are other interesting sources where some details are publicly available e.g. Link 5, SKARN, PWC, Minviro, Chordia, Vera et al, REE's, to determine the TSC's. Sectoral Life Cycle analysis studies such as those by copper/nickel/cobalt give comprehensive environmental impact information for economic activity sector operation's average performance. Average performance for nickel is as presented in the summary figure below. More transparency about scope 3 emissions from upstream purchased materials and upstream and downstream transport is needed.



This information does not allow us to determine the performance distribution curve for the whole sector, which is necessary to give guidance for redirecting the capital flows to enhance sustainability. Commercial data providers are regularly consulted by investors wishing to make finance available to extract and process critical raw materials including nickel. So comparative aspects of LCA studies versus the data-access sold by commercial data vendors, as mentioned in the table below are interesting.

Comparison of LCA with a Purchased Data Report

Remarks	LCA	Purchased Data Report
General	Cradle to Gate report contains mining, smelting & refining. Gate to Gate report contains metal smelting & refining. Data is collected from different operations and background data is used from data bases with some modelling. System boundaries need to be well documented.	Starting only since a few years, data vendors have started to provide data for economically important metals. The list is expanding. Quality is improving. Data collected from different operations and background data are used for some modelling. System boundaries need to be well documented.
Pro-arguments	The information is publicly available Information is Free of cost. LCA studies report performance of operations for different environmental impacts. Carbon Emissions are expressed as Global Warming Potential in almost all LCA studies. Allocation for byproducts is done transparently following standards (PEF, ISO) Data for fossil energy, renewable energy, electricity, transport, etc. is available. LCA studies for public disclosure are peer reviewed by independent external expert panel.	The data is very well segregated. Per site, Per process step, Per metal, Per technology route (pyro-, hydro-metallurgy) Data gives a distribution curve of intensity per site allowing determination of a 10-percentile value. The data is annually updated. Data uses specific emission factor of used electricity An anonymized detailed sub-set report for public distribution can be purchased.
Contra-Arguments	In most cases data reflects averages of a sector or several companies or technologies Data is updated only after a few years. LCA Studies are complex and costly and less segregated. The data for an individual site is generally not available. Comparing LCA studies requires the full study reports and critical review reports.	The data sets are to be purchased and costly. Data sets are available only for a limited number of metals, (Cu, Li, Ni, Co). The data sets are confidential. Allocation for byproducts needs more verification. General lack of transparency may affect the datasets.

Considering all these aspects, an external data provider (Wood-Mackenzie), supplying more granular data, per asset, per process stage and per emissions source, has been used to determine the TSC in Platform 2.0, only those metals for which reasonably robust, granular, data set was available, namely, copper, nickel, and lithium. It was possible to determine the carbon emissions, namely, 1. emission intensity criterion for electricity/heat/steam consumption and 2. total scope 1 and 2 emissions intensity. Since even with the commercial data access, not all the emissions sources are known in detail, with the required granularity particularly related to the direct emissions, a 3rd criterion, namely main elements of the "forward-looking *Decarbonisation Roadmap* for the asset carrying the activity at each site of a company have been identified.

For enhancing transparency of environmental performance, it is desirable that in future the economic operators and their investors analyse information and report publicly a comparison of the current environmental performance for the main impact categories with those as given in nickel life cycle assessment, (e.g. as global warming potential, primary energy demand, blue water consumption, scope 1-3 emissions, energy sources renewable versus non-renewables), while taking care to keep business confidential part accessible only to their 3rd party verifiers. This is also in line with the recommendation of IEA to strengthen the collection and reporting of granular and standardised data to enable benchmarking and progress tracking across the industry and throughout the supply chain. More recently, Global Critical Minerals Outlook 2024, IEA (page 10) reconfirms that voluntary sustainability standards can help actors improve ESG performance, but greater transparency, due diligence, harmonised approaches to credibility and appropriate incentives are needed to tap their full potential. There needs also more transparency about scope 3 emissions from upstream purchased materials and upstream and downstream transport. Some sustainability reports have basis for such information.

Information from the decarbonisation Roadmaps about decarbonisation levers and associated climate and environmental impact on other environmental objectives for these and new critical raw materials would then form a basis for reviewing TSC for these materials

or for determining TSC criteria for other critical raw materials for those cases where the environmental objective of climate change mitigation would be considered appropriate.

The economic activity's revenue would be considered Taxonomy aligned and substantially contributing to climate change mitigation objective when nickel smelting and refining is carried out in accordance with all the elements included in each criteria set, depending on the raw material resource.

The determination of an electricity grid factor of <100 g CO2e / MWh, is based on the advice by the TEG (Link, page 44), and is considered appropriate to promote the use of renewable or low carbon fossil free electricity. The 45 g CO2e / kWh is based on the recommendation of trajectory for net zero in line with climate goals as laid out in chapter II on the review of Climate DA in this report. Criterion A covers both electricity and heat (including steam), because all these forms of energy are relevant in this industry. Purchased energy as well as on-site generation are included because both are used in this industry

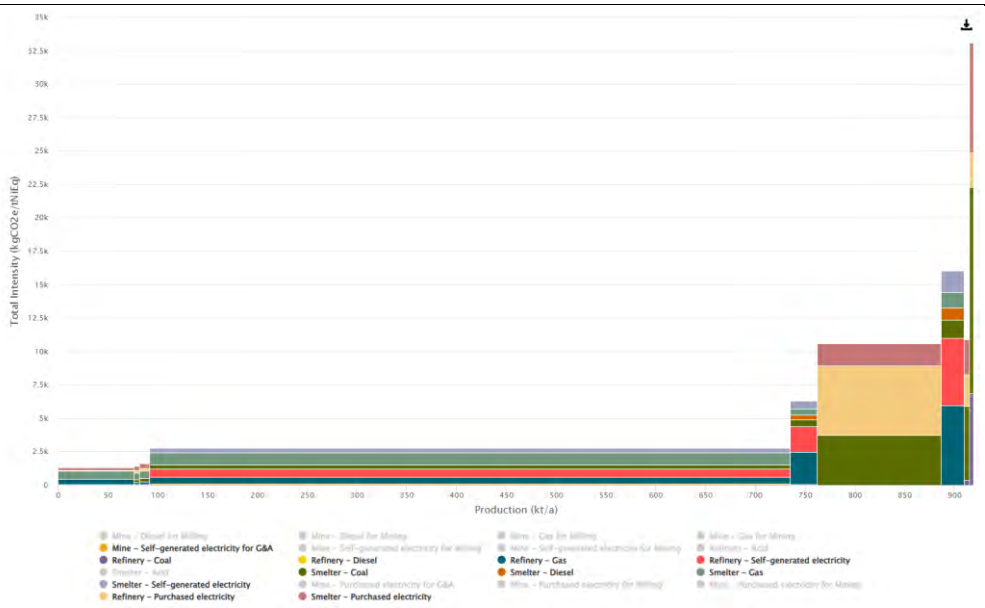
For the determination of Technical Screening Criteria for Nickel production, the improvement of "own performance" of the economic operations as related to carbon emissions has been determined as the main lever for the improvement of environmental pressure. In other words, the chosen environmental objective for substantial contribution is determined to be "Climate Change Mitigation".

The best performance for carbon emissions (criterion B), in the threshold values for TSC 1-3 as determined for onsite carbon emissions, including those for the electricity generation, is that for the asset at 10^{th} -percentile position of the production value, in the distribution curve of Wood Mackenzie data base in year 2023.

For Class 1 Nickel, this threshold value is, for smelting and refining, 1708 kgCO2e / t NiEq. Please see the figures below. The reason for choosing this threshold is because it would not be possible to refer to the EU ETS product benchmark approach for Nickel production. This value is adjusted considering that the total emissions in 2023 would need to reduce further by 50%, (i.e. 854 kgCO2e/t Ni Eq)., to ensure an alignment with the Paris Agreement (1,5°C) compliant transition trajectory while preventing lock-in or stranded assets. This adjustment is in line with the practice of providing sustainable finance by one of the current members of Platform. This is also in alignment with the recommendations for the level of ambition by Science Based Target Initiative (SBTI) for scope 1 and 2 targets, *namely, "at a minimum, scope 1 and scope 2 near-term targets must be consistent with the level of decarbonization required to keep global temperature increase to 1.5°C compared to pre-industrial temperatures".*

Permission to publish figure below needs to be validated by European Commission with WM.

Figure- Class 1 Ni, carbon emissions intensity of smelting and refining, including those for electricity, 2023.

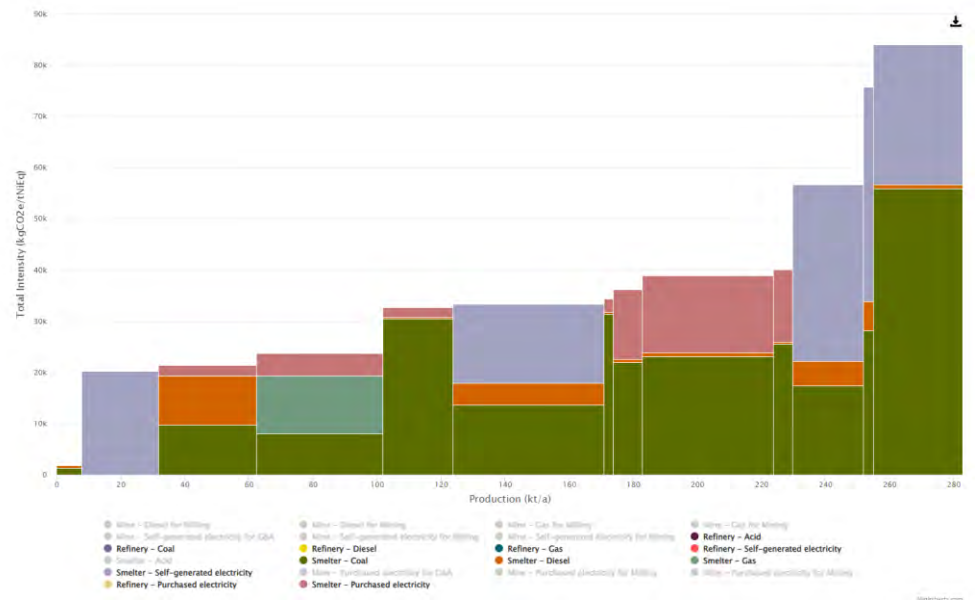


(Source - Wood Mackenzie)

For Ferro-Nickel these best performance threshold values are, respectively 20 tCO2e/t Ni Eq and for the adjusted value with 50% decrease, 10 tCO2e /t Ni Eq. Please see the figures below.

Permission to publish figure below needs to be validated by European Commission with WM.

Smelting and refining of Class 2 Nickel (FeNi), carbon emissions intensity including those for electricity, 2023



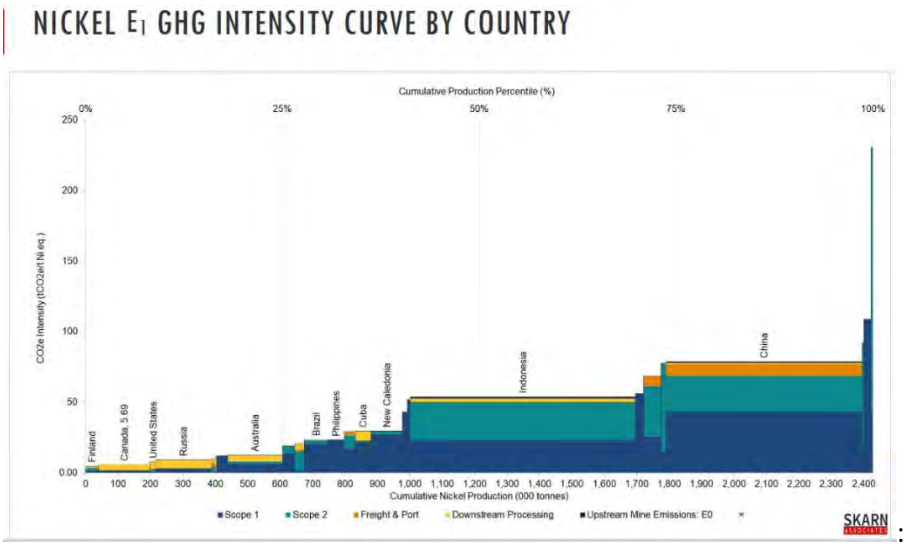
(Source - Wood Mackenzie)

Description of Manufacturing of Nickel and alloys from Primary and Secondary materials

Nickel refining from concentrates obtained from Primary Resources such as sulphidic or laterite ores or other minerals, using pyrometallurgical or hydrometallurgical (e.g. high-pressure acid leaching) routes, results in products such as refined Class 1 Nickel (refined Nickel), and Class 2 Nickel (Ferronickel, containing approximately 27% Nickel, and Pig Nickel Iron PNI, containing 2-10% Nickel). Nickel compounds such as nickel sulphate are also produced from primary and secondary materials such as intermediate materials from other

non-ferrous metal production or from pre-consumer materials, post-consumer materials, slags, and residues from among others tailing ponds, where the economic activity complies with all elements of TSC 1, TSC 2 or TSC 3.

The carbon emissions performance of Nickel supply chain vary significantly across the globe as given in the figure below. This is predominantly due to different process technologies, different energy mixes and different power grid emission factors.



A few process flows are given below from literature NFM BREF (page 898-900), Bai et al, Wei et al.

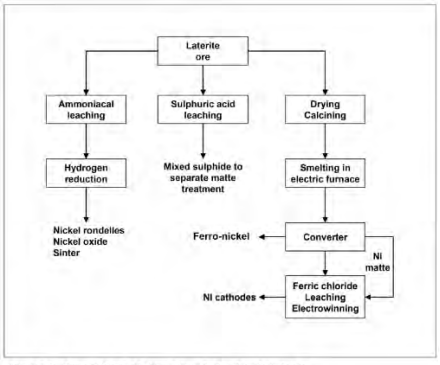


Figure 9.1: Generic flowsheet for nickel production from laterite ores

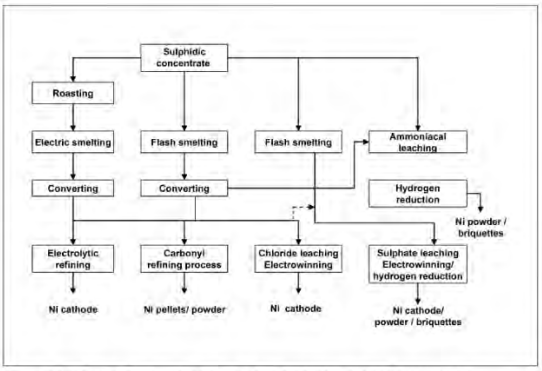
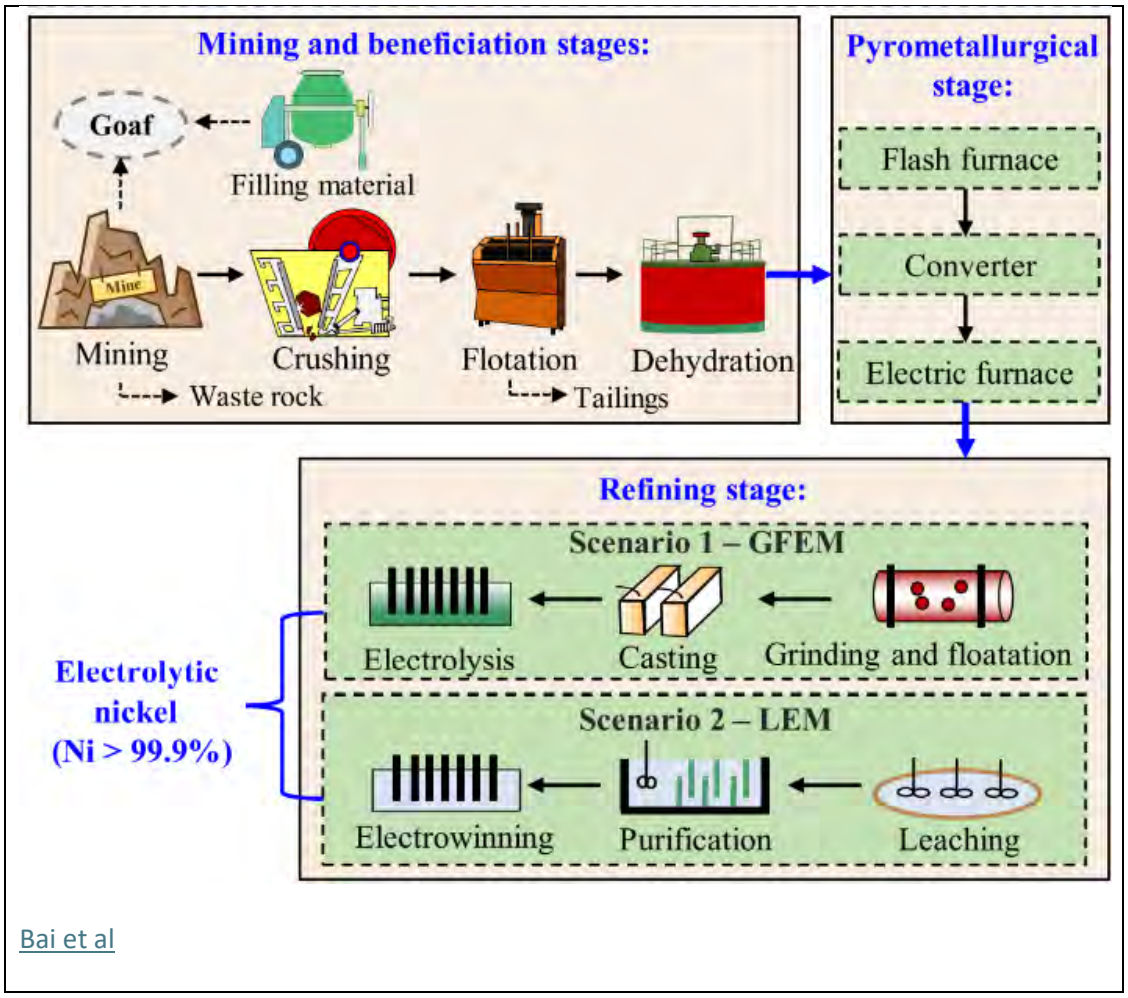
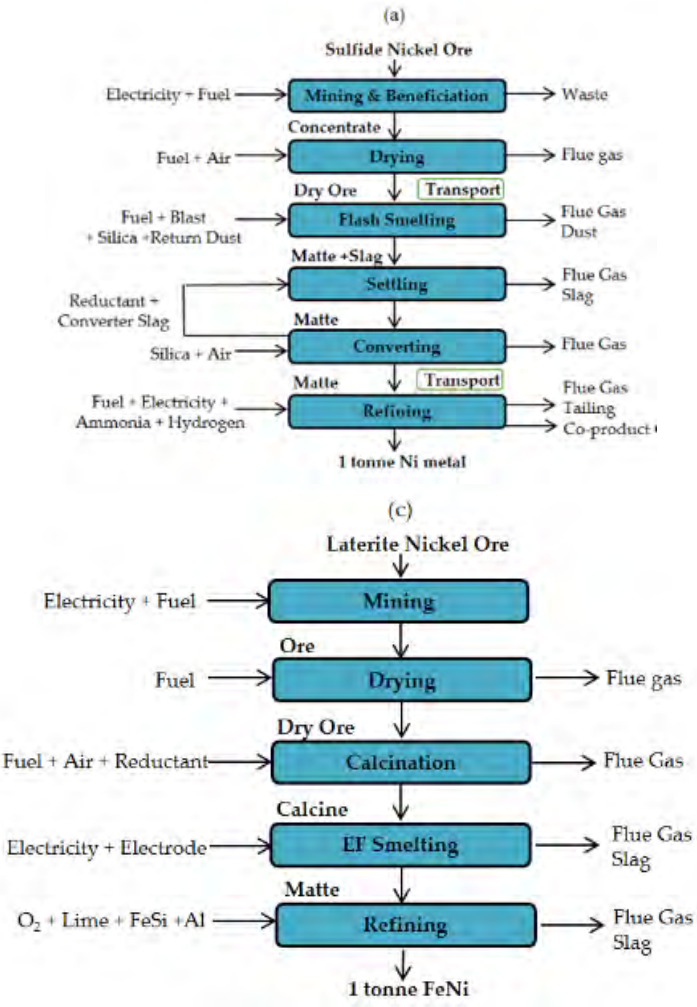


Figure 9.2: Generic flowsheet for the production of nickel from sulphidic concentrates

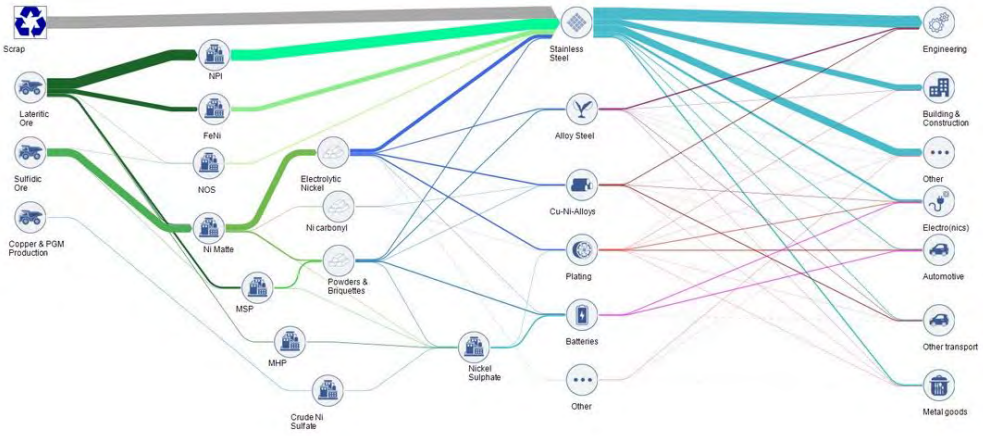

Mining and beneficiation stages:
Goaf
Filling material
Mine
Mining
Crushing
Flotation
Dehydration
Waste rock
Tailings
Pyrometallurgical stage:
Flash furnace
Converter
Electric furnace
Refining stage:
Scenario 1 – GFEM
Electrolysis
Casting
Grinding and floatation
Scenario 2 – LEM
Electrowinning
Purification
Leaching
Electrolytic nickel (Ni > 99.9%)

Bai et al



Wei et al

A recent Sankey diagram of the flows of nickel from mining through production, manufacturing, first and end use is shown below.



Manufacturing of Nickel - Secondary production (Production from secondary input materials)

Stainless steel and other nickel-bearing alloys are the primary sources of secondary nickel. It is estimated that around 80 % of the nickel produced is recycled from new and old stainless-steel scrap and returns to that end use. Other nickel-bearing materials such as precipitates and residues are recycled to primary production. Secondary nickel and cobalt are consumed directly in the form of remelted scrap and other recycled products, generally in the production of ferro-nickel and stainless steel NFM BREF (page 40, 897). The global nickel-related CO2 emissions are reduced by one third thanks to nickel recycling (Link).

The recycling activity maintains the intrinsic metal properties and only alters the physical form of a metal object so that new applications can be efficiently created from the recycled material.
Commodity metals – which operate with a fully developed recycling infrastructure - have among the highest recycling rates of all materials.

While the non-ferrous metals production already processes a significant amount of secondary raw materials (e.g. pre-consumer metal scrap), a significant potential still exists to increase the recovery of metals from e.g. sludges and slags from metals production and post-consumer metals scrap, electronic scrap, residues and materials streams from the tailing ponds. Enabling higher recovery of metals from these streams will reduce or limit Europe's import dependence for metals. Furthermore, better treatment of waste streams (which are often landfilled) can reduce the risk of hazardous materials entering the environment. (p45, Metals for Climate Neutral Europe).

For manufacturing of Nickel, using up to 80% secondary raw materials in the total input materials and an electricity grid factor of less than EU average grid factor is expected to result in substantial carbon emissions saving, as compared to the primary processing.

Nickel production from secondary sources will substantially contribute to climate change mitigation objective as compared to Nickel production from primary resources. The production from secondary resources (recycling), is described as treating a feedstock constituted of pre-consumer metals/alloy scrap, post-consumer metals/alloy scrap, complex end-of-life metal containing products or industrial metal containing residues, which produces refined metal (or alloy) at quality standards allowing for direct replacement of metal (or alloy) from primary sources. The revenue should be considered Taxonomy aligned if the ratio of secondary materials to total input materials is equal to or higher than 80%. To be clear, the ores or concentrates from primary processing are not to be considered as secondary materials.

The quality of the refined metal and alloys would be exactly the same as that produced using the primary materials. This criterion, referring to the use of secondary materials, is expected to encourage maximum investment going into increasing the use of secondary materials as a share of total input materials for producing the refined metals.

This criterion, referring to the use of secondary materials, is expected to encourage maximum investment going into increasing the use of secondary materials as a share of total input materials for producing the refined metals.

A separate benchmarks per metal, and per type of raw material (primary or secondary), is appropriate to encourage refining processing of more secondary materials with very low metal content.

Evidence / certification from the operator to support the claim of share of secondary materials to total materials, as well as a 3rd party verification of the same, will be obligatory.

Secondary materials collection, sorting and chemical processing (recycling) are currently the main barriers to increase their availability by recycling processing. Any additional barriers (e.g. a stricter emission intensity factor) may lead to non-processing of low-quality materials and their loss to society by being land-filled, potentially leading to more pollution.

Therefore, the recommendation is to use a grid factor lower than the applicable EU Average (< 240 g CO2e/kWh until 31.12.2029 and do not exceed 115g CO2e/kWh from 1.1.2030 is expected to further promote the contribution to the reduction of carbon emissions during secondary processing.

2.8. Do No Significant Harm criteria

Production of metals from primary or secondary sources must fulfil the legal minimum required as permit conditions to carry out the operations. Compliance with the permit conditions and fulfilment of general Taxonomy DNSH criteria (Appendices A, B C and D) would be expected to prevent any significantly harmful effects to the other environmental objectives.

- Sustainable use and protection of water and marine resources: The current permits granted to perform the activity foresees that it would not cause any major damage to the risks related to the climate change adaptation such as those mentioned in Annex I of DA1 (Appendix B).
- Transition to Circular Economy: Metals are recyclable materials and by their nature contribute to the circular economy. However, during their processing waste streams are generated. These need to be managed well.
- Pollution prevention and control: The BREF criterion corresponds to the legal minimum required for installations in the EU. The current permits are granted on condition that the emissions of pollutants are within or lower than the emission levels associated with the best available techniques (BAT-AEL) ranges set out in the latest relevant best available techniques (BAT) conclusions, including the best available techniques (BAT) conclusions for the non-ferrous metals industries and no significant cross-media effects occur (as mentioned in in Annex I of DA1 (Appendix C. For those metals which are not specifically referred to in the respective Best available techniques document, (e.g. Li), only the “General BAT conclusions” apply.
- Protection and restoration of biodiversity and ecosystems: The current permits granted to perform the activity foresees that it would not cause any major damage to the risks related to the biodiversity and ecosystems by measures mentioned in Annex I of DA1 (Appendix D).

iv. Data, Usability and Guidance

Data:

To comply with the criteria in TSC 1 and 2, operators need to measure and report their associated CO2 emission as follows:

For criterion A:

GHG emissions are the life-cycle greenhouse gas emissions produced from the generation of the electricity and heat (including steam) used for the manufacturing.

For criterion B:
GHG emissions are quantified including Scope 1 and Scope 2 in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018, excluding lifecycle data and emissions for Scope 2. Certification from 3rd party for not using Thermal Coal will be provided.

For criterion C:
This would be considered fulfilled when the decarbonization roadmap is published and the main components are present. The 50% reduction is aspirational, and it is not required for alignment. This would help the gathering of information while at the same time ensuring that the criteria are usable right now.

For TSC 3:
In addition to criterion C mentioned above, evidence / certification from the operator to support the claim of the share of secondary materials to total materials, as well as a 3rd party verification of the same, will be obligatory.

Usability

Considerations for the usability of the criteria are explained in detail in the different steps of criteria design in subsections 2.1 to 2.7 of the rationale. In order to test the applicability of the criteria determination approach, targeted outreach workshops were carried out with relevant industry associations, the results of which were considered for the criteria design.

v. Recommendation for future work

Further investigation and analysis of available data and evidence needs to be carried out for other critical raw materials for which at the moment no commercial data is available.

Evidence based on the proposed criteria C points could guide investors to avoid lock-in effect during the future investments for primary and secondary refining of other critical raw materials.

The Platform also recommends the development of criteria for the recovery of critical raw material elements from secondary resources for which scientific evidence is available.

12. Manufacturing (Smelting and Refining) of Lithium * CCM

i. Description of the activity

Manufacturing of refined lithium and lithium compounds from primary or secondary raw materials.

The economic activities in this category could be associated with NACE code C24.4.5 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

An economic activity in this category is a transitional activity as referred to in Article 10(2) of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this section.

ii. Technical screening criteria

Substantial contribution to climate change mitigation

Lithium refining from concentrates obtained from Primary Resources such as brines or spodumene ores using pyrometallurgical or hydrometallurgical routes, of from secondary resources, results in lithium metal or lithium compounds (such as carbonate and hydroxide), where the economic activity complies with all elements of TSC 1 or 2 or 3:

TSC 1. producing refined lithium and lithium compounds from primary resource of brine concentrates:

Criterion A – The average GHG emissions intensity resulting from the consumed electricity and heat (including steam) does not exceed 100 g CO2e/kWh until 31.12.2029 and does not exceed 45 g CO2e/kWh from 1.1.2030. GHG emissions are the life-cycle greenhouse gas emissions produced from the generation of the electricity and heat (including steam) used for the manufacturing.

Criterion B – No thermal coal is used.

Criterion C – A forward looking Decarbonisation Roadmap, for the asset carrying the smelting and refining activity at each site of a company, for decreasing the remaining onsite carbon emissions intensity by 50%, from the base line year is published and the scope 3 emissions for 50% (by value) of upstream purchased materials and for upstream and downstream transport are reported annually thereafter. Baseline year is 2023 or the year before the actual date of application for Sustainable Finance.

The forward-looking Decarbonisation Roadmap will contain among other points, at least,
I. a commitment to be Climate Neutral by 2050 as per Paris Agreement, 1.5°C scenario,
II. use renewable and sustainable fossil free energy sources (as defined in Directive 2018/2001/EU).
III. annually report electricity intensity per ton of sold product.
IV. annually report the fossil energy consumption intensity per ton of sold product.
V. progressively replace all the materials in upstream scope 3 having a high product carbon footprint progressively by those having a lower carbon footprint.
VI. annually report the progress (actual reagents consumption intensity and associated CO2 emissions)
VII. describe the methodology to retrieve data and report the emissions of upstream suppliers of materials, fuels, reagents.
VIII. describe methodology to retrieve data and to report emissions of upstream and downstream transport.
IX. A comparison of the current environmental performance for the main impact categories given in a typical life cycle assessment for one of the other non-ferrous metals (e.g. copper, or nickel is reported, such as (e.g. Primary Energy Demand Non-renewable (PED), Global Warming Potential, Acidification Potential (AP), Eutrophication Potential, Photochemical Ozone Creation Potential (POCP), and Ozone Depletion Potential (ODP), blue water consumption, scope 1-3 emissions, energy sources renewable versus non-renewables.
X. For lithium processed using leaching processes (e.g. HPAL and others), the impact on Pollution is to be described in detail.

The forward-looking Decarbonisation Roadmap is verified by an independent third party, for the

presence of the main elements of this roadmap, referred in criterion C, points I to IX, such as climate neutrality commitment, electricity intensity per ton of sold product etc.

TSC 2. producing refined lithium and lithium compounds from primary resource of spodumene concentrates:

Criterion A – The average GHG emissions intensity resulting from the generation of electricity and heat (including steam) does not exceed 100 g CO2e/kWh until 31.12.2029 and does not exceed 45 g CO2e/kWh from 1.1.2030. GHG emissions are the life-cycle greenhouse gas emissions produced from the generation of the electricity and heat (including steam) used for the manufacturing.

Criterion B – GHG emissions intensity associated with the onsite use of fossil fuels and reagents, including reducing agents for processing and electricity/heat/steam generation, is less than 3.5 t CO2e /t LCE (Lithium Carbonate Equivalent). GHG emissions are quantified including direct emissions from the activity and direct emissions from the generation of (self-produced or purchased) electricity and heat (including steam) in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018, or they are quantified including Scope 1 and Scope 2 in accordance with the Greenhouse Gas Protocol. No thermal coal is used.

Criterion C – The obligations of the forward-looking Decarbonisation Roadmap mentioned under TSC1-Criterion C, for refining from primary resources, would be complied with.

TSC 3: Refined lithium and lithium compounds produced from Secondary Resources:

Criterion A – Lithium and compounds produced using secondary input materials containing at least 0,1% by weight of lithium (e.g. slags, electronic waste, material streams from tailing ponds etc.), where the ratio of secondary input materials to Total input materials is at least higher than 70%, based on mass,

Criterion B – The average carbon intensity of the electricity does not exceed European Union Grid Average (direct emissions of 240 g CO2e/kWh until 31.12.2029 and do not exceed 115g CO2e/kWh from 1.1.2030 g CO2 e/kWh).

Criterion C – The obligations of the forward-looking Decarbonisation Roadmap mentioned under TSC1-Criterion C, for refining from primary resources, would be complied with.

Do no significant harm ('DNSH')	
(2) Climate change adaptation	DNSH as set out in Appendix A of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852.
(3) Sustainable use and protection of water and marine resources	DNSH as set out in Appendix B of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852.

(4) Transition to a circular economy	N/A
(5) Pollution prevention and control	The activity complies with the criteria set out in Appendix C of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852. The activity performance complies with provisions of NFM BREF conclusions - Commission Implementing Decision 2016/1032.
(6) Protection and restoration of biodiversity and ecosystems	DNSH as set out in Appendix D of Annex 1 to the Commission Delegated Regulation (EU) 2021/2139 supplementing Regulation (EU) 2020/852.

iii. Rationale

The technical screening criteria for the specific activity has been defined to strike the best balance between the different requirements in the Taxonomy regulation (Art. 19) and fulfilling the overall Taxonomy aims.

2.1 Background
2.2 Choice of priority materials
2.3 Approach to determine substantial contribution: (own performance or enabling)?
2.4 Environmental objective chosen for substantial contribution and reasoning.
2.5 Level of ambition and how to achieve it.
2.6 Description of the priority activity
2.7 Substantial Contribution Criteria Determination Logic
2.8 Do No Significant Harm

2.1 Background

This work has resulted from the continued development Platform 1.0 work for copper (report *page 261) and the need to develop a consistent methodological approach to determining Technical Screening Criteria for all the strategic and critical raw materials defined by the Critical Raw Materials Act (CRMA)* Regulation, while adhering to the principle of evidence based criteria setting and usability. Useability is considered by explaining steps of criteria design in subsections 2.1 to 2.7 in detail. In order to comply with the criteria, operators need to measure and report their associated CO2 emission in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018.

The CRMA covers a broad list that includes, among others, NACE code (24.4) Manufacture of basic precious and other non-ferrous metals, consisting of, (C 24.4.1) Precious metals production, C24.4.2 Aluminium production (C24.4.3)[167] Lead, zinc and tin production, (C24.4.4) Copper production, (C24.4.5) Other non-ferrous metal production (Si, Li, Ni, Co, Dy, Nd, Pr, Ag, B, Cd, Cr, Ga, Ge, In, Ir, Mn, Mo, Sc, Tb, Te, V) and other materials required for clean energy production and magnetic materials.

167 Already covered in the first EU Taxonomy climate Delegated Act.

In the Communication page 6, accompanying the EU Critical Raw-Materials Act, the Commission requests: "Under the Taxonomy Regulation, the Commission is empowered to compile a list of environmentally sustainable activities by defining technical screening criteria for each environmental objective through Delegated Acts. As a follow-up to the forthcoming environmental Delegated Act, which will cover recycling, the Commission will ask the Platform on Sustainable Finance 2.0 to develop Taxonomy criteria for mining and refining, building on the work started under the Platform 1.0, to be considered and later adopted by the Commission."

2.2 Choice of priority materials

The twin energy and digital transition is metal and material intensive (Metals-for-Clean-Energy, (pages 9-16,19), IEA report "The Role of Critical Minerals in Clean Energy Transitions. Electric vehicles, batteries, solar photovoltaic systems, wind turbines, and hydrogen technologies all require significantly more metals than their conventional alternatives to replace fossil fuel needs. The recent IEA, Global Critical Minerals Outlook 2024 (page 7), informs that the combined market value of key energy transition minerals – copper, lithium, nickel, cobalt, graphite and rare earth elements – more than doubles to reach USD 770 billion by 2040. Furthermore, this report (page 9) claims that the recycled quantities of copper and cobalt could reduce 2040 primary supply requirements by 30%, and 15% for lithium and nickel. Without the uptake of recycling and reuse, mining capital requirements would need to be one-third higher. The data for total supply and demand of different key minerals estimates are available from IEA (link).

In Europe, the critical raw materials are required for strategic autonomy. For many of those materials, Europe is largely relying on outside sourcing. The critical raw materials act is providing a framework for boosting their production across the value chain. The primary processing of many critical raw materials is still under development and the associated environmental impact data is not publicly available because of their more limited use. Among the critical raw materials, the non-ferrous metals sector (aluminium, copper, nickel, etc.) has been developing extensively, however for many of the remaining materials the return flows at the "end-of-life" are not significant and needs to be improved. Non-ferrous metals form a fascinating eco-system across their value chains that connect one way or the other the base, precious, specialty and alloys production to each other. Most metal ores carry, next to the primary metals, various other metals in smaller concentrations. These latter are, when it is economically viable, extracted during the metallurgical process of the primary or 'carrier metal', including via recovery in slags or hydrometallurgical residues from among others tailing ponds. All base metals (ores) are carrier metals for a wide range of other base-metals, precious and specialty metals (as shown in figure below).

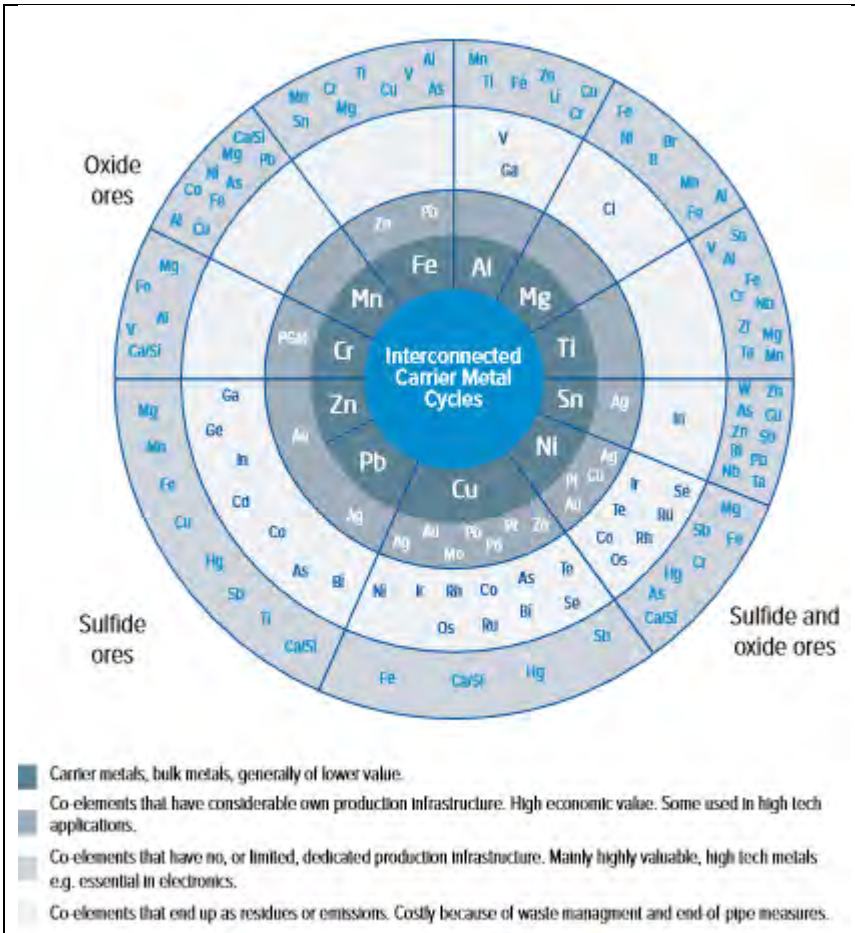


Figure 2: Non-ferrous metals sector interlinkages I Source: UNEP 2013[2]

Secondary processing results in significant value recovery of these biproducts or co-products which would otherwise be lost to landfills and helps extending the continued use of these materials by recycling and maintaining them in the society.

Among the critical raw materials, the work on copper was prioritised as a continuation of the work started in the first mandate of the platform. Nickel and Lithium were also considered given their criticality, but also thanks to the availability of data.

2.3 Approach to determine substantial contribution: (own performance versus enabling)

Reducing pressure on the environment, by reducing carbon emissions of pollutants during on performance is considered more appropriate to have a maximum coverage. Enabling other activity such as renewable energy generation or e-mobility will only partially mitigate the environmental impact and will require developing other evidence elements such as tracking-and tracing.

Carbon emissions parameters measurement and reporting is now well established, so also from useability perspective, this option of “own performance” is to be preferred.

In other words, a substantial contribution can be achieved by improving emission performance of the refining production itself (whether the refined products are used for transition or for other purposes), by taking appropriate measures under its own control.

2.4 Environmental objective considered for substantial contribution and reasoning behind the choice.

Climate change mitigation (CCM) has been chosen as the Environmental Objective for substantial contribution.

Although significant improvement has been made in Europe, as mentioned in Metals-for-Climate Neutral Europe figure 21, page (29), more global efforts are needed to decrease the own scope 1 and 2 carbon emissions of the manufacturing (smelting and refining) operations to achieve alignment with the Paris Agreement 1.5°C scenario, and would be possible using the encouragement of Sustainable Finance.

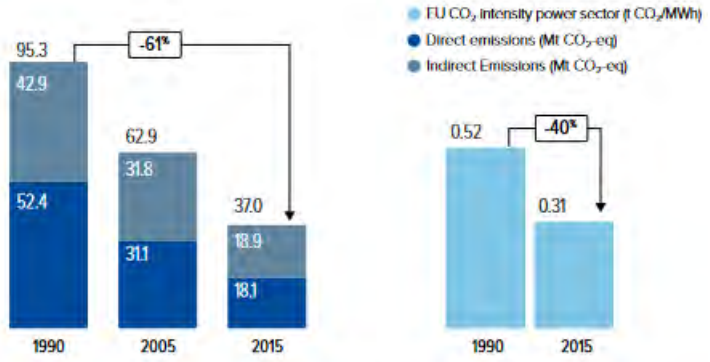
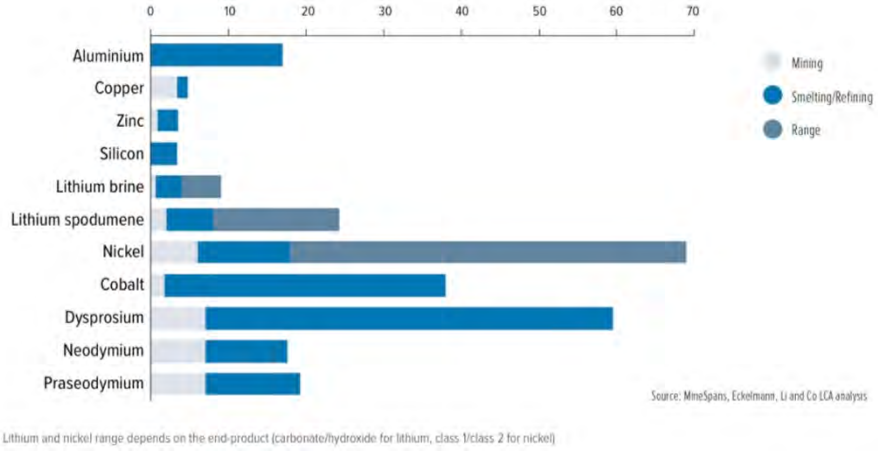


Figure 21: (left) GHG emissions (Mt-CO_2 - eq) of the non-ferrous metals industry (Sources: EEA (direct process emissions), Eurostat (direct emissions related to energy use) and EEA (indirect emissions using EU average CO_2 intensity of power production)[99] (right) Evolution of CO_2 intensity of the EU power production (t CO_2/MWh) (Source: EEA)[100]

Carbon emissions from manufacturing (smelting and refining) operations of critical raw materials are significant. Please see page 195 in IEA report "The Role of Critical Minerals in Clean Energy Transitions., or see metals-for-clean-energy, p95.

Figure 2. GWP primary metal production, split into mining and metal making steps (tonne CO_2/tonne metal, for lithium tonne CO_2/tonne LCE)



Lithium and nickel range depends on the end-product (carbonate/hydroxide for lithium, class 1/class 2 for nickel)

Metals production is an energy intensive process, which results in significant carbon emissions due to the use of fossil fuels and reagents during refining processing. Demand for significantly more materials for twin transition would require much more energy use resulting in many more carbon emissions. Mineral processors and metal production operators can contribute to climate change mitigation by reducing pressure on environment by own performance, by decreasing carbon footprint of their own roasting, smelting and refining operation, decreasing the carbon footprint of the onsite consumed electricity, heat and steam, as well as by taking steps to monitor and report carbon emissions of upstream mining, specifically for the integrated operators carrying out mining, smelting and refining activities at the same site, up to the stage of concentrate.

It is important to reassure the investors about potential risks to other environmental objectives while transforming to achieve carbon neutrality. To this end investors are investing in LCA studies with some public disclosure. (e.g. Link). Furthermore, Life Cycle analysis studies sponsored by industry associations, such as that by nickel1 and nickel2 clarify the current average performance of the sector for among other parameters, global warming potential, primary energy demand, blue water consumption, scope 1-3 emissions, energy sources renewable versus non-renewables. This forms a good first step to determine environmental objectives for substantial contribution (SC) and do not significant harm (DNSH), and, also to determine the technical screening criteria (TSC) for the same and while preventing possible risks related to greenwashing and asset lock-in's. However these studies are not yet available for many of the raw materials listed in Critical Raw Materials Act (CRMA Regulation).

When robust data and evidence are available, an identification of the priority environmental objectives for smelting and refining of the remaining strategic and critical raw materials can be made.
For a subset of these remaining materials[168], where the impact on environment due to carbon dioxide emissions can be proven to be the highest as compared to other environmental objectives, a similar approach as the one used for copper, nickel and lithium could be used for determining the Technical Screening Criteria for Climate Change Mitigation.

2.5 Level of ambition and how to achieve it

Climate Change Mitigation's headline ambition level is **to be compliant with requirement of carbon neutrality by 2050 as per Paris Agreement's 1,5°C scenario**. This can be achieved by using the electricity/steam/heat consumed on site by non-fossil resources or by using non-fossil reagents.

The following **solutions and corresponding technologies** decrease the carbon intensity of metals production (t CO2e/t of metals) as informed by the Best Available Techniques (BAT) Reference Document for the Non-Ferrous Metals Industries.

1. By improving energy efficiency
2. By use of more metal containing secondary materials
3. By electrification and consumption of renewable and fossil free electricity,
4. By use of non-fossil reduction agents and alternative fossil free fuels.

168 For which criteria are not developed yet.

5. By roasting of carbon containing fraction of the infeed materials before it enters the smelting operation aided by carbon capture and storage or carbon capture and use.
5. Innovating in other breakthrough manufacturing technologies (Artificial intelligence, data mining etc.).

More recently, the forward looking decarbonisation roadmaps, such as that by international copper association (link) and IFC-Columbia (link) help clarify with which levers such transformation could be achieved, what levels of investments would be required and which framework conditions need to be fulfilled. Lithium Specific roadmap is expected to become available after 2024.

In this document, the criteria have been proposed for Lithium production, which does not have an ETS Product Benchmark based Criteria because of lack of publicly available data, confidentiality of the performance information, heterogeneous raw materials, small number of installations and / or because of the use of heterogeneous technology routes used to process the raw materials.

Best performance is represented when the electricity/steam/ heat consumption is from non-fossil sources, and total emissions intensity of an asset are less than or equal to those of an asset on the 10th percentile value on a global distribution curve for 2023 of the total carbon emissions intensity (CO2e/t LCE), plotted over the cumulative production volume.

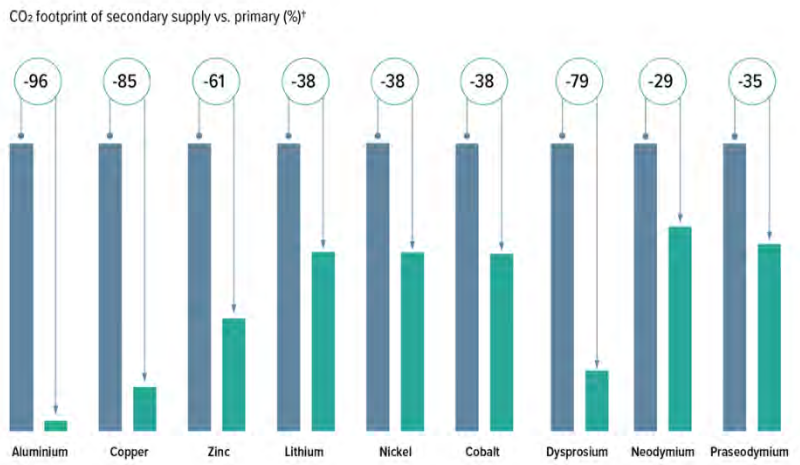
A decrease by 50% of the 2023 carbon emissions intensity value is likely to ensure that the asset would not become a stranded asset in the next foreseeable future and will remain on the trajectory to be carbon neutral in 2050.

2.6 Description of the priority activity

Manufacturing of refined lithium, alloys and compounds (C24.4.5) is a part of NACE CODE C24, manufacturing of non-ferrous metals from primary and secondary raw materials.
The NACE code classification (link) refers to the statistical classification of economic activities established by Regulation (EC) No 1893/2006.
The activity is a transitional activity as referred to in Article 10(2) of Regulation (EU) 2020/852.

Lithium production including roasting and refining from concentrates obtained from Primary Resources such as brines, or spodumene ores or other minerals, using pyrometallurgical or hydrometallurgical (e.g. high-pressure acid leaching) routes, results in compounds such as refined lithium carbonate and lithium hydroxide. These lithium compounds could also be produced as a product from primary and secondary materials such as intermediate materials from other non-ferrous metal production or from pre-consumer materials, post-consumer materials, slags, and residues from among others tailing ponds.

The choice of the environmental objective of Climate Change Mitigation for manufacturing of lithium **by secondary processing** is appropriate because the associated carbon footprint is lower than that from primary by between 29% to >85%. Refer - metals-clean-energy under topic, **Ensuring sustainability of Europe's metals supply chains:**



While non-ferrous metals production already processes a significant amount of secondary raw materials (e.g. pre-consumer metal scrap), a significant potential still exists to increase the recovery of metals from e.g. sludges and slags from metals production and post-consumer metals scrap. Enabling higher recovery of metals from these streams will reduce or limit Europe's import dependence for metals. Furthermore, better treatment of waste streams (which are often landfilled) can reduce the risk of hazardous materials entering the environment. (p45, Metals for Climate Neutral Europe)

Production of lithium from secondary resources depends on the lithium content of secondary raw material and its size distribution. It follows a similar process as of production of lithium from primary resources in removing impurities and lithium recovery. Scrap quality has a high impact on the energy consumption and carbon emissions of secondary lithium furnaces, i.e. production of lithium from low quality scrap would be more energy and CO2-intensive than from high quality scrap. Lithium manufacturing from secondary resources would lead to direct CO2 emissions due to fossil fuel input. Recycling of electronic scrap would lead to high CO2 emissions, since electronic scrap contains a high share of carbon leading to additional process emissions. However, detailed information about carbon emissions from processing of lithium from secondary resources is not publicly available.

2.7 Substantial Contribution Criteria Determination Logic

In Platform 1.0, to determine the technical screening criteria (TSC) values, distribution curves for direct carbon emissions intensity for lithium manufacturing (refining), per site, on a global scale, were purchased from an external supplier. The performance of the "front-runners" was determined for 2021, using a 10-percentile value. The value was adjusted to reflect ambition required by Paris Agreement for 2030. In addition, an electricity emission intensity factor of 100g CO2e / kWh was introduced to be consistent with the climate DA. Separate criteria for secondary processing (recycling) activity were introduced based on ratio of input materials to total materials.

In Platform 2.0 this work has been taken forward for other materials from the CRMA list, to study the impact of refining activities on carbon emissions, relying on robust, good quality data.

Work started with studying the public literature (e.g. link1, link2, LCA Case study from Sweden link 4, company sustainability reports, that give some details for an operation. There are other interesting sources where some details are publicly available e.g. Link 5, SKARN, PWC, Minviro, Chordia, Vera et al, REE's, to determine the TSC's. Sectoral Life

Cycle analysis studies such as those by copper/nickel/cobalt give comprehensive environmental impact information for economic activity sector operation's average performance. Average performance for lithium was not available from a sector LCA. More transparency about scope 3 emissions from upstream purchased materials and upstream and downstream transport is still needed.

This information does not allow us to determine the performance distribution curve for the whole sector, which is necessary to give guidance for redirecting the capital flows to enhance sustainability. Commercial data providers are regularly consulted by investors wishing to make finance available to extract and process CRMA materials including lithium. So comparative aspects of LCA studies versus the data-access sold by commercial data vendors, as mentioned in the table below are interesting.

Comparison of LCA with a Purchased Data Report

Remarks	*LCA*	*Purchased Data Report*
General	*Cradle to Gate report contains mining, smelting & refining.* *Gate to Gate report contains metal smelting & refining.* *Data is collected from different operations and background data is used from data bases with some modelling.* *System boundaries need to be well documented.*	*Starting only since a few years, data vendors have started to provide data for economically important metals. The list is expanding. Quality is improving.* *Data collected from different operations and background data are used for some modelling.* *System boundaries need to be well documented.*
Pro-arguments	*The information is publicly available* *Information is Free of cost.* *LCA studies report performance of operations for different environmental impacts.* *Carbon Emissions are expressed as Global Warming Potential in almost all LCA studies.* *Allocation for byproducts is done transparently following standards (PEF, ISO)* *Data for fossil energy, renewable energy, electricity, transport, etc. is available.* *LCA studies for public disclosure are peer reviewed by independent external expert panel.*	*The data is very well segregated.* *Per site,* *Per process step,* *Per metal,* *Per technology route (pyro-, hydro-metallurgy)* *Data gives a distribution curve of intensity per site allowing determination of a 10-percentile value.* *The data is annually updated.* *Data uses specific emission factor of used electricity* *An anonymized detailed sub-set report for public distribution can be purchased.*
Contra-Arguments	*In most cases data reflects averages of a sector or several companies or technologies* *Data is updated only after a few years.* *LCA Studies are complex and costly and less segregated.* *The data for an individual site is generally not available.* *Comparing LCA studies requires the full study reports and critical review reports.*	*The data sets are to be purchased and costly.* *Data sets are available only for a limited number of metals, (Cu, Li, Ni, Co).* *The data sets are confidential.* *Allocation for byproducts needs more verification.* *General lack of transparency may affect the datasets.*

Considering all these aspects, an external data provider (Wood-Mackenzie), supplying more granular data, per asset, per process stage and per emissions source, has been used to determine the TSC criteria in Platform 2.0, only those metals for which reasonably robust, granular, data set was available, namely, copper, nickel, and lithium. It was possible to determine carbon emissions, namely, 1. emission intensity criterion for electricity/heat/steam consumption and 2. total scope 1 and 2 emissions intensity. Since even with the commercial data access, not all the emissions sources are known in detail, with the required granularity particularly related to the direct emissions, a 3rd criterion, namely main elements of the "forward-looking *Decarbonisation Roadmap* for the asset carrying the smelting and refining activity at each site of a company have been identified.

For enhancing transparency of environmental performance, it is desirable that in future the economic operators and their investors analyse information and report publicly a comparison of the current environmental performance for the main impact categories with those as given in copper or nickel life cycle assessment, (e.g. as global warming potential, primary energy demand, blue water consumption, scope 1-3 emissions, energy sources renewable versus non-renewables), while taking care to keep business confidential part accessible only to their 3rd party verifiers. This is also in line with the recommendation of IEA to strengthen the collection and reporting of granular and standardised data to enable

benchmarking and progress tracking across the industry and throughout the supply chain. More recently, Global Critical Minerals Outlook 2024, IEA (page 10) reconfirms that voluntary sustainability standards can help actors improve ESG performance, but greater transparency, due diligence, harmonised approaches to credibility and appropriate incentives are needed to tap their full potential. There needs also more transparency about scope 3 emissions from upstream purchased materials and upstream and downstream transport. Some sustainability reports have basis for such information.

Information from the decarbonisation roadmaps about decarbonisation levers and associated climate and environmental impact on other environmental objectives for these and new critical raw materials would then form a basis for reviewing TSC for these materials or for determining TSC for other critical raw materials for those cases where the environmental objective of climate change mitigation would be considered appropriate.

The economic activity's revenue would be considered Taxonomy aligned and substantially contributing to climate change mitigation objective when lithium refining is carried out in accordance with all the elements included in each criteria set, depending on the raw material resource.

The determination of an electricity emission intensity factor of <100 g CO2e / kWh, is based on the advice by the TEG (Link, page 44), and is considered appropriate to promote the use of renewable or low carbon fossil free electricity. The 45 g CO2e / kWh is based on the recommendation of trajectory for net zero in line with climate goals as laid out in chapter II on the review of Climate DA in this report. Criterion A covers both electricity and heat (including steam), because all these forms of energy are relevant in this industry. Purchased energy as well as on-site generation are included because both are used in this industry

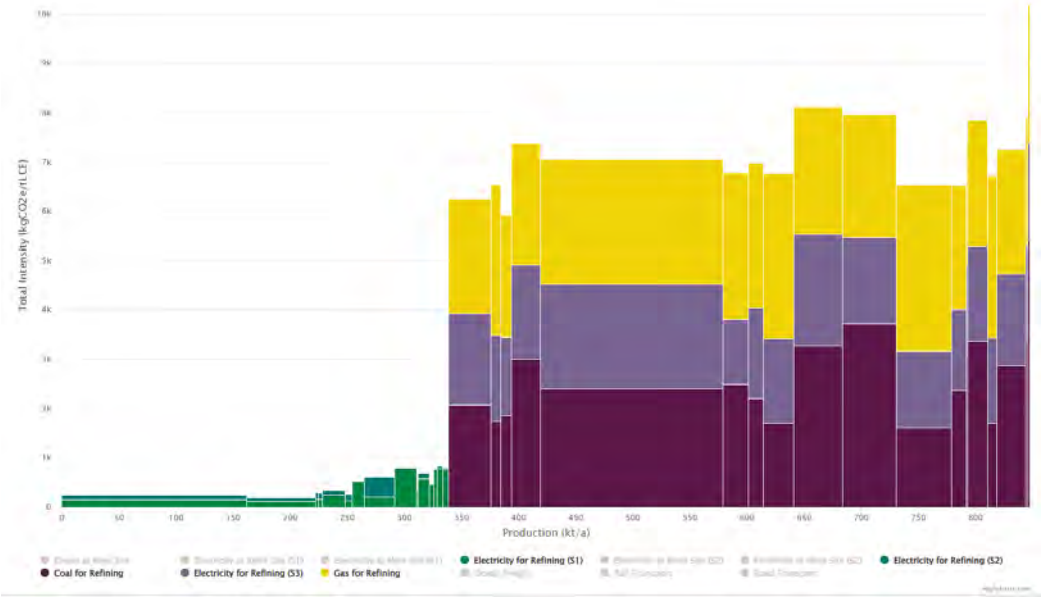
For the determination of Technical Screening Criteria for Lithium production, the improvement of "own performance" of the economic operations as related to carbon emissions has been determined as the main lever for the improvement of environmental pressure. In other words, the chosen environmental objective for substantial contribution is determined to be "Climate Change Mitigation".

The best performance for carbon emissions (criterion B), in the threshold values for TSC 1-3 as determined for onsite carbon emissions, including those for the electricity generation, is that for the asset at 10th -percentile position of the production value, in the distribution curve of Wood Mackenzie data base in year 2023.

For lithium compounds of technical grade, from spodumene and other minerals, this is 7 t CO2e / t Lithium carbonate equivalent (LCE). Please see the figures below. The reason for choosing this threshold is because it would not be possible to refer to the EU ETS product benchmark approach for LCE production. This value is adjusted considering that the total emissions in 2023 would need to reduce further by 50%, (i.e. 3.5 t CO2e/t LCE)., to ensure an alignment with the Paris Agreement (1,5°C) compliant transition trajectory while preventing lock-in or stranded assets. This adjustment is in line with the practice of providing sustainable finance by one of the current members of Platform. This is also in alignment with the recommendations for the level of ambition by Science Based Target Initiative (SBTI) for scope 1 and 2 targets*, namely, "at a minimum, scope 1 and scope 2 near-term targets must be consistent with the level of decarbonization required to keep global temperature increase to 1.5°C compared to pre-industrial temperatures".*

Permission to publish this figure below needs to be validated by European Commission with WM.

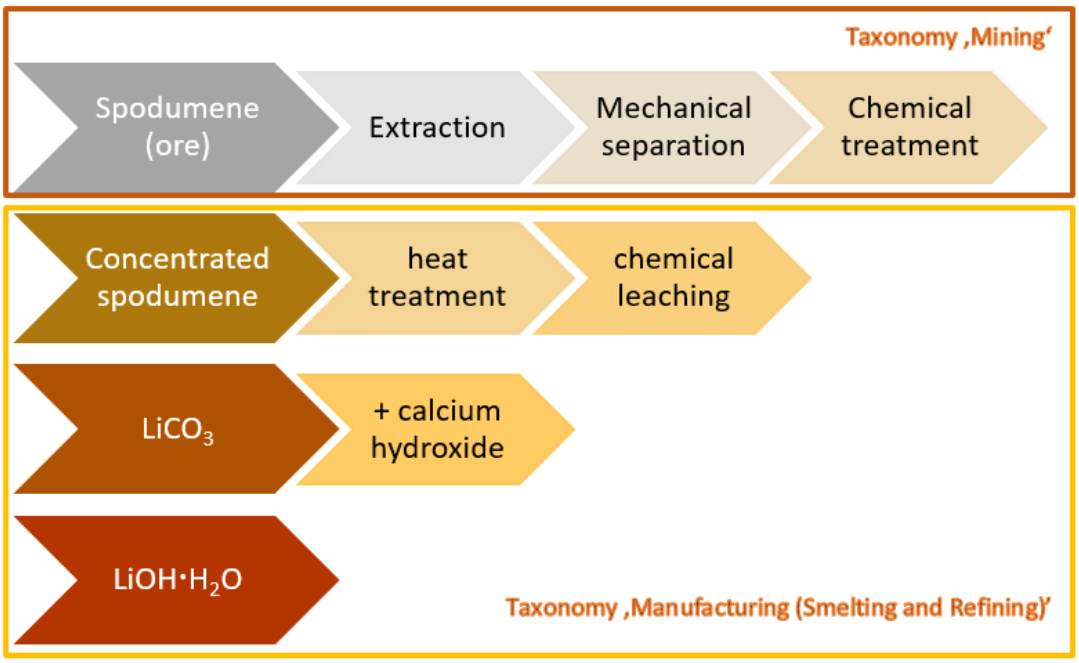
Figure- Lithium Refining from Brine and Spodumene, 2023, carbon emissions intensity including those for power. (Source - Wood Mackenzie)



Description of Manufacturing of Lithium products from Primary and Secondary materials

The economic activity of Lithium refining would result in products of technical grade such as Lithium Carbonate or Lithium hydroxide monohydrate, by processing the concentrates obtained from Primary raw material resources such as brine or spodumene or other minerals, using pyrometallurgical or hydrometallurgical routes, or from secondary resources such as pre-consumer materials, post-consumer materials, slags and residues from among others tailing ponds, as illustrated below (source: Chordia et al 2022).

Spodumene-based production of Lithium hydroxide (battery grade)



(based on Chordia et al. 2022)

Side product of $LiOH.H_2O$: $CaCO_3$ (Chordia et al. 2022)

Environmental performance differs considerably depending on the raw material resource (brine or mineral (spodumene, lepidolite, petalite, other), energy sources (gas, alternative fuels, biogas, hydrogen etc.), reduction agents (non-thermal coal, biochar or alternative reduction agents) and the processing route (pyrometallurgical / hydrometallurgical including leaching / mixed).

Manufacturing of Lithium - Secondary production (Production from secondary input materials)

While the non-ferrous metals production already processes a significant amount of secondary raw materials (e.g. pre-consumer metal scrap), a significant potential still exists to increase the recovery of metals from e.g. sludges and slags from metals production and post-consumer metals scrap, electronic scrap, residues and materials streams from the tailing ponds. Enabling higher recovery of metals from these streams will reduce or limit Europe's import dependence for metals. Furthermore, better treatment of waste streams (which are often landfilled) can reduce the risk of hazardous materials entering the environment. (p45, Metals for Climate Neutral Europe).

Lithium compound production from secondary sources will substantially contribute to climate change mitigation as compared to lithium production from primary resources. The production from secondary resources (recycling), is described as treating a feedstock constituted of pre-consumer metals / alloy scrap, post-consumer metals/alloy scrap, complex end-of-life metal containing products or industrial metal containing residues, which produces refined metal (or alloy) at quality standards allowing for direct replacement of metal (or alloy) from primary sources. The revenue should be considered Taxonomy aligned if the ratio of secondary materials to total input materials is equal to or higher than 80%. To

be clear, the ores or concentrates from primary processing are not to be considered as secondary materials.

Global Critical Minerals Outlook 2024, IEA, (page 131), informs that "lithium chemicals can be recycled from secondary resources, typically "black mass" either from end-of-life batteries or manufacturing scrap from gigafactories. Historically, battery recycling facilities focused on higher-value metals, such as nickel and cobalt, and lithium was often not recovered. Depending on prices, the uptake of lithium recycling may require policy incentives." Financial incentives are also necessary, especially at this stage, where not enough volumes are available for collection.

The quality of the refined metal and compounds would be the same as that produced using the primary materials. Therefore, the revenue should be considered Taxonomy aligned if the ratio of secondary materials to total input materials is equal to or higher than 80%.

This criterion, referring to the use of secondary materials, is expected to encourage maximum investment going into increasing the use of secondary materials as a share of total input materials for producing the refined metals.

A separate benchmarks per metal, and per type of raw material (primary or secondary), is appropriate to encourage refining processing of more secondary materials with very low metal content.

Evidence / certification from the operator to support the claim of share of secondary materials to total materials, as well as a 3rd party verification of the same, will be obligatory.

Considering that critical raw materials are required in increasing quantities for Europe's strategic autonomy, collection, sorting and recycling need to be encouraged and incentivised to increase the availability of secondary materials. Any additional barriers (e.g. a stricter electricity emission intensity factor) may lead to non-processing of low-quality materials and their loss to society by being land-filled, potentially leading to more pollution.

Therefore, the recommendation is to use a grid factor lower than the applicable EU Average (< 240 g CO2e/kWh until 31.12.2029 and do not exceed 115g CO2e/kWh from 1.1.2030 is expected to further promote the contribution to the reduction of carbon emissions during secondary processing.

Do No Significant Harm (DNSH)

Major risk to make significant harm to any of the other environmental objectives:

Production of metals from primary or secondary sources must fulfil the legal minimum required as the permit conditions in the EU to carry out the operations. Compliance with the permit conditions and fulfilment of general Taxonomy DNSH criteria (Appendices A, B C and D) would be expected to prevent any significantly harmful effects to the other environmental objectives.

- Sustainable use and protection of water and marine resources: The permits granted to perform the activity include all conditions necessary to ensure the activity does not cause any deterioration of the status or potential of water bodies and does not prevent it from achieving good status/potential, based on a detailed assessment of the activity on all potentially affected water bodies

- Transition to Circular Economy: Metals are recyclable materials and by their nature contribute to the circular economy. However, during their processing waste streams are generated. These need to be managed well.

The BREF criterion corresponds to the legal :Pollution prevention and control •
The current permits are granted on .minimum required for installations in the EU condition that the emissions of pollutants are within or lower than the emission levels associated with the best available techniques (BAT-AEL) ranges set out in the including the best ,latest relevant best available techniques (BAT) conclusions *S*ome .available techniques (BAT) conclusions for the non-ferrous metals industries monitoring of .e.g. ,general provisions apply for all non-ferrous metal processing prevention of diffuse emission etc. The criterion referring to Appendix C is to ,dust as mentioned in in Annex I of ,ensure that no significant cross-media effects occur The BREF WGC (Common Waste Gas .(The BREF NFM (Non-ferrous metals _DA1 Management and Treatment Systems in the Chemical Sector)

- Protection and restoration of biodiversity and ecosystems: The current permits granted to perform the activity foresees that it would not cause any major damage to the risks related to the biodiversity and ecosystems by measures mentioned in Annex I of DA1 (Appendix D).

iv. Data, Usability and Guidance

Data:

To comply with the criteria in TSC 1 and 2, operators need to measure and report their associated GHG emission as follows:

For criterion A:
GHG emissions are the life-cycle greenhouse gas emissions produced from the generation of the electricity and heat (including steam) used for the manufacturing.

For criterion B: Certification from 3rd party for not using Thermal Coal will be provided.

For criterion C:
This would be considered fulfilled when the decarbonization roadmap is published and the main components are present. The 50% reduction is aspirational, and it is not required for alignment. This would help the gathering of information while at the same time ensuring that the criteria are usable right now.

For TSC 3:
In addition to criteria C mentioned above, evidence / certification from the operator to support the claim of the share of secondary materials to total materials, as well as a 3rd party verification of the same, will be obligatory.

Usability

Considerations for the usability of the criteria are explained in detail in the different steps of criteria design in subsections 2.1 to 2.7 of the rationale. In order to test the applicability of the criteria determination approach, targeted outreach workshops were carried out with relevant industry associations, the results of which were considered for the criteria design.

v. Recommendation for future work

Further investigation and analysis of available data and evidence needs to be carried out for other critical raw materials for which at the moment no commercial data is available.

Evidence based on the proposed criteria C points could guide investors to avoid lock-in effect during the future investments for primary and secondary refining of other critical raw materials.

The Platform also recommends the development of criteria for the recovery of critical raw material elements from secondary resources for which scientific evidence is available.

13. Progress reports on unfinished activities

i. Progress report on new activity "Manufacture of Tyres" substantially contributing to Pollution Prevention and Control

This section summarises the progress achieved in the development of a new economic activity for manufacturing of tyres (C1 category – NACE Code C.22.11) in the EU Taxonomy, making a substantial contribution to the pollution prevention and control objective (PPC).

The work on this activity builds on previous work by the EU Platform 1.0, which included relevant considerations on tyre noise and tyre abrasion as part of the proposed substantial contribution criteria for a new economic activity on urban and suburban passenger land public transport. This is summarised in section 7.1 of the Annex to the Platform on Sustainable Finance 1.0's report with recommendations on technical screening criteria for the four remaining environmental objectives of the EU Taxonomy from March 2022.

The previous Platform was unable to develop technical screening criteria for tyre abrasion since *"a suitable method to measure tyre abrasion and mileage is not currently available"* and recommended the European Commission to mandate the development of such a testing method. However, road transport-related economic activities included in the Climate Delegated Act contain also DNSH criteria for tyre noise under the PPC objective (i.e. Annex I, section 6.3 on urban and suburban transport, road passenger transport; section 6.5 on transport by motorbikes, passenger cars and light commercial vehicles; and section 6.6 on freight transport services by road). The Commission later included Recital (10) of the Delegated Regulation 2023/2485 of 27 June 2023, acknowledging the potential contribution of tyre manufacturing to several environmental objectives and highlighting the need to develop technical screening criteria in this regard:

Tyres represent 20 % of a vehicle energy consumption and as such, tyre manufacturing has the possibility to reduce greenhouse gas emissions targeted by the entire transport sector, relying on innovation. Tyres can also contribute to a more circular economy. Accordingly, while tyre manufacturing is not included in the scope of the activity for manufacturing of components that are essential for delivering and improving the environmental performance of low carbon vehicles, it will be necessary to further assess the manufacturing of tyres in order to establish specific technical screening criteria for that activity, taking due account of legal requirements under the most recent proposals of Union legislation and best practices, particularly regarding microplastic release, air pollution, noise, direct greenhouse gas emissions, end of life. In the meantime, tyre manufacturing continues to be an eligible activity under Section 3.6 of Annex I to Delegated Regulation (EU) 2021/2139 on other low carbon technologies. In particular for road vehicles of categories M and N, tyres should comply with external rolling noise requirements in the highest populated class and with Rolling Resistance Coefficient (influencing the vehicle energy efficiency) in the highest two populated classes as set out in Regulation (EU) 2020/740 of the European Parliament and of the Council and as can be verified from the European Product Registry for Energy Labelling (EPREL). Furthermore, tyres should fulfil the Euro 7 proposal for tyre abrasion requirements.

Recent legislative developments regarding tyre abrasion have allowed to resume the work on criteria for tyre manufacturing. At EU level, tyre abrasion-related emissions are already being targeted in the EURO 7 Regulation[1] which also governs type-approval of tyres setting limits for the tyre abrasion of all tyres that will

be sold in the EU market progressively starting from 1 July 2028. At UN level, the UN Regulation 117 for the type-approval of new tyres has already incorporated provisions for testing C1[2] tyres for their abrasion, whereas limit values will be introduced in September 2025.

Based on this, in September 2024, a dedicated group was created in the Platform with a mandate to develop technical screening criteria for the inclusion of the activity “Manufacture of tyres” in the EU Taxonomy. Two workshops, involving a wide range of ad-hoc experts, have been organised in order to gather technical input.

While the Platform has not yet managed to finalise its technical recommendations due to a lack of time and data, there is agreement that “Manufacture of tyres” should be classified in the EU Taxonomy as an own-performance activity substantially contributing to Pollution Prevention and Control. The substantial contribution criteria should include criteria on abrasion and noise, based on a “best-in-class" approach linked to the methodology of the EURO 7 Regulation for tyre abrasion (e.g. set levels equal or less to a percentage of the relevant Euro 7 abrasion limit), and to the EPREL database for tyre noise (e.g. limitation to Class A tyres), while also providing certain safeguards on pollution and toxicity through an additional criterion in relation to the use of toxic/hazardous chemicals. The DNSH criteria would consider, among others, the tyres’ energy performance, and impacts on all environmental objectives from the manufacturing process and sourcing of raw materials.

Going forward and once abrasion limits are made available both at UN and EU level, the Platform understands that it will be technically possible – based on the ongoing market assessment – to identify the proportion of tyres that would be able to comply with the proposed criteria in order to set the adequate level of ambition for this activity. Despite the significant progress made in the development of criteria, further consideration should be given to the potential trade-offs between decreasing tyre abrasion and the toxicity of the particles released, which will be addressed through specific safeguards in the substantial contribution criteria based on the latest state of technology available.

[1] Regulation (EU) 2024/1257 on type-approval of motor vehicles and engines and of systems, components and separate technical units intended for such vehicles, with respect to their emissions and battery durability (Euro 7).
[2] C1 tyres are tyres for use mainly in passenger cars and comprise the vast majority of tyres sold in the EU. C2 and C3 tyres are tyres mainly in use for light and heavy-duty vehicles.

ii. Progress report on new activity “Manufacturing of emergency aircraft” enabling substantially enabling Climate Change Adaptation

The activity was proposed to be included in the Taxonomy under the Platform’s current mandate. However, due to limited resources and high workload of the Platform, it has not been finalised for inclusion yet.

Context

It is recognised by the European Commission and Platform experts that emergency aircraft play a crucial role in enabling responses to climate-related hazards, increasing the overall preparedness and resilience of communities in Europe and beyond.

It is therefore proposed to include the manufacturing of emergency aircraft as an enabling activity under the adaptation objective. The activity would directly enable the already included Emergency Services activity.

Past work

Early draft criteria for the activity were developed under the Platform's first mandate, . The criteria were, however, not mature enough to be included in the Platform's final recommendations. The main issues that remained to be addressed related to:

2) Compliance of the criteria with the Horizontal Framework for Enabling Activities[169]
2) Missing DNSH criteria

Both aspects required considerable expert-driven considerations with the participation of aircraft sustainability experts and emergency services users.

Steps undertaken

Significant progress has been achieved in identifying and appointing relevant ad-hoc experts, which can support the further development of the criteria for successful inclusion in the Taxonomy.

Although some gaps in the available expertise remain, we do not consider them a hindrance for progressing the work. Rather, progress has been stalled due to the Platform's overall workload and small size, Members have not been available for undertaking this work yet.

The appointed experts have been welcomed and informed of the delay and remain ready to contribute once the work can be commenced.

iii. Progress report on new activity "Manufacture of energy efficient equipment for industry" substantially contributing to Climate Change Mitigation

Based on the proposals submitted through the EU Taxonomy Stakeholder Request Mechanism, in September, the European Commission invited the Technical Working Group of the Platform to work on technical screening criteria for the inclusion of "Manufacture of energy efficient equipment in industry" as a new activity in the EU Taxonomy.

Energy efficiency plays a key role in EU's efforts to accelerate the transition to a net-zero industry. Automation and control systems can optimize the energy demand, resources throughput and overall GHG emissions optimisation of industrial facilities in various sectors (metal, cement, glass, mining, water, desalination, infrastructure, power generation, furnace etc).

Industry is the most expensive sector to decarbonise. Thus, favourable financing conditions enabled by the EU Taxonomy framework would intensify the uptake of energy efficiency solutions in industrial processes.

[169] See Chapter "Horizontal Framework for Enabling Activities" in Platform report of 28 November 2022: https://finance.ec.europa.eu/document/download/7599ea2d-975c-4b25-adca-de1d26533e99_en?filename=221128-sustainable-finance-platform-technical-working-group_en.pdf

Equipment optimising energy efficiency in industrial processes can bring significant savings in the industry sector, which was directly responsible for emitting 9.0 Gt of CO2 in 2022, accounting for a quarter of global energy system CO2 emissions. In the EU, the industry sector accounted for 25.6 % of the final energy consumption in 2021, which made it the third largest consumer.

To deliver on the request from the European Commission, the Platform created a dedicated group to work on recommendations for technical screening criteria for "Manufacture of energy efficient equipment in industry", inviting external experts to assist in the work.

The Platform agrees that the new activity should be included as an enabling activity substantially contributing to Climate Change Mitigation.

Furthermore, inspired by the activities 3.5 Manufacture of energy efficiency equipment for buildings and 7.3 Installation, maintenance and repair of energy efficiency equipment (in buildings) of Annex 1 of the Climate Delegated Act, the Platform is considering spitting the activity into to two standalone activities:

1. the manufacture of energy efficiency technologies and
2. the uptake of these measures by industry.

This two-pronged approach would aim to incentivize green investments in 1) companies producing energy efficiency equipment and 3) investments in energy efficiency measures by industrial companies aimed at reducing energy consumption. Whereas the former activity is relevant for both the Revenue and Capex KPIs, the latter activity will predominately aim at all industrial companies who invest in optimizing energy efficiency of their industrial processes to count these investments (Capex) as sustainable.

The activity could potentially cover the manufacture of the following technologies:

<u>Energy-efficient automation and control systems for industry, including:</u>

- Variable speed drives variable speed fans and variable-speed drive air compressors for industry applications. Soft starters are excluded.
- Advanced SCADA (Supervisory Control and Data Acquisition) control software for industrial processes, restricted to SCADA software that allows the possibility to monitor and control power or energy and/or to detect gas or fluid leakage. Remote terminal units (RTU), controllers, field devices and sensors installed as part of eligible SCADA software are included.
- Electronic displays, human machine interface devices and software.
- Automation Control systems including Programmable Logic Controllers (PLC), Programmable Automation Controllers (PAC) and Advanced Process Controllers (APC) with fieldbus communication interface (PROFINET / PROFIenergy, Modbus, EtherCAT, Powerlink, Devicenet, Bacnet, etc.), restricted to controllers that can be used for energy management or controllers coupled to an energy efficiency or energy management application.
- Energy metering or control systems for industrial processes, including supervision software, energy and power meters, power factor correction systems, thermostats and related sensors.
- Industrial smart sensors as defined in "Preparatory study for the Ecodesign and Energy Labelling Working Plan 2020-2024: TASK 4: Complementary analyses and recommendations for the Ecodesign and Energy Labelling working plan 2020-2024: Final 2021-04."

<u>Professional services related to the energy performance of the industry, including:</u>

- Technical consultations (energy audits or simulations, project management and training)
- Energy performance contracts
- Energy management services
- Design services and software that include energy efficiency or optimization of system architecture

iv. Progress report on new activity “Maintenance of bridges and tunnels” substantially contributing to the transition to a circular economy.

This work resumes previous discussions from the EU Platform 1.0, in which the Technical Working Group (Platform) worked on an initial proposal for Technical Screening Criteria for the maintenance of civil engineering works to the circular economy. Such works included roads, motorways, tunnels and bridges. The maintenance of roads and motorways was finalised and added to the Environmental Delegated Act.

For the maintenance of bridges and tunnels, the Platform found that apart from the recommendations of the main material; concrete, there was not enough data relating to other materials to justify technical screening criteria for a substantial contribution to the transition to a circular economy.

Background of the activity:

Demolition of flawed infrastructure and the reconstruction of bridges and tunnels requires enormous amounts of primary materials. The extraction, transport and refining of these materials lead to significant greenhouse gas emissions.

Background of the work:

In September 2024, the Platform activity lead resumed the work on this activity and onboarded six ad-hoc experts from academia in the infrastructure sector and representation from the European Commission. Discussions and work took place September to November 2024.

Proposed approach:

It was agreed that the substantial contribution of the economic activity is the transition to a circular economy, but also the minimisation of greenhouse gas emissions. It was agreed that the main objective of green investments in tunnels and bridges should enable the intactness of the infrastructure. This represents a shift from the work of the previous Platform, which included criteria on minimising material use in maintenance activities. Moving forward, it was agreed to focus on the extension of the service life of tunnels and bridges and therefore focus the criteria on maintenance processes.

Maintenance processes largely differ depending on the type of infrastructure. Therefore, this expert group proposed to differentiate the process related criteria by length of the bridge or tunnel. The alternative threshold, the weight of infrastructure, is often impossible to assess, especially for older infrastructure. The measurement by length is much simpler and is a relevant metric to differentiate processes.

Considerations to complete TSC for the proposed economic activity:

Consider the impact of this economic activity on both the transition to a circular economy (by avoiding material use) and climate change mitigation (by avoiding large amounts of greenhouse gas emission from the rebuilding of infrastructure).

Consider a new approach to the criteria than the previous work under the Platform 1.0 that focuses on two main criteria;

4. Monitoring of infrastructure
5. Extension of lifetime

IV. Defining the missing DNSH for the inclusion of "adapted" activities

Activity	Collection and transport of non-hazardous and hazardous waste
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	Separately collected waste is not mixed in waste storage and transfer facilities with other waste or materials with different properties. Recyclable waste[170] is not disposed of, incinerated or co-incinerated.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	criteria aligned to the Collection and transport of hazardous waste DNSH criteria under the Environmental DA
Usability of criteria	horizontal coherence across the DAs and avoiding undue administrative burden

Activity	Treatment of hazardous waste
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	n/a
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	criteria aligned to the same activity listed under PPC objective
Usability of criteria	horizontal coherence across the DAs and avoiding undue administrative burden

Activity	Depollution and dismantling of end-of-life products
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	1. The economic activity dismantles and depollutes separately collected waste from complex end-of-life products, such as automobiles, electrical and electronic equipment (EEE) or ships. 2. The economic activity dismantling and depolluting waste electrical and electronic equipment (WEEE) complies with the requirements set out in Article 8 of Directive 2012/19/EU and in Annexes VII and VIII to that Directive. The economic activity dismantling and depolluting end-of-life vehicles (ELVs) complies with the requirements set out in Article 6 and 7 of Directive 2000/53/EC and in Annex I to that Directive. 3. For the dismantling and depollution of scrap ships, the facility is included in the European List of ship recycling facilities as laid down in Commission

170 Recyclable waste' is waste that can be recycled in accordance with Article 3(17) of Directive 2008/98/EC.

	Implementing Decision (EU) 2024/1956[171]. For the construction of a new facility or the upgrade of an existing facility which is not yet included in the European List of ship recycling facilities, the facility fulfils all requirements set out in Article 13 of Regulation (EU) No 1257/2013 of the European Parliament and of the Council[172] and has applied to be included in the European List of ship recycling facilities. 4. For the dismantling and depollution of Waste from Electrical and Electronic Equipment (WEEE) and End-of-Life vehicles (ELVs), waste originates from collection points meeting the applicable requirements set by Union[173] and national legislation.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	DNSH derived from SC criteria of original activity. While the first criterion broadly mirrors activity description, it safeguards a separate collection of waste. The Platform is aware and supports contemplated changes to the EU ship recycling regulation (pending evaluation of the ship recycling regulation, which should serve as a basis for a revision) and ELV regulation proposal (currently being negotiated). Once the revision is completed, the COM shall update the references accordingly. Please note that this activity covers non-exhaustive (demonstrative) list of waste streams that - in the opinion of the Platform - should be clarified on all levels (activity description, SC and DNSH) to provide the users and reporting entities clarity on the activity boundaries.
Usability of criteria	proposed DNSH criteria ensure that significant harm to CE objective can be avoided as relevant legislative requirements are laid out

Activity	Sorting and material recovery of non-hazardous waste
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	1. Recyclable non-hazardous waste[174] is not disposed of, incinerated, or co-incinerated. 2. The preparing for re-use or recycling of the non-hazardous construction and demolition waste generated on the construction site is at least 70 % (by mass in kilogrammes), excluding backfilling. This excludes naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC[175]. This is done in accordance with the waste hierarchy and the EU Construction and Demolition Waste Management Protocol.
Other DNSH	use DNSH for same activity from Environmental Delegated Act

171 Commission Implementing Decision (EU) 2024/1956 of 16 July 2024 amending Implementing Decision (EU) 2016/2323 establishing the European List of ship recycling facilities pursuant to Regulation (EU) No 1257/2013 of the European Parliament and of the Council on ship recycling

172 Regulation (EU) No 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling and amending Regulation (EC) No 1013/2006 and Directive 2009/16/EC (OJ L 330, 10.12.2013, p. 1).

173 At Union level, applicable requirements are set for WEEE by Directive 2012/19/EU and for ELVs by Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles (OJ L 269, 21.10.2000, p. 34).

174 'Recyclable waste' is waste that can be recycled in accordance with Article 3(17) of Directive 2008/98/EC.

175 Commission Decision 2000/532/EC of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (OJ L 226, 6.9.2000, p. 3).

Rationale	Criterion 1 aligned with other CE activity (see collection and transport of non-hazardous and hazardous waste). Criterion 2 is introduced in line with construction and demolition waste criteria as activity includes - inter alia - construction and upgrades of recycling facilities), i.e. for capex financing.
Usability of criteria	First criterion presents a general safeguard ensuring that waste management hierarchy is respected. Second criterion allows for an easy and unambiguous implementation and verification.

Activity	Demolition and wrecking of buildings and other structures
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	1. The operator of the activity conducts a pre-demolition audit in line with the EU Construction and Demolition Waste Management Protocol 2. All separately collected and transported non-hazardous waste that is segregated at source is intended for preparation for reuse or recycling operations. 3. Construction and demolition waste is separately collected 4. The preparing for re-use or recycling of the non-hazardous construction and demolition waste generated on the construction site is at least 70 % (by mass in kilogrammes), excluding backfilling. This excludes naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC[176]. This is done in accordance with the waste hierarchy and the EU Construction and Demolition Waste Management Protocol. 5. Operators limit waste generation in processes related construction and demolition, in accordance with the EU Construction and Demolition Waste Management Protocol[177] and taking into account best available techniques and using selective demolition to enable removal and safe handling of hazardous substances and facilitate reuse and high-quality recycling by selective removal of materials, using available sorting systems for construction and demolition waste.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	DNSH derived from similar activities included in the Climate DA (e.g. 7.1 Construction of new buildings, 7.2 Renovation of existing buildings)
Usability of criteria	This activity is inherently linked to real estate-related activities and as such, it provides for an easy and unambiguous implementation (criterions 1, 4 and 5). Criterions 2 and 3 introduce a necessary general safeguard vis a vis waste treatment (see similar activities under treatment of waste in the Environmental DA).

Activity	Sale of spare parts
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	1. The economic operator should offer customers used, remanufactured or refurbished spare parts and components alongside new parts and components.

176 Commission Decision 2000/532/EC of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (OJ L 226, 6.9.2000, p. 3).

177 EU Construction & Demolition Waste Management Protocol, August 2024: https://data.europa.eu/doi/10.2873/77980.

	2. The products fit for reuse, remanufacturing or refurbishment should be labelled as such.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	Criteria shall safeguard that product's lifespan can be extended and that customers have proper information and ability to reflect it in their purchasing decisions.
Usability of criteria	The criteria provide clear safeguard to pro-long use phase of a product's life-cycle.

Activity	Preparation for re-use of end-of-life products and product components
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	n/a
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	nature of the activity contributes to the circular economy environmental objective
Usability of criteria	n/a

Activity	Sale of second-hand goods
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	n/a
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	nature of the activity contributes to the circular economy environmental objective
Usability of criteria	n/a

Activity	Product-as-a-service and other circular use- and result-oriented service models
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	The activity leads to an extended lifespan or increased use intensity of the product in practice.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	DNSH derived from partial take-over of the TSC concerning lifespan or intensity Might prove difficult to demonstrate (although the same wording is used as in the TSC). More concrete set of criteria were (for this aspect) developed by the Platform 1.0 (at least twice the EU average) but have not appeared in the final text of the Environmental DA.
Usability of criteria	Usability aspect has been extensively discussed (see also rationale). In this sense, currently proposed criteria provide a clear guidance. We assume that one the EU's digital product passport is available, easy thresholds could be introduced.

Activity	Provision of IT/OT data-driven solutions and software
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	Where relevant: The equipment used meets the requirements set in accordance with Directive 2009/125/EC for servers and data storage products. The equipment used does not contain the restricted substances listed in Annex II to Directive 2011/65/EU, except where the concentration values by weight in homogeneous materials do not exceed those listed in that Annex. A waste management plan is in place and ensures maximal recycling at end of life of electrical and electronic equipment, including through contractual agreements with recycling partners, reflection in financial projections or official project documentation. At its end of life, the equipment undergoes preparation for reuse, recovery or recycling operations, or proper treatment, including the removal of all fluids and a selective treatment in accordance with Annex VII to Directive 2012/19/EU.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	DNSH derived from partial take-over of the TSC concerning lifespan or intensity See e.g. 8.1 in the Climate DA (Data processing, hosting and related activities). Approach via activity 4.1 in the Environmental DA has been also considered.
Usability of criteria	For software only solutions, criteria do not apply. For solutions including hardware, a general and easy to follow safeguards are introduced, similarly to other activities (e.g. 8.1 in the Climate DA).

Activity	Phosphorus recovery from waste water
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	n/a
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	We have considered various approaches, such as legislative requirements ("Wastes and by-products, especially hazardous wastes, are managed in line with the Waste Treatment BREF." and "The phosphorus extracted out of the system is used either as a component material in a fertilising product compliant with Regulation (EU) 2019/1009 of the European Parliament and of the Council or national fertiliser legislation where it is more stringent, or in another field of application where the recovered phosphorus fulfils specified functions in accordance with the respective regulations."). We've decided to keep simple criteria as nature of the activity inherently contributes to the CE objective.
Usability of criteria	n/a

Activity	Recovery of bio-waste by anaerobic digestion or composting
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	1. Waste should be separately collected from other waste streams. 2. Separately collected waste is not mixed in waste storage and transfer facilities with other waste or materials with different properties.

Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	For the sake of consistency and clarity, a generic safeguard maintaining a separate waste collection was introduced.
Usability of criteria	the criteria introduce a general safeguard for separate waste collection - see similar activities under waste treatment (mainly in the Environmental DA)

Activity	Repair, refurbishment and remanufacturing
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	The economic activity implements a waste management plan that ensures that the product's components, especially those containing critical or strategic raw materials[178], that have not been reused in the same product are reused elsewhere, or, where reuse is not possible (due to damage, degradation or hazardous substances), that these components and materials are recycled, or, only where reuse and recycling is not viable, are disposed of in accordance with applicable Union and national legislation. The waste management plan is accessible to the public.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	DNSH derived from partial take-over of the TSC concerning lifespan or intensity
Usability of criteria	derived from existing criteria, easy to follow

Activity	Use of concrete in civil engineering
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	• The preparing for re-use or recycling of the non-hazardous construction and demolition waste generated on the construction site is at least 70 % (by mass in kilogrammes), excluding backfilling . This excludes naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC[179]. This is done in accordance with the waste hierarchy and the EU Construction and Demolition Waste Management Protocol. • Operators limit waste generation in processes related construction and demolition, in accordance with the EU Construction and Demolition Waste Management Protocol[180] and taking into account best available techniques and using selective demolition to enable removal and safe handling of hazardous substances and facilitate reuse and high-quality recycling by selective removal of materials, using available sorting systems for construction and demolition waste. • 'The use of primary raw material is minimised through the use of secondary

178 Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020

179 Commission Decision 2000/532/EC of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (OJ L 226, 6.9.2000, p. 3)

180 EU Construction & Demolition Waste Management Protocol, August 2024: https://data.europa.eu/doi/10.2873/77980.

	raw materials[181]. For concrete, a maximum of [85%] of the material comes from primary raw material. This criterion applies to in-situ poured concrete, pre-cast products, and all constituent materials, including any reinforcement. The threshold is calculated by subtracting the secondary raw material from the total amount of material used measured by mass in kilogrammes. Where the information on the recycled content of the construction product is not available, it is to be counted as comprising 100% primary raw material. In order to respect the Waste Hierarchy and thereby favour re-use over recycling, re-used construction products, including those containing non-waste materials reprocessed on site, are to be counted as comprising zero primary raw material.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	Scientific evidence shows that the proposed primary raw materials threshold proposed is achievable. According to a compilation of studies from the European Environment Agency, all the main material classes used in construction can use less than 90% of primary raw materials by mass in kilogrammes: (1) concrete, (2) bricks, tiles, ceramics, (3) biobased products, (4) glass, mineral insulation, (5) non-biobased plastic, (6) metals and (7) gypsum. Concerning the use of recycled aggregates, e.g. for structural application of concrete, Eurocode 2 – annex N will allow from 2024 higher quantities of recycled material. If derived from concrete waste, up to 40% combining recycled sand content (0-4mm) and recycled gravel content (5-20 mm). If derived from mixed construction and demolition waste, up to 20% combining recycled sand content (0-4mm) and recycled gravel content (5-20 mm). Additional research shows that for structural steel, concrete and bricks, up to 20 to 40% of recycled or re-used content is feasible. Please note that 85% threshold for concrete is still under scrutiny within the Platform.
Usability of criteria	derived from existing criteria with lower thresholds; references to EU CDW Protocol and coherence with the similar activities

Activity	Manufacture of plastic packaging goods
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for circular economy	1) The activity complies with one of the following criteria: a. use of circular feedstock: until 2028, at least 25 % of the packaging product by weight consists of recycled post-consumer material for non-contact sensitive packaging, at least 5 % for contact sensitive packaging[182] and at least 25% for single use PET beverage bottles. From

181 For the purposes of the Delegated Act, 'secondary raw materials' means materials that have been prepared for re-use or recycled in accordance with Article 3 of the Waste Framework Directive and have ceased to be waste under Article 6 of that Directive.

182 'Contact sensitive packaging' means packaging that is intended to be used in any packaging applications in the scope of Regulation (EC) No 1831/2003 of the European Parliament and of the Council of 22 September 2003 on additives for use in animal nutrition (OJ L 268, 18.10.2003 p. 29), Regulation (EC) No 1935/2004 of the European Parliament and of the Council of 27 October 2004 on materials and articles intended to come into contact with food and repealing Directives 80/590/EEC and 89/109/EEC (OJ L 338, 13.11.2004, p. 4), Regulation (EC) No 767/2009 of the European Parliament and of the Council of 13 July 2009 on the placing on the market and use of feed, amending European Parliament and Council Regulation (EC) No 1831/2003 and repealing Council Directive 79/373/EEC, Commission Directive 80/511/EEC, Council Directives 82/471/EEC, 83/228/EEC, 93/74/EEC, 93/113/EC and 96/25/EC and Commission Decision 2004/217/EC (OJ L 229, 1.9.2009, p. 1), Regulation (EC) No 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products (OJ L 342, 22.12.2009, p. 59), Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation

	2028, at least 35 % of the packaging product by weight consists of recycled post-consumer material for non-contact sensitive packaging, at least 10 % for contact sensitive packaging and at least 30% for single use beverage bottles and PET contact-sensitive packaging; b. design for reuse: the packaging product[183] has been designed to be reusable within a reuse system[184] and fulfils the requirements for the use of circular feedstock with at least 35 % of the packaging product by weight consists of recycled post-consumer material for non-contact sensitive packaging, at least 10 % for contact sensitive packaging and at least 30% for single use beverage bottles and PET contact-sensitive packaging applying as of 2028. The system for reuse is established in a way that ensures the possibility of reuse in a closed-loop or open-loop system which: i. provides a defined governance structure and keeps records on the number of fillings, re-uses, rejects, collection rate, amount of reusable packaging placed on the market and units of sales or equivalent units; ii. provides rules on the product scope and packaging formats, as well as on the collection of reusable packaging, including incentives for consumers; iii. ensures open and equal access and conditions for all economic operators wishing to become part of it, including proportionate distribution of costs and benefits for all system participants[185]; use of bio-waste feedstock: at least 65 % of the packaging product by weight consists of sustainable bio-waste feedstock[186]. Agricultural based bio-waste used for the manufacture of plastic packaging complies with the criteria laid down in Article 29, paragraphs 2 to 5, of Directive (EU) 2018/2001. Forest based bio-waste used for the

(EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (OJ L 117, 5.5.2017, p. 1), Regulation (EU) 2017/746 of the European Parliament and of the Council of 5 April 2017 on in vitro diagnostic medical devices and repealing Directive 98/79/EC and Commission Decision 2010/227/EU (OJ L 117, 5.5.2017, p. 176), Regulation (EU) 2019/4 of the European Parliament and of the Council of 11 December 2018 on the manufacture, placing on the market and use of medicated feed, amending Regulation (EC) No 183/2005 of the European Parliament and of the Council and repealing Council Directive 90/167/EEC (OJ L 4, 7.1.2019, p. 1), Regulation (EU) 2019/6 of the European Parliament and of the Council of 11 December 2018 on veterinary medicinal products and repealing Directive 2001/82/EC (OJ L 4, 7.1.2019, p. 43), Directive 2001/83/EC of the European Parliament and of the Council of 6 November 2001 on the Community code relating to medicinal products for human use (OJ L 311, 28.11.2001, p. 67), or Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods (OJ L 260, 30.9.2008, p. 13).

183 Defined as transport packaging or sales packaging used for transporting products within the territory of the Union, including via e-commerce, in the form of pallets, foldable-plastic boxes, boxes, trays, plastic crates, intermediate bulk containers, pails, drums and canisters of all sizes and materials, including flexible formats or pallet wrappings or straps for stabilisation and protection of products put on pallets during transport.

184 'Reusable' and 'reuse system' are defined and implemented in accordance with the requirements on packaging reuse systems in the Union legislation on packaging and packaging waste, including any standards related to the number of rotations in a system for reuse.

185 The Commission will review these conditions once the revision of Directive 94/62/EC of the European Parliament and of the Council of 20 December 1994 on packaging and packaging waste (OJ L 365, 31.12.1994, p. 10) will be adopted.

186 Sustainable bio-waste feedstock refers to industrial bio-waste and municipal bio-waste, it excludes primary biomass in the absence of legally agreed sustainability criteria.

	manufacture of plastic packaging complies with the criteria laid down in Article 29, paragraphs 6 and 7, of that Directive. 2. The packaging product is recyclable in practice and at scale. The packaging product demonstrates recyclability in practice and at scale by complying with all of the criteria specified below[187]. 2.1 The unit of packaging[188] is designed to be recyclable, so that it can be sorted and recycled at the end of life and that the resulting recycled material is of such quality that it can be used again in packaging applications. Colours, additives or design elements of the packaging that contaminate the recycling stream once packaging becomes waste and substantially reduce the quality of the resulting recyclates are not used. At best, the unit of packaging is made from the same material (mono-material solution) or, as a minimum, the materials present in the packaging are compatible with the existing recycling streams and sorting processes. Where all packaging components are not compatible with the existing recycling streams and processes, the packaging must allow for separation of its non-recyclable components, either manually by consumers or within the existing sorting and recycling processes. 2.2 In addition, the packaging is evaluated as recyclable at scale where it complies with one of the following criteria: (a) collection, sorting, and recycling is proven to work in practice and at scale: the plastic packaging material of the unit of packaging achieves the minimum recycling rate[189] target for plastic packaging waste set by the Directive 94/62/EC, either in the national jurisdiction where the packaging is put on the market, regardless of the jurisdiction's size, or in Member States that collectively represent at least 100 million inhabitants; (b) collection, sorting and recycling is proven to be on track to work in practice and at scale: sorting and recycling processes are available at the Technology Readiness of Level 9 as defined by ISO 16290:2013. 3. When the packaging material is produced, the following substances presenting hazardous properties specified below are not added to the feedstock: c. substances meeting the criteria laid down in Article 57 and identified in accordance with Article 59(1) of Regulation (EC) No 1907/2006; d. substances meeting the criteria for classification as carcinogenic category 1 or 2 in accordance with Regulation (EC) No 1272/2008 of the European Parliament and the Council; e. substances meeting the criteria for classification as mutagenic category 1 or 2 in accordance with Regulation (EC) No 1272/2008; f. substances meeting the criteria for classification as toxic for reproduction category 1 or 2 in accordance with Regulation (EC) No 1272/2008;

187 The Commission will review these conditions once the revision of Directive 94/62/EC of the European Parliament and of the Council of 20 December 1994 on packaging and packaging waste (OJ L 365, 31.12.1994, p. 10) will be adopted.

188 'Unit of packaging' means a unit as a whole, including any integrated or separate components, which together serve a packaging function such as the containment, protection, handling, delivery, storage, transport and presentation of products, and including independent units of grouped or transport packaging where they are discarded prior to the point of sale.

189 'Recycling rate' is the proportion of waste generated that is recycled.

	g. substances meeting the criteria for classification as endocrine disruption for human health category 1 or as endocrine disruption for environment category 1 in accordance with Regulation (EC) No 1272/2008; h. substances meeting the criteria for classification as persistent, bioaccumulative and toxic in accordance with Regulation (EC) No 1272/2008; i. substances meeting the criteria for classification as very persistent and very bioacumulative in accordance with Regulation (EC) No 1272/2008; j. substances meeting the criteria for classification as persistent, mobile and toxic in accordance with Regulation (EC) No 1272/2008; k. substances meeting the criteria for classification as very persistent and very mobile in accordance with Regulation (EC) No 1272/2008; l. substances meeting the criteria for classification as respiratory sensitiser category 1 in accordance with Regulation (EC) No 1272/2008, except enzymes; m. substances meeting the criteria for classification as skin sensitiser category 1 in accordance with Regulation (EC) No 1272/2008; n. substances meeting the criteria for classification as having chronic hazard to the aquatic environment category 1, 2, 3 or 4 in accordance with Regulation (EC) No 1272/2008; o. substances meeting the criteria for classification as hazardous to the ozone layer in accordance with Regulation (EC) No 1272/2008; p. substances meeting the criteria for classification as having specific target organ toxicity – repeated exposure category 1 or 2 in accordance with Regulation (EC) No 1272/2008; q. substances meeting the criteria for classification as having specific target organ toxicity – single exposure category 1 or 2 in accordance with Regulation (EC) No 1272/2008. Regulation (EC) No 1907/2006 shall prove a quantity of fluorine measured as content of either PFAS or non-PFAS. 4. Compostable plastic materials in packaging applications are used only for very lightweight plastic carrier bags; tea, coffee or other beverage bags; tea, coffee or other beverage pads and sticky labels attached to fruit and vegetables.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	First of all, *structure* of the DNSH criteria stems from TSC for a substantial contribution to the CE objective. Second, the criteria largely align to PPWR. Where a deviation occurs, it is for the operators to gradually prepare for the upcoming legal requirements (mainly from the PPWR) - in such case, thresholds are initially more relaxed as they kick in earlier than the target years in the PPWR envisage. The criteria also differ from PPWR in terms of substances banned from manufacturing – Platform opted for an alignment with the REACH Regulation (whereas PPWR only bans four heavy metals and – as a future measure – PFAS). On PFAS, the criteria now

	include a sentence under point (3): “Regulation (EC) No 1907/2006 shall prove a quantity of fluorine measured as content of either PFAS or non-PFAS."
Usability of criteria	The proposed criteria largely align to PPWR (new regulation on, inter alia, plastic packaging) in terms of content, bringing clarity and easy-to-follow guidance to the users. On top of that, since newly established requirements under PPWR will kick in at a later date, DNSH criteria allows for progression via ‘signalling’ to the market and moderate progressions over time towards thresholds stipulated by PPWR. Year 2028 is suggested as it would also align with 3-year review period of the Taxonomy Delegated Act.

Activity	Manufacture of active pharmaceutical ingredients (API) or active substances
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for pollution prevention and control	1. The activity complies with the following requirements regarding the emission of pollutants: 1.1. Where the activity falls within its scope, the emission limit values are within the BAT-AEL ranges[190]set out in: a. the best available techniques (BAT) conclusions for common waste gas management and treatment systems in the chemical sector for emissions to air of new installations (or for existing installations within 4 years of the BATC publication) where relevant conditions apply[191]; b. the Best Available Techniques Reference Document (BREF) for Manufacture of Organic Fine Chemicals (OFC)[192] for the manufacturing activity under conditions not covered by the BATC mentioned above; c. the best available techniques (BAT) conclusions for common waste water and waste gas treatment/management systems in the chemical sector[193]; d. the Best Available Techniques Reference Document (BREF) for the Large Volume Inorganic Chemicals – Solids and Others industry[194]; e. the Best Available Techniques Reference Document (BREF) for the manufacture of Large Volume Inorganic Chemicals - Ammonia, Acids and Fertilisers[195];

190 The requirements under this point tackle the pollutants identified under the key environmental issues of each BREF document or the BAT-AEL of the relevant BAT conclusions Commission Implementing Decisions. Where BAT-AEL differentiate between ‘existing’ and ‘new plants’, operators demonstrate compliance with BAT-AEL for new plants. When there is not a BAT-AEL range but a single value, emission levels are below such value. When the BAT-AEL range is expressed as follows: ‘<x-y unit’ (i.e. the lower-end BAT-AEL of the range is expressed as ‘lower than’), the mid-point is calculated using x and y. Averaging periods are the same as in the BAT-AEL of the BREF documents outlined above.

191 Commission Implementing Decision (EU) 2022/2427 of 6 December 2022 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions, for common waste gas management and treatment systems in the chemical sector (OJ L 318, 12.12.2022, p. 157).

192 The Best Available Techniques Reference Document (BREF) for Manufacture of Organic Fine Chemicals, available at: https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/ofc_bref_0806.pdf

193 Commission Implementing Decision (EU) 2016/902 of 30 May 2016 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for common waste water and waste gas treatment/management systems in the chemical sector (OJ L 152, 9.6.2016, p. 23).

194 Best Available Techniques (BAT) Reference Document for the Large Volumes Inorganic Chemicals- Solids and Others industry (version of 27.6.2023: https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/lvic-s_bref_0907.pdf).

195 Best Available Techniques (BAT) Reference Document for the manufacture of Large Volume Inorganic Chemicals – Ammonia, Acids and Fertilisers (version of 27.6.2023: https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/lvic_aaf.pdf).

	f. the Best Available Techniques Reference Document (BREF) for the production of speciality inorganic chemicals (SIC)[196;] for the manufacturing activity under conditions not covered by the BATC mentioned above. Installations that have been granted a derogation in accordance with the procedure set out in Article 15(4) of Directive 2010/75/EU are not considered as fulfilling the technical screening criteria for the period of the derogation. 1.2. Where a continuous measurement methodology for a certain pollutant is available, the operator applies Continuous Emission Monitoring Systems (CEMS), Continuous Effluent Quality Monitoring Systems (CEQMS) and other measures ensuring the regular verification of non-deterioration of environment. 1.3. The operator applies solvent waste segregation for solvent recovery from concentrated waste streams, where technically applicable. Solvents included in Table 1 of the European Medicines Agency ICH guideline Q3C (R8) on impurities: guideline for residual solvents[197] are avoided. The maximum solvents loss from total inputs does not exceed a 3% loss. Total volatile organic compound (VOC) recovery efficiency is at least 99%. The operator verifies that no fugitive VOC emission occurs beyond the criteria specified below as to the parts per million volumetric (ppmv) thresholds by carrying out Leak detection and repair (LDAR) campaigns, at least every 3 years. Investments for the use of high integrity equipment are recommended, provided that these are installed in existing plants for cases mentioned under BAT 23 point b of the best available techniques (BAT) conclusions for common waste gas management and treatment systems in the chemical sector (WGC), whereas the pressure threshold is brought to 200 bar. The minimal verification schedule may be reduced in cases where quantification of total VOC emissions from the plant is periodically qualified with tracer correlation (TC) or with optical absorption-based techniques, such as differential absorption light detection and ranging (DIAL) or solar occultation flux (SOX) or other measures of equivalent performance. Diffuse emissions of substances or mixtures classified as CMR1A or 1B from leaky equipment do not exceed a concentration of 100 ppmv[198]. The LDAR campaigns have the features described in BAT19 of the best available techniques (BAT) conclusions for common waste gas management and treatment systems in the chemical sector, which include detecting, repairing and maintaining leaks within 30 days of detection and a leak threshold that is lower than or equal to 5000 ppmv for substances or mixtures other than those classified as CMR 1A or 1B, which are reviewed and updated for the continuous improvement of the installation. Solvent losses and recovery efficiency of VOC are monitored based on a solvent management plan using a mass balance for verification of compliance, in accordance with Chapter V of Directive 2010/75/EU. 1.4.

196 The Best Available Techniques Reference Document (BREF) for the production of speciality inorganic chemicals (SIC) (version of 27.6.2023: https://eippcb.jrc.ec.europa.eu/reference/production-speciality-inorganic-chemicals).

197 European Medicines Agency ICH guideline Q3C (R8) on impurities: guideline for residual solvents. Step 5, 2022, version of 27.6.2023 available at: https://www.ema.europa.eu/en/documents/scientific-guideline/international-conference-harmonisation-technical-requirements-registration-pharmaceuticals-human-use_en-33.pdf.

198 Where the exemption under criterion 1.3 applies.

	Sewage, refuse, and other waste (including solids, liquids, or gaseous by-products from manufacturing) are disposed of in a safe, timely, and sanitary manner. Containers or pipes for waste material are clearly identified. For those facilities located in EU member states, hazardous waste management is undertaken by an accredited hazardous waste operator according to Directive 2008/98/EC requirements and following the requirements of Regulation 2024/1157 on shipments of waste. For those facilities located in non-EU countries: - Conversion of hazardous waste to non-hazardous waste is overcome by a certified hazardous waste operator according to local regulation. - When treated in situ, same facility where the waste is generated, analytical data demonstrating the conversion of these substances and their residues to non-hazardous waste materials are available at the facility and kept up to date. - When treated off-site, a tracking system for hazardous waste (e.g. as set by Hazardous Waste Manifest System by EPA[199]) is implemented from the time it leaves the generator facility where it was produced, until it reaches the off-site waste management facility that will treat it and comply with the requirements on transboundary movements of waste of the Basel convention (https://www.basel.int/). 2. The manufacturing process of the API does not involve the use of substances, whether on their own or in mixtures, that meet the criteria set out in Article 57 of Regulation (EC) 1907/2006 except where it is assessed and documented by the operator that no other suitable alternative substances or technologies are available on the market, and that they are used under controlled conditions[200].
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	DNSH derived from partial take-over of the TSC-PPC concerning PPC safeguards at plant level. Level of ambition was reduced from "below midpoint of BAT-AEL ranges" in TSC to "withing BAT-AEL ranges" for DNSH.
Usability of criteria	derived from existing criteria EU regulation when applicable and a reference to local regulation + recognize standard, including the link to the information, for non-EU countries.

Activity	Manufacture of medicinal products
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for pollution prevention and control	1. In line with the EMA ERA guidelines, the PEC/PNEC ratio for the medicinal product obtained in the Environmental Risk Assessment is below 1. 2. Public information, such as leaflets or websites, updated according to the state of the art, is provided about dose and dosing method to minimise the excess of dosed API. 3. The manufacturer contributes to mitigating the environmental impact of incorrect waste disposal of unused medicinal product, including by providing relevant information to the downstream users on appropriate disposal of unused medicinal product.

199 https://www.epa.gov/hwgenerators/hazardous-waste-manifest-system

200 The Commission will review the exceptions from the prohibition from manufacturing, placing on the market or use of the substances referred to in points (f) and (g) once it will have published horizontal principles on essential use of chemicals.

	4. The activity complies with the following requirements regarding the emission of pollutants: 4.1. Where the activity falls within its scope, the emission limit values are within the BAT-AEL ranges[201] set out in: a. the best available techniques (BAT) conclusions for common waste gas management and treatment systems in the chemical sector for emissions to air of new installations (or for existing installations within 4 years of the BATC publication) where relevant conditions apply[202]; b. the Best Available Techniques Reference Document (BREF) for Manufacture of Organic Fine Chemicals (OFC)[203] for the manufacturing activity under conditions not covered by the BATC mentioned above; c. the best available techniques (BAT) conclusions for common waste water and waste gas treatment/management systems in the chemical sector[204]; d. the Best Available Techniques Reference Document (BREF) for the Large Volume Inorganic Chemicals – Solids and Others industry[205]; e. the Best Available Techniques Reference Document (BREF) for the manufacture of Large Volume Inorganic Chemicals - Ammonia, Acids and Fertilisers[206]; f. the Best Available Techniques Reference Document (BREF) for the production of speciality inorganic chemicals (SIC)[207] ; for the manufacturing activity under conditions not covered by the BATC mentioned above. Installations that have been granted a derogation in accordance with 4.2. Where a continuous measurement methodology for a certain pollutant is available, the operator applies Continuous Emission Monitoring Systems (CEMS), Continuous Effluent Quality Monitoring Systems (CEQMS) and other measures ensuring the regular verification of non-deterioration of environment. 4.3. The operator applies solvent waste segregation for solvent recovery from concentrated waste streams, where technically applicable. Solvents included in Table 1 of the European Medicines Agency ICH guideline

201 The requirements under this point tackle the pollutants identified under the key environmental issues of each BREF document or the BAT-AEL of the relevant BAT conclusions Commission Implementing Decisions. Where BAT-AEL differentiate between 'existing' and 'new plants', operators demonstrate compliance with BAT-AEL for new plants. When there is not a BAT-AEL range but a single value, emission levels are below such value. When the BAT-AEL range is expressed as follows: '<x-y unit' (i.e. the lower-end BAT-AEL of the range is expressed as 'lower than'), the mid-point is calculated using x and y. Averaging periods are the same as in the BAT-AEL of the BREF documents outlined above.

202 Commission Implementing Decision (EU) 2022/2427 of 6 December 2022 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions, for common waste gas management and treatment systems in the chemical sector (OJ L 318, 12.12.2022, p. 157).

203 The Best Available Techniques Reference Document (BREF) for Manufacture of Organic Fine Chemicals, available at: https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/ofc_bref_0806.pdf.

204 Commission Implementing Decision (EU) 2016/902 of 30 May 2016 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for common waste water and waste gas treatment/management systems in the chemical sector (OJ L 152, 9.6.2016, p. 23).

205 Best Available Techniques (BAT) Reference Document for the Large Volumes Inorganic Chemicals- Solids and Others industry (version of 27.6.2023:).

206 Best Available Techniques (BAT) Reference Document for the manufacture of Large Volume Inorganic Chemicals – Ammonia, Acids and Fertilisers (version of 27.6.2023: https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/lvic_aaf.pdf).

207 The Best Available Techniques Reference Document (BREF) for the production of speciality inorganic chemicals (SIC) (version of 27.6.2023: https://eippcb.jrc.ec.europa.eu/reference/production-speciality-inorganic-chemicals).

	Q3C (R8) on impurities: guideline for residual solvents[208] are avoided. The maximum solvents loss from total inputs does not exceed a 3% loss. Total volatile organic compound (VOC) recovery efficiency is at least 99%. The operator verifies that no fugitive VOC emission occurs beyond the criteria specified below as to the parts per million volumetric (ppmv) thresholds by carrying out Leak detection and repair (LDAR) campaigns, at least every 3 years. Investments for the use of high integrity equipment are recommended, provided that these are installed in existing plants for cases mentioned under BAT 23 point b of the best available techniques (BAT) conclusions for common waste gas management and treatment systems in the chemical sector (WGC), whereas the pressure threshold is brought to 200 bar. The minimal verification schedule may be reduced in cases where quantification of total VOC emissions from the plant is periodically qualified with tracer correlation (TC) or with optical absorption-based techniques, such as differential absorption light detection and ranging (DIAL) or solar occultation flux (SOX) or other measures of equivalent performance. Diffuse emissions of substances or mixtures classified as CMR1A or 1B from leaky equipment do not exceed a concentration of 100 ppmv[209]. The LDAR campaigns have the features described in BAT19 of the best available techniques (BAT) conclusions for common waste gas management and treatment systems in the chemical sector, which include detecting, repairing and maintaining leaks within 30 days of detection and a leak threshold that is lower than or equal to 5000 ppmv for substances or mixtures other than those classified as CMR 1A or 1B, which are reviewed and updated for the continuous improvement of the installation. Solvent losses and recovery efficiency of VOC are monitored based on a solvent management plan using a mass balance for verification of compliance, in accordance with Chapter V of Directive 2010/75/EU. 4.4. Sewage, refuse, and other waste (including solids, liquids, or gaseous by-products from manufacturing) are disposed of in a safe, timely, and sanitary manner. Containers or pipes for waste material are clearly identified. For those facilities located in EU member states, hazardous waste management is undertaken by an accredited hazardous waste operator according to Directive 2008/98/EC requirements and following the requirements of Regulation 2024/1157 on shipments of waste. For those facilities located in non-EU countries: - Conversion of hazardous waste to non-hazardous waste is overcome by a certified hazardous waste operator according to local regulation. - When treated in situ, same facility where the waste is generated, analytical data demonstrating the conversion of these substances and their residues to non-hazardous waste materials are available at the facility and kept up to date. - When treated off-site, a tracking system for hazardous waste (e.g. as set by Hazardous Waste Manifest System by EPA[210]) is implemented from the time it leaves the generator facility where it was produced, until it reaches the off-site

208 European Medicines Agency ICH guideline Q3C (R8) on impurities: guideline for residual solvents. Step 5, 2022, version of 27.6.2023 available at: https://www.ema.europa.eu/en/documents/scientific-guideline/international-conference-harmonisation-technical-requirements-registration-pharmaceuticals-human-use_en-33.pdf

209 Where the exemption under criterion 1.3 applies.

210 https://www.epa.gov/hwgenerators/hazardous-waste-manifest-system

	waste management facility that will treat it and comply with the requirements on transboundary movements of waste of the Basel convention (https://www.basel.int/). 5. The manufacturing process of the API does not involve the use of substances, whether on their own or in mixtures, that meet the criteria set out in Article 57 of Regulation (EC) 1907/2006 except where it is assessed and documented by the operator that no other suitable alternative substances or technologies are available on the market, and that they are used under controlled conditions[211].
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	DNSH derived from partial take-over of the TSC-PPC concerning: -PPC safeguards at end of life (PEC/PNEC) and at plant level. For the former, the level of ambition was reduced from "below midpoint of BAT-AEL ranges" in TSC to "withing BAT-AEL ranges" for DNSH. -good practices across the value chain
Usability of criteria	derived from existing criteria EU regulation when applicable and a reference to local regulation + recognize standard, including the link to the information, for non-EU countries.

Activity	Collection and transport of hazardous waste
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for pollution prevention and control	1. The activity utilises waste collection vehicles which conform to at least Euro V standards[212]. 2. Hazardous waste is collected separately from non-hazardous waste to prevent cross-contamination. Appropriate measures are taken to ensure that during separate collection and transport, hazardous waste is not mixed either with other categories of hazardous waste or with other waste, substances or materials. Mixing includes the dilution of hazardous substances. 3. Proper collection and handling prevent leakage of hazardous waste during collection, transport, storage and delivery to the treatment facility permitted to treat hazardous waste. 4. Hazardous waste is packaged and labelled in accordance with the international and Union standards in force in the course of collection, transport and temporary storage. 5. The operator collecting hazardous waste complies with record-keeping

211 The Commission will review the exceptions from the prohibition from manufacturing, placing on the market or use of the substances referred to in points (f) and (g) once it will have published horizontal principles on essential use of chemicals. Additionally, the section on the review of the Climate DA identifies some possible usability issues with Appendix C and hence provides initial recommendations to the Commission. On this basis, recommendations in this report regarding Appendix C or parts of it are therefore subject to review by the Commission.

212 In accordance with Regulation (EU) 2018/858 of the European Parliament and of the Council of 30 May 2018 on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles, amending Regulations (EC) No 715/2007 and (EC) No 595/2009 and repealing Directive 2007/46/EC (OJ L 151, 14.6.2018, p. 1).

	obligations, including as regards quantity, nature, origin, destination, frequency of collection, mode of transport and treatment method, set out in applicable Union and national legislation 6. For waste from electrical and electronic equipment (WEEE): a) the main categories of end-of-life electrical and electronic equipment (EEE) set out in Annex III to Directive 2012/19/EU are collected separately; b) collection and transport preserve the integrity of WEEE and prevent the leakage of hazardous substances, such as ozone-depleting substances, fluorinated greenhouse gases or mercury contained in fluorescent lamps. 7. A management system is set up by the collection and logistics operator to manage environmental, health and safety risks.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	To keep consistency, this DNSH is the same than existing DNHS for PPC in ENV Delegate Act (this DA is not under review)
Usability of criteria	derived from existing criteria

Activity	Treatment of hazardous waste
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for pollution prevention and control	All substances, and mixtures recovered comply with the applicable relevant legislation, such as Regulation (EC) No 1907/2006, Regulation (EU) 2019/1021, Regulation (EC) No 1272/2008 and Directive 2008/98/EC. The activity deploys relevant techniques for pollution prevention and control, as set out in the best available techniques (BAT) conclusions for waste treatment[213]. The activity meets the relevant associated emission limits (BAT-AELs).
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	To keep consistency, this DNSH is the same than existing DNHS for PPC in ENV Delegate Act (this DA is not under review)
Usability of criteria	derived from existing criteria

Activity	Remediation of contaminated sites and areas
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for pollution prevention and control	1. The remediation activity is not carried out by the operator[214] that caused the pollution or a person acting on behalf of that operator in order to comply with environmental liability provisions based on the 'polluter-pays' principle according to national law. 2. The relevant contaminants are removed, controlled, contained or diminished using physical, chemical, biological or other methods to ensure that the contaminated area (land, water body or other), taking into account its use at the time of the damage or approved future use of the area, no longer poses any significant risk of adversely affecting human health and the environment, as set out in one of the following: (a) national regulatory standards; (b) where such standards are not available, an internal site-specific risk-

213 Implementing Decision (EU) 2018/1147.

214 As defined in Article 2, point 6, of Directive 2004/35/CE.

	assessment taking into account the characteristic and the extent of the impacted area (land, water body or other), the type, properties (persistence, mobility and toxicity) and concentration of the substances, preparations, organisms or micro-organisms, possible migration pathways and the probability of dispersion[215]. 3. The remediation activity is conducted in line with best industry practice and includes all of the following elements: (a) the original operational activity or defective plant and ancillary equipment that led to the contamination has been stopped or addressed so as not to be a potential source of further contamination before any assessment or remediation activity is undertaken (except long-range transboundary air pollution or other unidentifiable diffuse sources); (b)preparatory investigations, including site-specific surveys and physical, chemical or microbiological data collection, are carried out in line with best industry practice and best available techniques to establish the following elements used to define the environmental targets for the remediation and evaluate the remedial options: (i) the location, characteristics and extent of the contaminated site; (ii) the underlying geological and hydrological conditions; (iii) the likely quantity, composition and sources of contaminants; (iv) soil and water pollution originating from it as well as the risks to human health and the environment. (c) for activities located in third countries, the remedial options are analysed in equivalent national law or commonly accepted international standards[216]; (d) any hazardous or non-hazardous waste or contaminated soils extracted or otherwise produced by the remediation activity is subject to appropriate collection, transport, treatment, recovery or disposal by an authorized operator, in accordance with national legal requirements and care is taken to prevent any mixing of excavated contaminated materials and non-contaminated materials; (e) control, monitoring or maintenance activities are carried out in the after-care phase of at least 10 years, unless a different duration sufficient to guarantee long-term risk control is defined in the national law or in the remediation and monitoring plan (see point 4). 4. The remediation and monitoring plan is approved by the competent authority in accordance with national legal requirements, following consultation with local stakeholders.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	DNSH derived from partial take-over of the TSC-PPC. Doe to the link between the nature of the activity and the substantial contribution, the DNSH is very similar to the TSC-PPC but reducing the level of ambition when possible.
Usability of criteria	Wording was harmonized to increase consistency with DNHS for legally non-conforming landfills and abandoned or illegal waste dumps

215 For activities in third countries, unless more stringent standards are mandatory under national legislation, UNEP Guidance on the management of contaminated sites (UNEP/MC/COP.3/8/Rev.1-Guidance_Contaminated_Sites_EN.pdf, mercuryconvention.org) are applied.

216 For activities in third countries, in accordance with applicable national law or international standards (such as UNEP Guidance on the management of contaminated sites, UNEP/MC/COP.3/8/Rev.1-Guidance_Contaminated_Sites_EN.pdf mercuryconvention.org) requiring remediation based on an alternative, transparently described process and valuation approach to define a suitable strategy, which comprises primary remedial measures (including monitoring requirements), complementary and compensatory remedial measures in a dedicated remediation plan.

Activity	Remediation of legally non-conforming landfills and abandoned or illegal waste dumps
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for pollution prevention and control	1. The remediation activity is not carried out by the operator[217] that caused the pollution or a producer of waste or a person acting on behalf of that operator or producer in order to comply with environmental liability provisions based on the 'polluter-pays' principle according to national law. 2. The relevant contaminants are removed, controlled, contained or diminished using physical, chemical, biological or other methods to ensure that the landfill and the contaminated area (land, water body or other), taking into account its use at the time of the damage or approved future use of the area, no longer pose any significant risk of adversely affecting human health and the environment, as set out in one of the following (a) in national regulatory standards, (b) where such standards are not available, in an internal site-specific risk-assessment taking into account the characteristic and the extent of the impacted area (land, water body or other), the type, properties (persistence, mobility and toxicity) and concentration of the substances, preparations, organisms or micro-organisms, possible migration pathways and the probability of dispersion[218]. 3. The remediation activity is conducted in line with best industry practice and includes all of the following elements: (a) the non-conforming or illegal landfill or dumpsite to be remediated has been closed and is not taking in further waste other than possibly inert or biostabilized waste to be used as landfill cover material (as far as allowed in the environmental permit for the remediation project); (b) preparatory investigations including site-specific surveys and physical, chemical or microbiological data collection are carried out in line with best industry practice and best available techniques to establish the following elements used to define the environmental targets for the remediation and evaluate the remedial options: (i) the location, characteristics and extent of the landfill and the contaminated area; (ii) the underlying geological and hydrological conditions; (iii) the likely quantity, composition and sources contaminants; (iv) soil and water pollution originating from it as well as the risks to human health and the environment. (c) for activities located in third countries, the remedial options are analysed in equivalent national law or commonly accepted international standards[219]; (d) any hazardous or non-hazardous waste or contaminated soils extracted or

217 As defined in Article 2, point 6, of Directive 2004/35/CE.

218 For activities in third countries, unless more stringent standards are mandatory under national legislation, UNEP Guidance on the management of contaminated sites (UNEP/MC/COP.3/8/Rev.1-Guidance_Contaminated_Sites_EN.pdf, mercuryconvention.org) are applied.

219 For activities in third countries, in accordance with applicable national law or international standards (such as UNEP Guidance on the management of contaminated sites, UNEP/MC/COP.3/8/Rev.1-Guidance_Contaminated_Sites_EN.pdf mercuryconvention.org) requiring remediation based on an alternative, transparently described process and valuation approach to define a suitable strategy, which comprises primary remedial measures (including monitoring requirements), complementary and compensatory remedial measures in a dedicated remediation plan.

	otherwise produced by the remediation activity is subject to appropriate collection, transport, treatment, recovery or disposal by an authorized operator, in accordance with national legal requirements and care is taken to prevent any mixing of excavated contaminated materials and non-contaminated materials; (e) control, monitoring or maintenance activities are carried out in the after-care phase of at least 10 years, unless a different duration sufficient to guarantee long-term risk control is defined in the national law or in the remediation and monitoring plan (see point 4). 4. The remediation and monitoring plan is approved by the competent authority in accordance with national legal requirements, following consultation with local stakeholders. 5. all materials and fuels recovered from landfilled waste meet relevant quality standards or user specifications for the intended recovery operations and do not represent a risk for the environment or human health.
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	DNSH derived from partial take-over of the TSC-PPC. Doe to the link between the nature of the activity and the substantial contribution, the DNSH is very similar to the TSC-PPC but reducing the level of ambition when possible.
Usability of criteria	Wording was harmonized to increase consistency with DNHS for Remediation of contaminated sites and areas

Activity	Provision of IT/OT data-driven solutions for leakage reduction
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for sustainable use and protection of water and marine resources	n/a
Other DNSH	use DNSH for same activity from Environmental Delegated Act
Rationale	No significant negative effect on water resources expected
Usability of criteria	n/a

Activity	Manufacture of rail rolling stock constituents
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for climate change mitigation	Rail rolling stock constituents designed specifically for transport of fossil fuels are excluded
Other DNSH	use DNSH for same activity from Climate Delegated Act
Rationale	criteria are just a safeguard against promotion of fossil fuel transport
Usability of criteria	

Activity	Conservation, including restoration, of habitats, ecosystems and species

SC criteria	generic criteria for climate change adaptation (points 1-4); *this activity could be considered to be included as adapted-enabling similarly to Restoration of wetlands*
Proposed DNSH for protection and restoration of biodiversity and ecosystems	1. General conditions In areas designated by the national competent authority for conservation or restoration or in habitats that are protected, the activity is in accordance with the conservation or restoration objectives for those areas. There is no conversion of habitats specifically sensitive to biodiversity loss or with high conservation value, or of areas set aside for the conservation or restoration of such habitats in accordance with national law. 2. Management plan or equivalent instrument The area is covered by a management plan or by an equivalent instrument, such as restoration plan[220], which is regularly updated and in any case at least every ten years. The plan includes provisions for maintaining and possibly enhancing biodiversity in accordance with national and local provisions, including the following: (a) ensuring the good conservation status of habitat and species, maintenance of typical habitat species; (b) excluding the use or release of invasive species. All management relevant DNSH criteria are addressed in the management plan or equivalent instrument. The management plan or equivalent instrument provides for monitoring which ensures the correctness of information contained in the plan, in particular as regards the data relating to the involved area, and follow-up of the effectiveness of the adopted measures. 3. Audit Within two years after the beginning of the activity and every 10 years thereafter, the compliance of the activity with the substantial contribution to climate change adaptation criteria and with the DNSH criteria are verified by either of the following: (a) the relevant national competent authorities; (b) an independent third-party certifier, at the request of national authorities or the operator of the activity. In order to reduce costs, audits may be performed together with any forest certification, land-use certification, biodiversity certification, climate certification or other audit. The independent third-party certifier may not have any conflict of interest with the owner or the funder and may not be involved in the development or operation of the activity. As a result of the verification, the certifier issues an audit report which is publicly available. Group assessment The compliance with the DNSH criteria may be checked at the level of a group of holdings sufficiently homogenous to evaluate the risk of the sustainability of the conservation or restoration activity, provided that all those holdings have a durable relationship between them and participate in the activity and the group

220 The restoration plan can be part of a management plan. Where the area is covered by a management plan, no additional restoration plan is required.

	of those holdings remains the same for all subsequent audits. 4. Guarantee of permanence The area is subject to public or private contractual arrangement that can ensure that the conservation objectives will be achieved and maintained. 5. Additional minimum requirements The offsetting of the impacts of another economic activity is excluded under this activity[221]. Only net biodiversity gains resulting from conservation/restoration can be accounted for as substantial contribution under this activity[222]. The introduction of invasive alien species is prevented or their spread is managed in accordance with Regulation (EU) No 1143/2014.
Other DNSH	Use DNSH for same activity from Environmental Delegated Act
Rationale	The criteria are mostly derived from existing DNSH criteria in Climate DA Annex II, Restoration of wetlands (DNSH BIODIVERSITY and DNSH CCM). The rationale for including selected sections from the latter is that effective conservation and restoration activities need careful planning, location selection, monitoring and independent verification of results. These DNSHs are complemented with some additional minimum requirements from Environmental DA Annex IV (Conservation SC) and with some other minor amendments (e.g. audit report).
Usability of criteria	To facilitate usability, the proposed CCA DNSH BIODIVERSITY criteria are almost fully based on existing criteria elements in Climate and Environmental DAs.

Activity	Manufacturing of Refined Copper (NACE C24.4.4) under manufacturing of basic metals (NACE C24)
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for climate change mitigation	TSC 1 (Producing (smelting and refining) copper from concentrates): Criterion A - The average carbon intensity of the electricity does not exceed 240 g CO2e/kWh until 31.12.2029 and does not exceed 115g CO2e/kWh from 1.1.2030 Criterion B - Direct emissions associated with fossil fuels or reagents including reducing agents for processing and electricity/heat/steam generation for processing and electricity/heat/steam generation are less than 472 kg CO2e /t Cu. GHG emissions are quantified including direct emissions from the activity and direct emissions from the generation of (self-produced or purchased) electricity and heat (including steam) used in activity in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018, or they are quantified including Scope 1 and Scope 2 in accordance with the Greenhouse Gas Protocol. No thermal coal is used. Criterion C - A forward looking Decarbonisation Roadmap for decreasing the remaining onsite direct emissions intensity by 50%, from the base line year is published and the scope 3 emissions for 50% (by value) of upstream purchased materials and for upstream and downstream transport are reported annually thereafter.

221 Biodiversity offsets are measurable conservation outcomes resulting from measures designed to compensate for residual, unavoidable, adverse biodiversity impacts arising from an activity or project after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to conserve the same biodiversity values (habitats, species or ecosystems) that are negatively impacted by the activity or project.

222 This can include additional conservation/restoration outcomes beyond offsetting measures.

	TSC 2 (Refined Copper and alloys produced from Secondary Resources): Criteria A – Copper and alloys produced using secondary input materials (including material streams from the tailing ponds), where secondary input materials/Total input materials >80%, Criteria B – The average carbon intensity of the electricity does not exceed 240 g CO2e/kWh until 31.12.2029 and does not exceed 115g CO2e/kWh from 1.1.2030 Criteria C – The obligations of the forward-looking Decarbonisation Roadmap mentioned under TSC1- Criterion C, for refining from primary resources, will have to be complied with. For all Criteria for Decarbonisation Roadmap above: The forward-looking, Decarbonisation Roadmap will contain among other points, at least, a commitment to, 1. be Climate Neutral by 2050 as per Paris Agreement, 1.5°C scenario, 1. use renewable and sustainable fossil free energy sources (as defined in Directive 2018/2001/EU). 2. annually report electricity intensity per ton of sold product. 3. annually report the fossil energy consumption intensity per ton of sold product. 4. progressively replace all the materials in upstream scope 3 having a high product carbon footprint progressively by those having a lower carbon footprint. 5. annually report the progress (actual reagents consumption intensity and associated CO2 emissions) 6. describe the methodology to retrieve data and report the emissions of upstream suppliers of materials, fuels, reagents. 7. describe methodology to retrieve data and to report emissions of upstream and downstream transport. 8. A comparison of the current environmental performance for the main impact categories given in copper life cycle assessment is reported. (e.g. Primary Energy Demand Non-renewable (PED), Global Warming Potential, Acidification Potential (AP), Eutrophication Potential, Photochemical Ozone Creation Potential (POCP), and Ozone Depletion Potential (ODP). The forward-looking Decarbonisation Roadmap is verified by an independent third party, for the presence of the main elements of this roadmap, such as climate neutrality commitment, electricity intensity per ton of sold product etc.
Other DNSH	use DNSH for same activity proposed in this report
Rationale	In criteria A & B, average value of EU grid factor or direct emissions value associated with the identified best performance operation, without any further decrease is considered.
Usability of criteria	Useability is considered by explaining steps of criteria design in subsections 2.1 to 2.7 in detail.

Activity	Manufacturing of Refined Nickel (NACE C24.4.5) under manufacturing of basic metals (NACE C24)
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for climate	TSC 1 (Producing Nickel products (Class 1 and 2) by refining from concentrates derived from Primary sulfidic ores):

change mitigation	Criterion A - The average carbon intensity of the electricity does not exceed 240 g CO2e/kWh until 31.12.2029 and does not exceed 115g CO2e/kWh from 1.1.2030. Criterion B - Direct emissions associated with fossil fuels or reagents (gas / non-thermal coal) are less than 1708 kg CO2e /t Ni eq. GHG emissions are quantified including direct emissions from the activity and post processing and direct emissions from the generation of (self produced or purchased) electricity and heat (including steam) used in activity and in post processing in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018, or they are quantified including Scope 1 and Scope 2 in accordance with the Greenhouse Gas Protocol Criterion C - A forward looking Decarbonisation Roadmap for decreasing the remaining onsite direct emissions intensity by 50%, from the base line year is published and the scope 3 emissions for 50% (by value) of upstream purchased materials and for upstream and downstream transport are reported annually thereafter. TSC 2 (Proposed criteria for producing Nickel products (Class 2) by refining from concentrates derived from Primary lateritic ores): Criterion A - The average carbon intensity of the electricity does not exceed 240 g CO2e/kWh until 31.12.2029 and does not exceed 115g CO2e/kWh from 1.1.2030. Criterion B - Direct emissions associated with fossil fuels or reagents (gas / non-thermal coal) are less than 20 t CO2e /t Ni eq. GHG emissions are quantified including direct emissions from the activity and post processing and direct emissions from the generation of (self produced or purchased) electricity and heat (including steam) used in activity and in post processing in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018, or they are quantified including Scope 1 and Scope 2 in accordance with the Greenhouse Gas Protocol Criterion C- A forward looking Decarbonisation Roadmap for decreasing the remaining onsite direct emissions intensity by 50%, from the base line year is published and the scope 3 emissions for 50% (by value) of upstream purchased materials and for upstream and downstream transport are reported annually thereafter. TSC 3 (Refined Nickel products produced from Secondary Resources): Criterion A - Nickel metal or chemicals produced using secondary input materials, where secondary input materials / Total input materials >80% . Criterion B - The average carbon intensity of the electricity does not exceed 240 g CO2e/kWh until 31.12.2029 and does not exceed 115g CO2e/kWh from 1.1.2030. Criterion C- The obligations of the Decarbonisation Roadmap mentioned under Criterion C, for refining from primary resources, will have to be complied with. For all Criteria for Decarbonisation Roadmap above: The forward looking, Decarbonisation Roadmap will contain among other points, at

	least, a commitment to, 1. be Climate Neutral by 2050 as per Paris Agreement, 1.5°C scenario, 1. use renewable and sustainable fossil free energy sources (as defined in Directive 2018/2001/EU). 2. annually report electricity intensity per ton of sold product. 3. annually report the fossil energy consumption intensity per ton of sold product. 4. progressively replace all the materials in upstream scope 3 having a high product carbon footprint progressively by those having a lower carbon footprint. 5. annually report the progress (actual reagents consumption intensity and associated CO2 emissions) 6. describe the methodology to retrieve data and report the emissions of upstream suppliers of materials, fuels, reagents. 7. describe methodology to retrieve data and to report emissions of upstream and downstream transport. 8. For class 2 Nickel processed using HPAL process, the impact on Pollution is to be described in detail, it should comply with NFM BREF. The Decarbonisation Roadmap is verified by an independent third party, for the presence of the main elements of this roadmap, such as climate neutrality commitment, electricity intensity per ton of sold product etc.
Other DNSH	use DNSH for same activity proposed in this report
Rationale	In criteria A & B, average value of EU grid factor or direct emissions value associated with the identified best performance operation, without any further decrease is considered.
Usability of criteria	Useability is considered by explaining steps of criteria design in subsections 2.1 to 2.7 in detail.

Activity	Manufacturing of Refined Lithium (NACE C24.4.5) under manufacturing of basic metals (NACE C24)
SC criteria	generic criteria for climate change adaptation (points 1-4)
Proposed DNSH for climate change mitigation	TSC 1 (Producing Lithium products by refining from primary resources of brine concentrates): Criterion A - The average carbon intensity of the electricity does not exceed 240 g CO2e/kWh until 31.12.2029 and does not exceed 115g CO2e/kWh from 1.1.2030. Criterion B – N/A Criterion C - A forward looking Decarbonisation Roadmap for decreasing the remaining onsite direct emissions intensity by 50%, from the base line year is published and the scope 3 emissions for 50% (by value) of upstream purchased materials and for upstream and downstream transport are reported annually thereafter. TSC 2 (producing Lithium products by smelting and refining from primary resources of mineral concentrates (spodumene etc.)): Criterion A - The average carbon intensity of the electricity does not exceed 240 g CO2e/kWh until 31.12.2029 and does not exceed 115g CO2e/kWh from 1.1.2030. Criterion B - Direct emissions intensity associated with the onsite use of fossil fuels or reagents, including reducing agents for processing and electricity/heat/steam

	generation, is less than 7 t CO2e /t LCE (Lithium Carbonate Equivalent). GHG emissions are quantified including direct emissions from the activity and direct emissions from the generation of (self produced or purchased) electricity and heat (including steam) used in activity in accordance with Commission Recommendation 2021/2279/EU or, alternatively, in accordance with ISO 14067:2018, or they are quantified including Scope 1 and Scope 2 in accordance with the Greenhouse Gas Protocol. No thermal coal is used. Criterion C- A forward looking Decarbonisation Roadmap for decreasing the remaining onsite direct emissions intensity by 50%, from the base line year is published and the scope 3 emissions for 50% (by value) of upstream purchased materials and for upstream and downstream transport are reported annually thereafter. TSC 3 (Refined Lithium Chemicals produced from Secondary Resources): Criterion A. Lithium metal or chemicals produced using secondary input materials, where the ratio (secondary input materials / Total input materials) is, at least, 70%. Criterion B. The average carbon intensity of the electricity does not exceed 240 g CO2e/kWh until 31.12.2029 and does not exceed 115g CO2e/kWh from 1.1.2030. Criterion C. The obligations of the Decarbonisation Roadmap mentioned under criterion C, for refining from primary resources, will have to be complied with. For all Criteria for Decarbonisation Roadmap above: The forward-looking, Decarbonisation Roadmap will contain among other points, at least, a commitment to, 2. be Climate Neutral by 2050 as per Paris Agreement, 1.5°C scenario, 3. use renewable and sustainable fossil free energy sources (as defined in Directive 2018/2001/EU) 4. annually report electricity intensity per ton of sold product. 5. annually report the fossil energy consumption intensity per ton of sold product. 6. progressively replace all the materials in upstream scope 3 having a high product carbon footprint progressively by those having a lower carbon footprint. 7. annually report the progress (actual reagents consumption intensity and associated CO2 emissions) 8. describe the methodology to retrieve data and report the emissions of upstream suppliers of materials, fuels, reagents. 9. describe methodology to retrieve data and to report emissions of upstream and downstream transport. The Decarbonisation Roadmap is verified by an independent third party, for the presence of the main elements of this roadmap, such as climate neutrality commitment, electricity intensity per ton of sold product etc.
Other DNSH	use DNSH for same activity proposed in this report
Rationale	In criteria A & B, average value of EU grid factor or direct emissions value associated with the identified best performance operation, without any further decrease is considered.

Usability of criteria	Useability is considered by explaining steps of criteria design in subsections 2.1 to 2.7 in detail.

Activity	The opening and operation of lithium, nickel and copper mines
SC criteria	"adapted"
Proposed DNSH for climate change mitigation	1. The mine meets the following Scope 1 + 2 GHG intensities, depending on mineral. • Lithium rock mining: 1.23 tCO2e/tLCE before 2030 0.615 tCO2e/tLCE after 2030 • Lithium brine: 1.23 tCO2e/tLCE before 2030 0.615 tCO2e/tLCE after 2030 • Nickel sulfidic ore mining: 0.74 tCO2e/tNiEq before 2030 0.37 tCO2e/tNiEq after 2030 • Nickel laterite ore mining: 0.68 tCO2e/tNiEq before 2030 0.34 tCO2e/tNiEq after 2030 • Copper mining: 2.31 tCO2e/ContainedCu before 2030 1.15 tCO2e/ ContainedCu after 2030 2. The average electricity GHG emissions intensity, either produced on site or purchased should be less than 100gCO2e/kWh on a lifecycle basis The average carbon intensity of the electricity does not exceed European Union Grid Average (direct emissions of 240 g CO2e/kWh until 2030 and do not exceed 115g CO2e/kWh from 2030 g onwards). .
Other DNSH	use DNSH for same activity proposed in this report
Rationale	Please see mining section in this report
Usability of criteria	Please see mining section in this report

Recommendations for future work: There was no sufficient time to propose DNSH criteria for all outstanding activities from the Environmental Delegated Act and the additions made to the Climate Delegated Act in June 2023. The table below provides an overview of the activities that still need to be added in the future.

Nr	Activity	missing DNSH criteria
1	Manufacture of automotive and mobility components	CCM
2	Manufacture, installation, and servicing of high, medium and low voltage electrical equipment for electrical transmission and distribution that result in or enable a substantial contribution to climate change mitigation	CCM
3	Passenger and freight air transport	CCM
4	Manufacturing of aircraft	CCM

5	Leasing of aircraft	CCM
6	Air transportation ground handling operations	CCM
7	Manufacture of electrical and electronic equipment	CE
8	Production of alternative water resources for purposes other than human consumption	CE
9	Maintenance of roads and motorways	CE
10	Marketplace for the sale or reuse of second-hand goods	CE
11	Manufacture, installation and associated services for leakage control technologies enabling leakage reduction and prevention in water supply systems	WAT
12	Water supply	WAT
13	Urban Wastewater Treatment	WAT
14	Sustainable urban drainage systems (SUDS)	WAT
15	Nature-based solutions for flood and drought risk prevention and protection	WAT
16	Hotels, holiday, camping grounds and similar accommodation	BIO

V. Additional proposals

1. Headline Ambition Statement for Climate Change Adaptation

i. Context

The Platform report published on 30 March, 2022[223] defined the Headline Ambition Statements for the four (non-climate) environmental objectives. The report explained that "defining substantial contribution to the Taxonomy environmental objectives requires an understanding of what the objectives are in terms of their end-state targets (**headline ambition levels**), how they interact and what sort of contribution should be expected through an implementing activity." It also laid down that "headline ambition level in this context means the aspirational goal linked to each environmental objective" and the ambition levels are set to align with EU's current goals, targets in EU strategies and regulations, as well as EU commitments to international treaties. They provide clarity and context to both the experts working on developing the Taxonomy criteria and also to the users of the Taxonomy, creating better alignment and understanding[224].

The Headline Ambition Statement for Climate Change Adaptation has been developed by a group of climate change adaptation experts, representing private sector, academia, government entities and financial institutions convened by the Platform Technical Working Group and has been revised by DG Climate Action to ensure correct and up to date coverage and interpretation of all relevant EU regulation and international commitments.

ii. Headline Ambition Statement for Climate Change Adaptation

By 2030(1) physical climate risks material to all activities in the European and international economies are reduced to the level that allows private and public economic activities(2) to be continued without major avoidable(3) climate-related disruptions in the present and for the lifetime of the activity(4).

This includes removing the existing barriers(5) to successful adaptation and maximizing the enabling effect(6) of public and private economic activities to support the increase in European and international resilience level to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities in alignment with international, national, regional and local adaptation strategies and action plans, while avoiding maladaptation(7).

Explanatory notes

[223] https://finance.ec.europa.eu/document/download/c9c66978-63bc-47ca-bbac-fc758c454370_en?filename=220330-sustainable-finance-platform-finance-report-remaining-environmental-objectives-Taxonomy_en.pdf

[224] Please not that Headline Ambition Statements do not represent any compliance requirements and serve only as a high-level indication of the overall ambition level for the Taxonomy objectives, in alignment with existing EU policies, commitments and targets.

(1) Where achievement of this ambition level is not possible, as a minimum by 2027 systemic observation of climate data is in place; and by 2030: 1) assessments of climate hazards, climate change impacts and exposure to risks and vulnerabilities have been carried out, 2) adaptation plans have been developed, 3) progress has been achieved in adaptation plan implementation and 4) monitoring and evaluation systems are in place for up-to-date climate change information, effectiveness of implemented measures and need to revise adaptation plans.

(2) Excluding significantly harmful activities to any of the other 5 environmental objectives or minimum social safeguards, which require phasing out. Including activities that are "low environmental impact activities or those transitioning to a performance level that is better than the «do no significant harm» threshold.

(3) "Avoidable" in this context means a) there are solutions/technologies available that can eliminate or reduce the specific identified climate change related risk to the required level to avoid disruptions, and b) the cost of eliminating or reducing the risk to the required level to avoid disruptions is not exceeding the benefit (e.g., the value of the avoided damage and loss taking into account their severity and likelihood and applying the precautionary principle). In cases where the risk is deemed "not avoidable" based on these factors, attempt should be given to reduce the risk and impact on the operation of the activity to the highest attainable level and to shorten the recovery time; and the residual risk should be accounted for.

(4) For long-term or indefinite activities – when the lifetime is long, but not clearly indicated / known at least 30 years in the future, while taking also into consideration the design life of any infrastructure or physical assetswhere that activity relates to long-lasting infrastructure or long-lived nature-based solutions.

(5) Such as barriers related to knowledge, guidance, policy-making, land-use and urban planning, equitable acess and participation, and others.

(6) To maximise the enabling effect, transformational (also called transformative) adaptation approach is considered where appropriate, based on IPCC definition:"actions aiming at adapting to climate change resulting in significant changes in structure or function that go beyond adjusting existing practices" as opposed to «incremental adaptation», which is done via less significant changes and where «the central aim is to maintain the essence and integrity of a system or process at a given scale» (IPCC). Note that incremental adaptation may accrue to result in a transformational adaptation.

(7) Maladaptation refers to the process of an adaptation action leading to negative effects now or in the future e.g. through increased risks of adverse climate-related outcomes, increased or shifted vulnerability to climate change, diminished welfare or by undermining sustainable development, including causing harm to other environmental and/or social objectives. This can happen in the same or other regions, systems, sectors, activities or social groups than those targeted by the adaptation action. Maladaptation risks require continuous monitoring before, during and after the implementation of adaptation actions/measures.

iii. Rationale and link to European Union's strategies and policies

Alignment with Taxonomy Regulation

The Taxonomy Regulation states that "an economic activity that pursues the environmental objective of climate change adaptation should **contribute substantially to reducing or preventing the adverse impact of the current or expected future climate, or the risks of such adverse impact**, whether **on that activity itself or on people, nature or assets**. That environmental objective should be interpreted **in accordance with**

relevant Union law and the Sendai Framework for Disaster Risk Reduction 2015–2030 (*Recital 25).”* It furthermore specifies, that “an activity shall qualify as contributing substantially to climate change adaptation where that activity includes adaptation solutions that reduce either the risk of the adverse impact or the actual adverse impact of the current climate and the expected future climate without increasing the risk if an adverse impact on people, nature or assets.” *(Article 11).*

Most relevant elements of Union law (as of October 2024) are the Communication ‘Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change’, the Regulation 2018/1999 on the Governance of the Energy Union and Climate Action, and the European Climate Law (Article 4.)[1].

On the international level, the Paris Agreement includes the global goal on adaptation to enhance adaptive capacity and resilience and to reduce vulnerability, with a view to contributing to sustainable development. Likewise, the Sendai Framework for Disaster Risk Reduction 2015–2030, explicitly mentioned in Recital 25 sets global goals towards preventing and reducing disaster risks, including those arising due to climate change. The EU ambition on adaptation under the UNFCCC is outlined by the EU Adaptation Communication to the UNFCCC.

The adaptation headline ambition aligns the Taxonomy Regulation objective on adaptation with the goals of the relevant EU and international policies as detailed below, as well as translates those goals to the economic activity context. It builds on the previous methodological work carried out by the Technical Expert Group and adds the alignment with the recently updated or adopted EU policies.

Alignment with relevant Union Law

The **European Climate Law** Article 5 on adaptation objective aims to ensure **continuous progress in enhancing adaptive capacity, strengthening resilience and reducing vulnerability** to climate change in accordance with Article 7 of the Paris Agreement.

The EU Strategy on adaptation to climate change, set out how the European Union can adapt to unavoidable impacts of climate change and become climate resilient by 2050. It has been published in 2021 and is in full alignment with the EU Green Deal call for more ambitious EU adaptation action[2]. The long-term vision set by the strategy is: **“the EU will be a climate-resilient society, fully adapted to the unavoidable impacts of climate change.** This means that **by 2050 (..) we will have reinforced adaptive capacity and minimised vulnerability to climate impacts,** in line with the Paris Agreement and the European Climate Law.” (Ch. 2). The Adaptation Strategy pursues three objectives: to adapt faster, smarter and in a more systemic way. In the economic activity context, it means achievement of a fully climate-resilient functioning of the economic activities and full adaptation to the impacts, which cannot/will not be avoided through ambitious mitigation action and because of the level of historical GHG emissions, which have already locked in climate change impacts for decades to come.

The headline adaptation ambition definition for the Taxonomy replicates the ambition levels indicated in the Union Law and specifies how it applies to economic activities in a measurable and monitorable way.

Regulation 2018/1999 on the Governance of the Energy Union and Climate Action outlines Member States’ reporting requires on adaptation actions, including as part of their National Energy Climate Plans.

The 2021 EU Common Provisions Regulation, which is a single rulebook of EU funds jointly delivered with Member States and regions, is stating that adequate mechanisms to ensure the climate proofing of supported

investment in infrastructure should be an integral part of programming and implementation of the funds. Climate proofing in the understanding of the Regulation is a process to prevent infrastructure from being vulnerable to potential long-term climate impacts whilst ensuring that the energy efficiency first principle is respected.

Alignment with the international frameworks

Article 7 of the Paris Agreement is the basis for the adaptation goals defined in the EU policies and defines the overarching global goal on adaptation (GGA) as "**enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change,** with a view to contributing to sustainable development and ensuring an adequate adaptation response (..)". Following a two year process started at COP26 in Glasgow, at COP28 in Dubai Parties adopted the UAE Framework for Global Climate Resilience' to guide the achievement of the Global Goal on Adaptation, and launched a two-year UAE-Belém work programme to identify adaptation indicators and report/monitor progress on adaptation actions at global level.

Furthermore, the Taxonomy Regulation specifically refers to The Sendai Framework for Disaster Risk Reduction 2015–2030 as the guiding international policy. The overarching goal of the Sendai Framework is to "**prevent new and reduce existing disaster risk** through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional **measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.**" It further sets out seven global targets on reducing disaster mortality, reduction of population affected, reduction of economic losses and impacts on GDP, limiting damage to infrastructure and provision of essential services, improved access to early warning systems and disaster risk data, as well as enhancing the national and international action on disaster risk reduction.

In the spirit of the Paris Agreement and Sendai Framework, the Taxonomy is to include activities and Substantial Contribution criteria in support of the implementation of adaptation measures, which unequivocally contribute to and enable the prevention and reduction of exposure and vulnerability to climate-related hazards and help achieve high level of resilience and adaptive capacity of people, of nature, of cultural heritage, of assets and of economic activities, which is reflected in the headline ambition.

Alignment with national and sub-national adaptation action

The European Climate Law stipulates that the relevant Union institutions and the Member States shall ensure continuous progress in enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change in accordance with Article 7 of the Paris Agreement (Article 5.1.). It also prescribes that the Commission should adopt a Union strategy on adaptation to climate change in line with the Paris Agreement and shall regularly review it (Art. 5.2.). It **recommends the Member States to "adopt and implement national adaptation strategies and plans, taking into consideration the Union strategy on adaptation to climate change […] and** based on robust climate change and vulnerability analyses, progress assessments and indicators, and guided by the best available and most recent scientific evidence." (Art. 5.4). Moreover, in their adaptation strategies, member States should take into account the particular vulnerability of the relevant sectors, including agriculture and of water and food systems, as well as food security and promote nature-based solutions and ecosystem-based adaptation.

The EU Strategy on adaptation to climate change further states that **adaptation is a "whole-society endeavour"** and therefore "**it is vital for the private and public sectors to work together more closely, in particular on financing adaptation**."

To meet the need for more and better climate-related risk and losses data, the Commission will promote common rules and procedures for the recording and collection of data on climate-related losses and physical climate risk. In addition, it will support policy development at all levels and sectors, among others by providing ex-ante project assessment tools to better identify co-benefits and positive impacts on the economy of adaptation and prevention projects, and supporting the integration of climate resilience in national fiscal frameworks.

With regard to speeding up adaptation, the Commission will take action to reduce climate-related risk, among others by reducing climate-related risk and closing the climate protection gap through identifying and promoting best practices in financial instruments for risk management.

The adaptation efforts by economic actors operating the activities included in the Taxonomy shall align with the national (and relevant subsidiary e.g. regional and local) adaptation strategies and plans to eliminate miscoordination, misalignment and at worst counterproductive adaptation actions, as well as to avoid maladaptation. Instead, high alignment should be promoted to help accelerate the achievement of the national (and relevant subsidiary e.g. regional and local) adaptation strategies and plans, while increasing the resilience of the economic activities at the same time. This high alignment is therefore included in the adaptation ambition level.

Avoiding maladaptation

In addition, the EU Strategy on adaptation to climate change calls for the avoidance of maladaptation: "support the private sector to **identify risks and steer investment towards action on adaptation and resilience (and avoid maladaptation**)". In Taxonomy context, **maladaptation is to be avoided in all its forms** and is defined as: "Actions that may lead to increased *risk* of adverse climate-related outcomes, including via increased *GHG* emissions, increased *vulnerability* to *climate change*, or diminished welfare, now or in the future" (IPCC AR5 and Special Report: Global Warming of 1.5 ºC) and includes 12 broad examples of maladaptation as described by IPCC:

Table 14-4 | A selection of examples of actual or potential maladaptive actions from this report.

Broad type of maladaptive action
Failure to anticipate future climates. Large engineering projects that are inadequate for future climates. Intensive use of non-renewable resources (e.g., groundwater) to solve immediate adaptation problem
Engineered defenses that preclude alternative approaches such as EBA
Adaptation actions not taking wider impacts into account
Awaiting more information, or not doing so, and eventually acting either too early or too late. Awaiting better "projections" rather than using scenario planning and adaptive management approaches
Forgoing longer term benefits in favor of immediate adaptive actions; depletion of natural capital leading to greater vulnerability
Locking into a path dependence, making path correction difficult and often too late
Unavoidable ex post maladaptation, e.g., expanding irrigation that eventually will have to be replaced in the distant future
Moral hazard, i.e., encouraging inappropriate risk taking based, e.g., on insurance, social security net, or aid backup
Adopting actions that ignore local relationships, traditions, traditional knowledge, or property rights, leading to eventual failure
Adopting actions that favor directly or indirectly one group over others leading to breakdown and possibly conflict
Retaining traditional responses that are no longer appropriate
Migration may be adaptive or maladaptive or both depending on context and the individuals involved

Source: IPCC AR5 Impacts, Adaptation and Vulnerability

Therefore, avoidance of all maladaptation is an important element of the Taxonomy headline ambition for adaptation.

[1] Note: European Union strives to mainstream adaptation in all relevant sector (and other) policies, therefore where available more specific sector goals on adaptation should be taken into account when developing the Taxonomy, however, these specific targets align with the key Union Law goals and are not included in the headline ambition definition in detail.

[2] The EU Strategy on Adaptation to Climate Change (2021-82 final) has been adopted by the European Commission on 24 February 2021 and binds the commission as it commits to the strategy and the actions incorporated. On 10 June the Council Conclusions on the EU Strategy on Adaptation to Climate Change were adopted, in which the Council endorses the strategy.

Relevant targets & reference points

Selection of adaptation related targets in Europe (legally binding or commitments)

Union Law

- The EU will be a climate-resilient society, fully adapted to the unavoidable impacts of climate change. This means that by 2050 (..) we will have reinforced adaptive capacity and minimised vulnerability to climate impacts, in line with the Paris Agreement and the European Climate Law. (Chapter 2, EU Strategy on adaptation to climate change);
- The strategy aims to realise the 2050 vision of a climate-resilient Union by making adaptation smarter, more systemic, swifter, and by stepping up international action. (Chapter 2, EU Strategy on adaptation to climate change);
- The gravity of the adaptation challenge makes it a whole-government and whole-society endeavour. It is vital for the private and public sectors to work together more closely, in particular on financing adaptation. (Chapter 2, EU Strategy on adaptation to climate change);
- The relevant Union institutions and the Member States shall ensure continuous progress in enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change in accordance with Article 7 of the Paris Agreement. (Article 4, European Climate Law as well as Regulation 2018/1999 on the Governance of the Energy Union and Climate Action);
- Member States shall develop and implement adaptation strategies and plans that include comprehensive risk management frameworks, based on robust climate and vulnerability baselines and progress assessments. (Article 4, European Climate Law).

International frameworks

- Parties hereby establish the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal

(well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels). (Article 7, Paris Agreement);

- Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience. (The Sendai Framework for Disaster Risk Reduction 2015–2030);
- Seven global targets:

1. Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020–2030 compared to the period 2005–2015;
2. Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020–2030 compared to the period 2005–2015;
3. Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030;
4. Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030;
5. Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020;
6. Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030;
7. Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

(The Sendai Framework for Disaster Risk Reduction 2015–2030)

- United Nations Sustainable Development Goal 13 ‘Take urgent action to combat climate change and its impacts", includes target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.
- The UAE Framework on Global Resilience, adopted in December 2023 at COP28, is articulated on 7 thematic targets to be achieved by 2030, as follows:
  - Significantly reducing climate-induced water scarcity and enhancing climate resilience to water-related hazards towards a climate-resilient water supply, climate-resilient sanitation and towards access to safe and affordable potable water for all;
  - Attaining climate-resilient food and agricultural production and supply and distribution of food, as well as increasing sustainable and regenerative production and equitable access to adequate food and nutrition for all;

- Attaining resilience against climate change related health impacts, promoting climate-resilient health services, and significantly reducing climate-related morbidity and mortality, particularly in the most vulnerable communities;
- Reducing climate impacts on ecosystems and biodiversity, and accelerating the use of ecosystem-based adaptation and nature-based solutions, including through their management, enhancement, restoration and conservation and the protection of terrestrial, inland water, mountain, marine and coastal ecosystems;
- Increasing the resilience of infrastructure and human settlements to climate change impacts to ensure basic and continuous essential services for all, and minimizing climate-related impacts on infrastructure and human settlements;
- Substantially reducing the adverse effects of climate change on poverty eradication and livelihoods, in particular by promoting the use of adaptive social protection measures for all;
- Protecting cultural heritage from the impacts of climate-related risks by developing adaptive strategies for preserving cultural practices and heritage sites and by designing climate-resilient infrastructure, guided by traditional knowledge, Indigenous Peoples' knowledge and local knowledge systems;

- *And* the following targets in relation to the dimensions of the iterative adaptation cycle:

- Impact, vulnerability and risk assessment: by 2030 all Parties have conducted up-to-date assessments of climate hazards, climate change impacts and exposure to risks and vulnerabilities and have used the outcomes of these assessments to inform their formulation of national adaptation plans, policy instruments, and planning processes and/or strategies, and by 2027 all Parties have established multi-hazard early warning systems, climate information services for risk reduction and systematic observation to support improved climate-related data, information and services;
- Planning: by 2030 all Parties have in place country-driven, gender-responsive, participatory and fully transparent national adaptation plans, policy instruments, and planning processes and/or strategies, covering, as appropriate, ecosystems, sectors, people and vulnerable communities, and have mainstreamed adaptation in all relevant strategies and plans;
- Implementation: by 2030 all Parties have progressed in implementing their national adaptation plans, policies and strategies and, as a result, have reduced the social and economic impacts of the key climate hazards identified in the assessments referred to in paragraph 10(a) above;
- Monitoring, evaluation and learning: by 2030 all Parties have designed, established and operationalized a system for monitoring, evaluation and learning for their national adaptation efforts and have built the required institutional capacity to fully implement the system;
- The UAE-Belem Work Programme on Indicators, due for completion in 2025, will provide the necessary indicators to measure progress towards achieving the above mentioned targets.

2. Nature-based solutions enabling adaptation

Recognising the high importance of nature-based solutions[225] (NbS) in the context of adaptation, as one of the most cost-effective resilience measures with a multitude of benefits [226], the Platform has progressed an analysis on the background rationale and potential practical approaches to facilitate NbS inclusion.

Work completed to date addresses:

- EU and international policy context
- EU-level and national public funding perspective
- Investor/sustainable finance perspective
- Addressing potential concerns
- Early thinking of practical options for NbS inclusion.

The current interim recommendations are as follows:

The EU Platform on Sustainable finance - recommend the following way forward:

- To include an activity (or several activities) which recognise NbS as contributing substantially to the climate change adaptation objective (as adaptation enabling activity);
- To use the term “nature-based solutions" in the activity title and/or description to clearly and correctly identify the nature of the activity;
- To define the activity scope such that it does not overlap with any related activities, which already target adaptation objective, including with the NbS activities already in place for the objective;
- To develop robust evidence-based DNSH criteria for all other objectives to eliminate any risk of maladaptation or other harm to any of the other objectives (especially biodiversity).

Platform is undertaking further work proposing practical options for NbS inclusion under adaptation objective, including potential approaches to structuring, classifying and/or grouping the various NbS types, as well as identifying key issues, which need to be addressed with DNSH criteria.

3. Prioritisation of sectors highly vulnerable to climate change

i. Introduction

The aim of this work is to identify and prioritise for future inclusion in the Taxonomy under Adaptation objective those economic sectors that are most vulnerable to climate change. The analysis used datasets of reported climate related sector vulnerability on the EU Member State and local government levels. The identified sectors urgently require implementation of adaptation sectors and would greatly benefit from sustainable adaptation finance, therefore they should be included in the Taxonomy as "adapted" sectors/activities with a high priority.

[225] Defined as “solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience”, see: European Commission, Nature-based solutions.

[226] According to IPCC, 2022: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.

Similar objective-specific prioritisation exercises have been carried out for all other objectives to support evidence-based Taxonomy development, however no such analysis had been done for the adaptation objective so far.

We furthermore compared the most vulnerable identified sectors with those covered by the Adaptation Annex (Annex II of Climate Delegated Act) to derive areas where the EU Taxonomy falls short.

The following data sources were identified and used for the analysis:

- Reporting on national adaptation actions by EU Member States, based on the Energy Union Governance Regulation – information as of spring 2023[1]
- Global Covenant of Mayors (GCoM) - A complete collection of action plans and monitoring reports from MyCovenant reporting platform, GCoM – MyCovenant, 4th Release – March 2023. European Commission, Joint Research Centre (JRC)[2]
- CDP Cities, States and Regions Open Data Portal, 2022 Cities Adaptation Actions by Action Group, focus on Europe as of 15.12.2023[3]

This resulting analysis (quantitative and descriptive) focuses at the of most vulnerable sectors, based on the combined results of the three datasets above. In the recommendations, also the recent EEA report on European Climate Risk Assessment[4] and the EU Strategy on adaptation to climate change have been taken into account.

ii. Vulnerable sectors – country level

The first available dataset provides insight into the national level climate risk and vulnerabilities reported by EU Member States, based on the Energy Union Governance Regulation in 2023.

As visible in Figure 1, the following vulnerable sectors were reported the most frequently by EU Member States are: health (26 countries), agriculture and food (25 countries), biodiversity, forestry (around 23 each), water management and energy (22 each), followed by transport and tourism (19 each).

Fifteen countries reported on civil protection and emergency management as well as buildings (15 countries). Coastal areas were reported by those countries with a coastline and, logically, not by land-locked countries. See “Technical Details: Key affected sectors reported in 2023 for more information”.

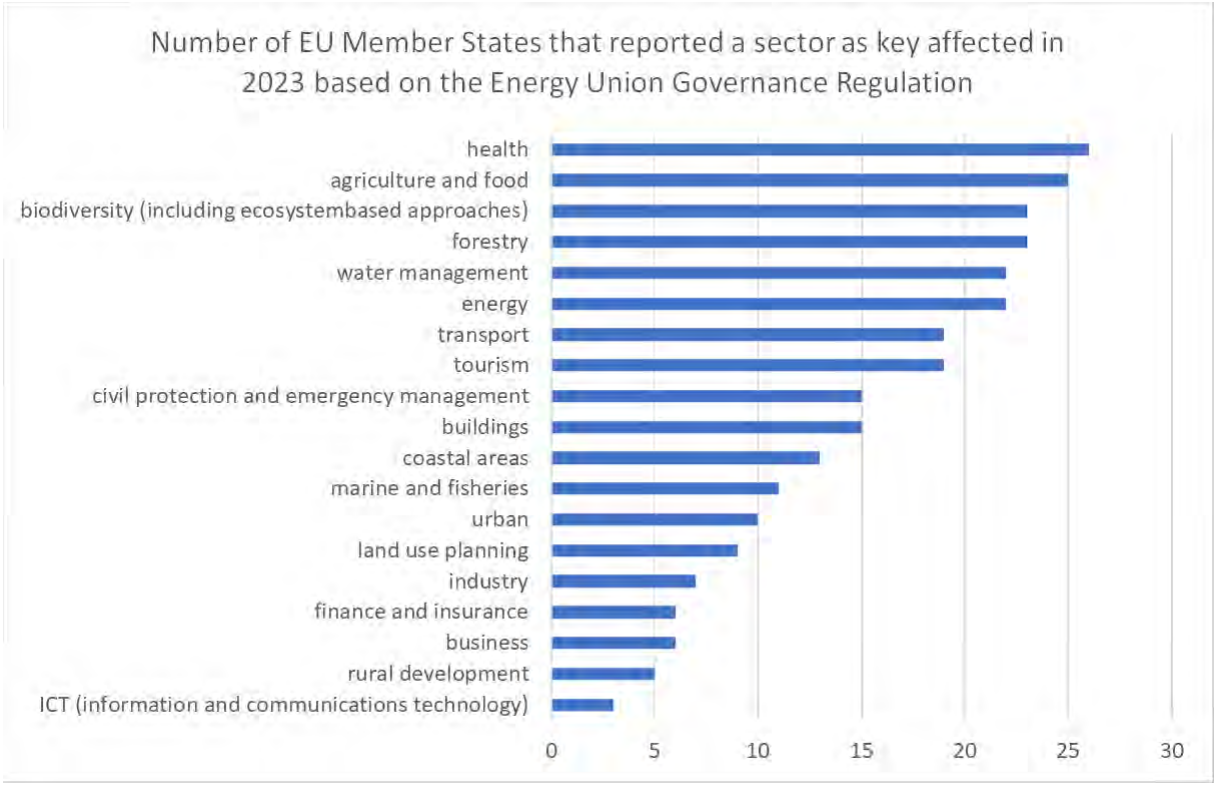


Figure 1: Number of EU Member States that reported this sector as key affected in 2023

iii. Vulnerable sectors – city/municipal/regional level – (GCoM)

Figure 2 shows the data from the Covenant of Mayors (CoM) vulnerable sector reporting in Europe. The data shows that most vulnerable sectors reported by local governments are environment and biodiversity, agriculture and forestry followed by health and civil protection and emergency and buildings as well as water. Land use planning, Transport and Energy are mentioned thereafter.

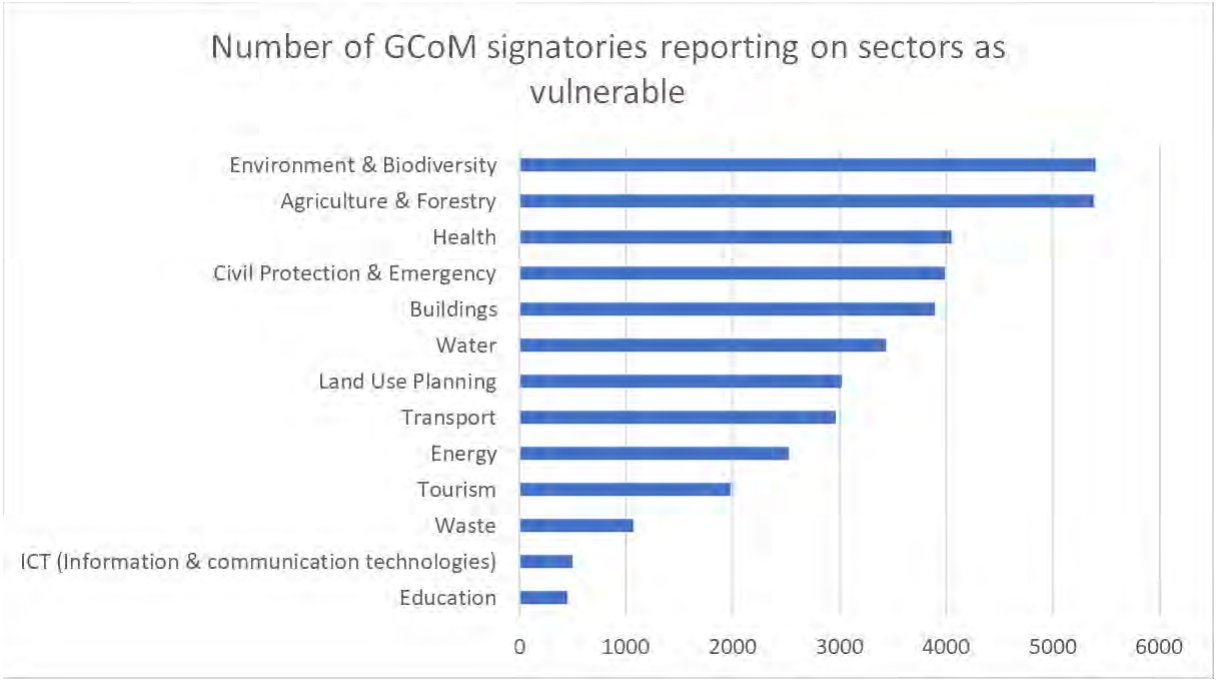


Figure 2: Number of GCoM signatories reporting sectors as vulnerable – March 2023

iv. Sectors with most adaptation actions/measures implemented – CDP Cities, States and Regions.

The data from CDP Cities, States and Regions Open Data Portal, describing 2022 Cities Adaptation Actions by Action Group, with a focus on Europe is showcased in Figure 3. In this case, the data show, which sectors the reporters take adaptation action in. We use this as a proxy indication of which sectors are considered vulnerable (and therefore attract most adaptation measures). Sectors mostly reported on in the CDP dataset are water supply, human health and social work activities, waste management, conservation, construction, sewerage, wastewater management and remediation activities. These are followed by forestry, agriculture, Other, Education, Real estate activities and Information and communication.

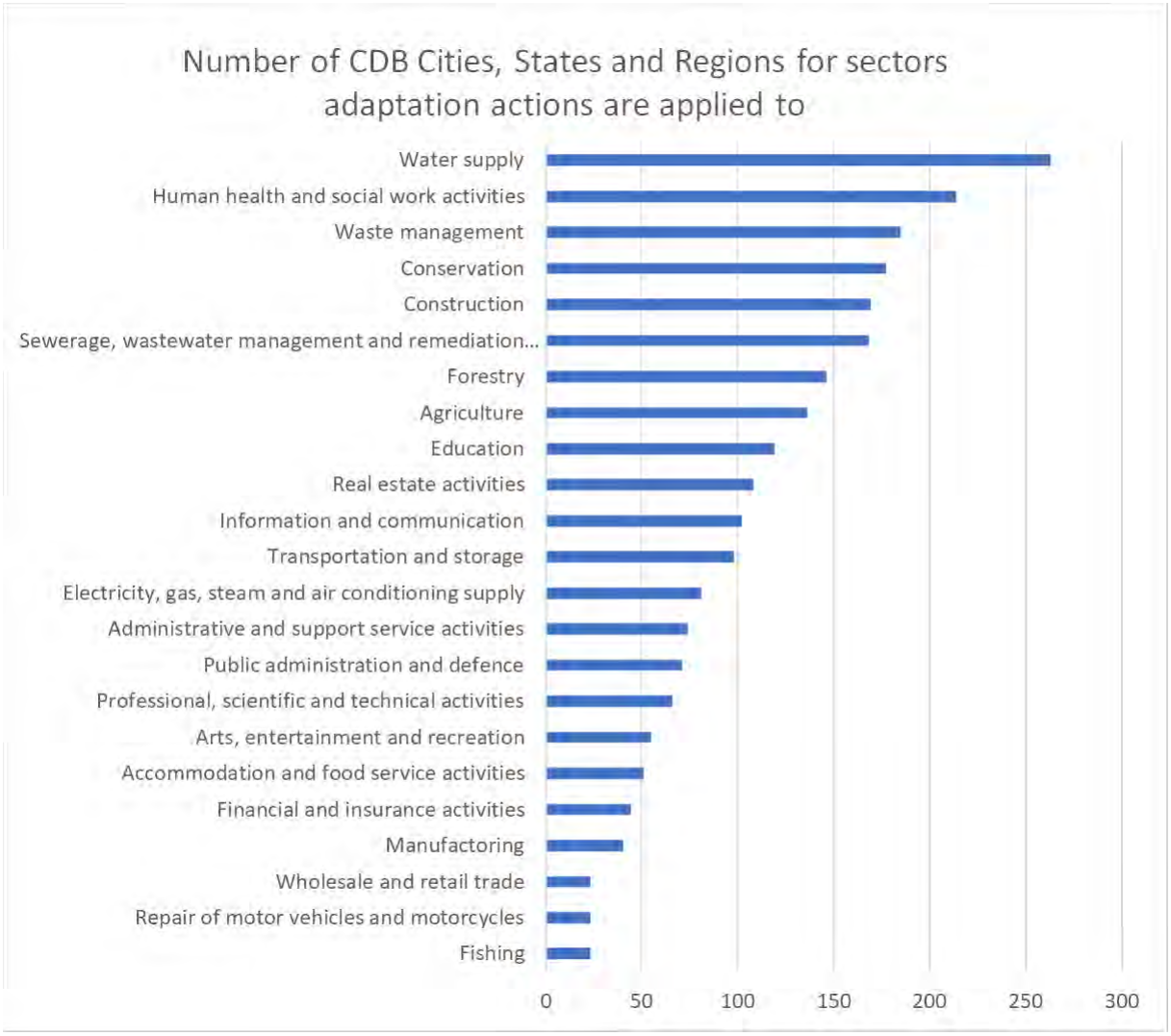


Figure 3: Number of CDP Cities, States and Regions for sectors adaptation actions are applied to

v. Vulnerable sector identification based on dataset synthesis

To combine the three above-mentioned datasets, making them comparable first requires common classes for the different sectors (i.e., a common terminology and grouping of the different sectors in each dataset[5]). A second step takes into account that the maximum number of EU Member States reporting under the Energy Union Governance Regulation (GovReg) is 27, while the number of reporting entities in the other two datasets is in orders of magnitude higher. Adding the information without considering these differences, results in a long list of overlapping sectors (if not grouped properly) or where the impact of the different datasets is driven mainly by the potential number of reporting entities. More details about the choices made ([6]) for the sake of this exercise can be found in "Technical Details: Combining the datasets from GovReg, CoM and CDP reporting".

To overcome the differences in size of the datasets, not the absolute numbers of the sectors are compared, but their relative importance within a dataset. This is done in two different ways:

- Sorting the number of records for each dataset and assigning a scoring for each quintile (0-1 in steps of 0.25) ([7])
- Selecting the maximum number in each dataset and expressing each number of records per sector as a fraction of this maximum value.

Table 1 below presents the results, namely the relative importance of the sector within a dataset (see Annex 3: Scoring of the sectors in the different datasets and combined scoring for details).

Table 1: Relative importance of the sector within a dataset

Sectors	Quintiles				Min-Max scaling				Average
	Govreg	CDP	CoM	sum/3	Govreg	CDP	CoM	sum/3	both methods
Agriculture	1	0.5	0.625	0.71	0.961538	0.315545	0.664199	0.65	0.68
Biodiversity	0.875	0.75	1	0.88	0.884615	0.410673	1.332593	0.88	0.88
Buildings	0.5	1	1	0.83	0.576923	0.446636	0.959783	0.66	0.75
Business	0.25	0.75	0	0.33	0.230769	0.37819	0	0.20	0.27
Civil protection	0.5	0	1	0.50	0.576923	0	0.983716	0.52	0.51
Coastal areas	0.5	0	0	0.17	0.5	0	0	0.17	0.17
Education	0	0.5	0.25	0.25	0	0.276102	0.112016	0.13	0.19
Energy	0.75	0.25	0.5	0.50	0.846154	0.187935	0.623982	0.55	0.53
Finance and insurance	0.25	0.25	0	0.17	0.230769	0.102088	0	0.11	0.14
Forestry	0.875	0.75	0.625	0.75	0.884615	0.338747	0.664199	0.63	0.69
Health	1	1	1	1.00	1	0.49652	1	0.83	0.92
ICT	0	0.5	0.25	0.25	0.115385	0.236659	0.122132	0.16	0.20
Industry	0.25	0.75	0	0.33	0.269231	0.342227	0	0.20	0.27
Land use planning	1	0	0.75	0.58	0.923077	0	0.746607	0.56	0.57
Marine and fisheries	0.25	0	0	0.08	0.423077	0.053364	0	0.16	0.12
Public administration	0	0.25	0	0.08	0	0.164733	0	0.05	0.07
Tourism	0.625	0.5	0.5	0.54	0.730769	0.24594	0.488774	0.49	0.52
Transport	0.625	0.25	0.75	0.54	0.730769	0.227378	0.73205	0.56	0.55
Waste	0	1	0.5	0.50	0	0.429234	0.263509	0.23	0.37
Water management	0.75	1	0.75	0.83	0.846154	1	0.84752	0.90	0.87

Besides providing the different sectors with a scoring (per dataset and combined), they can also get a ranking from the highest to the lowest scoring, see Table 2.

Table 2: Ranking from the highest to the lowest scoring

Sectors	ranking (quintiles)	ranking (min-max range)	sum of individual ranking	ranking of summed ranking	ranking based on average scoring
Health	1	3	4	1	1
Biodiversity	2	2	4	1	2
Water management	3	1	4	1	3
Buildings	3	5	8	4	4
Agriculture	6	4	10	5	6
Forestry	5	6	11	6	5
Transport	8	7	15	7	8
Land use planning	7	9	16	8	7
Energy	10	8	18	9	9
Tourism	8	10	18	9	10
Civil protection	10	11	21	11	11
Waste	10	12	22	12	12
Business	13	13	26	13	13
Industry	13	13	26	13	13
Coastal areas	17	15	32	15	17
ICT	15	17	32	15	15
Education	15	18	33	17	16
Marine and fisheries	19	16	35	18	19
Finance and insurance	17	19	36	19	18
Public administration	19	20	39	20	20

Independent from the method, the resulting order of the sectors is very similar (see Technical Details: Ranking of the different sectors based on scoring per methodology and combined scoring for details). When the sum of the ranking for both methods is used, the biggest gap in between consecutive scorings is 4. This gap is used to distinguish the sectors in 5 groups based on the attention they got in the Energy Union GovReg, CoM and CDP reporting, and indicator for the sectoral awareness of its vulnerability. Not surprising, those sectors that occur in all three datasets are almost exclusively at the top of this list, while those sectors present only in one dataset are in the lowest category (e.g. coastal areas, ICT, education, etc). While this is a consequence of the used methods, it is also an indication of some potential blank spots when it comes to vulnerable sectors.

vi. Current coverage of vulnerable sectors in the EU Taxonomy

The identified vulnerable sectors are covered in the current Annex II of the Delegated Act on Climate Change (Adaptation Annex) to varying degrees. Their coverage largely depends on whether they are also relevant for climate change mitigation. This is because all activities that were originally prioritised for climate change mitigation were also included in the Adaptation Annex. Table 3 provides an overview of the six most vulnerable sectors and the related economic activities listed in the Adaptation Annex. These six sectors are also mentioned in the EU Adaptation Strategy and are therefore particularly relevant for climate change adaptation.

Table 3: Vulnerable Sectors and their current coverage Annex II oft the Climate DA

Vulnerable sectors	***Economic activities within the sector currently covered in Adaptation Annex of Climate DA as "adapted"***
Health	12.1. Residential care activities 14.1. Emergency Services
Biodiversity	2.1. Restoration of wetlands
Water management	5.1. Construction, extension and operation of water collection, treatment and supply systems 5.2. Renewal of water collection, treatment and supply systems 5.3. Construction, extension and operation of waste water collection and treatment 5.4. Renewal of waste water collection and treatment 5.13. Desalination
Buildings	7.1. Construction of new buildings 7.2. Renovation of existing buildings 7.3. Installation, maintenance and repair of energy efficiency equipment 7.4. Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings) 7.5. Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings 7.6. Installation, maintenance and repair of renewable energy technologies 7.7. Acquisition and ownership of buildings
Agriculture	-
Forestry	1.1. Afforestation 1.2. Rehabilitation and restoration of forests, including reforestation and natural forest regeneration after an extreme event 1.3. Forest management 1.4. Conservation forestry

Of the three most vulnerable sectors – health, biodiversity and water management – only water management is almost fully covered, including economic activities in the areas of water supply, wastewater disposal and desalination. The highest rated most vulnerable sector, health, is only covered to a very limited extent in terms of residential (aged) care activities and emergency services, while the activities of hospitals and other medical services (general and specialised medical practices) beyond emergency services, which could be severely affected by climate change, are not included. The same applies to the third highest ranked sector, biodiversity, which is taken into account only in the restoration of wetlands.

The buildings sector is relatively well covered in the Adaptation Annex as "adapted" set of activities including construction and renovation activities and a number of more specific activities related to energy efficiency and the use of renewable energy. "Adapted" activities in the Taxonomy are "own performance" activities, which ensure that their own operations and value chains are made resilient to physical climate change impacts. What should be noted here, is that for the construction sector, not only the "activity" (the process of carrying it out) needs to be made resilient to climate impact, but also the result of the activity – e.g. the building itself must also be made resilient.

For the Taxonomy to incentivise and drive the resilience of buildings, these activities would need to be included in the Taxonomy as "adapted-enabling". Enabling activities under adaptation objective are those that enable the resilience of "other people, of nature, of cultural heritage, of assets and of other economic activities", this definition clearly applies to buildings, as the resilience of the buildings constructed improves the resilience of "others" - people or entities that will be using the building, rather than ensuring the resilience of the construction company operations. Classifying construction of buildings activities would allow those construction companies, which as a primary purpose focus on creating resilient building stock, to claim their turnover as Taxonomy-aligned under adaptation objective, when they fulfil all requirements of the enabling criterion (point 5 of the generic substantial contribution criteria).

This thinking extends further to also apply to the buildings that are Taxonomy-aligned under the mitigation objective: there may be a need to ensure that the adaptation DNSH ensure a base level of building resilience, as well as the resilience of the activity itself. We note that there are diverging interpretations in the market as to whether the current criteria apply to the activity or the output (building) – until better clarity is provided the current interpretations should be treated permissively by auditors and regulators. (Note that this clarification of adaptation DNSH to include the output of the activity would need to be undertaken for all activities where the resilience of the output is important for the achievement of adaptation objectives.)

In addition, several building-related measures originally included in the Taxonomy as supporting GHG reduction (mitigation) in buildings, would also be relevant for increasing the resilience of buildings. Further analysis and discussion among experts are needed, to determine whether these types of "measures"/activities need to be explicitly recognised in the Adaptation Annex.

A particularly large gap in the Taxonomy is the lack of agricultural activities, which are strongly influenced by physical climate change impacts. Platform 1.0 has proposed criteria for the inclusion of agricultural activities under the biodiversity objective, but the activities have not yet been included in the Delegated Acts of the Taxonomy. Including agriculture under the biodiversity objective could likewise facilitate the inclusion in the Adaptation Annex. In contrast to agriculture, forestry is largely covered in the Adaptation Annex, including activities on general forest management, conservation forestry and afforestation and rehabilitation of forests.

The other vulnerable sectors identified in the analysis, which do not belong to the first six sectors described above, were not analysed in detail with regard to their inclusion in the Adaptation Annex. In principle, the same applies as for the sectors that were analysed in detail. If they are relevant for climate change mitigation, such as the transport, energy and waste sectors, they are well covered in the Adaptation Annex. Other sectors such as land use planning are not included at all. In addition to the activities relevant to climate change mitigation, the Adaptation Annex also covers a set of activities that were included only because of their relevance for climate change adaptation. These activities include some of the identified vulnerable sectors, e.g. insurance and education.

In any case, for all sectors that have not been analysed in detail, a further analysis regarding their coverage in the Taxonomy needs to be carried out.

vii. Recommendations

We strongly recommend the inclusion of highly vulnerable economic activities in the EU Taxonomy as contributing substantially to the adaptation objective, while also not harming (DNSH) any other of the environmental objectives under the Taxonomy to guide investment flows towards building a resilient economy in the European Union.

As shown in this analysis, the EU Taxonomy is incomplete for the objective of climate change adaptation - it only partially covers economic activities that offer substantial contribution to adaptation (need to be "adapted" as a priority). These are additional economic activities that need to be prioritised for the definition of the criteria for their substantial contribution to adaptation (and the necessary DNSH for other objectives).

Our analysis shows that Health is widely reported as the most vulnerable sector. This finding is also confirmed by the recently published European Climate Risk Assessment (EUCRA)[9], which stresses the vulnerability of the health of the general population and the health system to climate risks. Health and Environment/Biodiversity are reported to be the two systems with risks where urgent action is needed.

Our analysis also identified Buildings and Agriculture as vulnerably sectors, which is likewise confirmed by EUCRA, stating that climate risks are affecting buildings, food security and agriculture.

Regarding Biodiversity, which is highly ranked in our analysis, it is important to consider a separate Nature-based solutions for adaptation activity for inclusion in the EU Taxonomy.

In conclusion, we - as the adaptation experts in the EU Platform on Sustainable finance - recommend the following way forward:

- **To include health-related activities such as hospital activities and general and specialist medical services in the Taxonomy in a targeted way, since this most vulnerable sector is currently not sufficiently covered in the adaptation objective Taxonomy.**
- **To consider and agree on the best approach for ensuring full clarity on the adaptation criteria for construction/ buildings- related activities, clearly defining that buildings need to be made resilient (adapting the outputs of construction and renovation activities), as well as the resilience construction and renovation activities themselves is needs to be ensured (adapting the process of these activities). This may result in certain building-related activities being included in the**

Taxonomy as "adapted-enabling" (potentially with clarified criteria); and a revision of adaptation DNSH for building sector activities in Mitigation annex to amend wording accordingly[227].

- **To consider addressing the high vulnerability of (and urgent need to build the resilience of) biodiversity and ecosystems in conjunction with the recommendations on including nature-based solutions in the EU Taxonomy and in consultation with biodiversity experts.**
- **To prioritize the inclusion of the agricultural sector in the adaptation annex as soon as possible, at the latest when it is included under any other environmental objective.**
- **For the next Platform mandate to continue the inclusion of all identified highly vulnerable sectors listed in this background note in the EU Taxonomy, beyond those prioritised in the points above.**

viii. Technical Details: Key affected sectors reported by EU Member States in 2023

Key affected sectors as reported by countries under Art. 19(1) of The Governance Regulation on the Energy Union and Climate Action (GovReg) on national adaptation actions.

Countries report key affected sectors, and link each of them to one (or exceptionally more than one) sector from the list in Footnote 4 of Annex I of the implementing regulation ((EU) 2020/1208). The sectors are:

- Agriculture and food,
- biodiversity (including ecosystem-based approaches),
- buildings,
- coastal areas,
- civil protection and emergency management,
- energy,
- finance and insurance,
- forestry,
- health,
- marine and fisheries,
- transport,
- urban,
- water management,
- ICT (information and communications technology),
- land use planning,
- business,
- industry,
- tourism,
- rural development,
- other [please specify]

[227] Please note: if this is undertaken for Buildings sector, a review is necessary for all sectors where the output, not only the activity itself, needs to be made resilinet/adapted

For each country, all sectors from the above list selected by a country are mapped once, for this exercise excluding 'other'. This for all countries where details about the reporting are available (all EU Member States (27) plus Switzerland).

ix. Technical Details: Combining the datasets from GovReg, CoM and CDP reporting

The definitions of the different classes in the three reporting were grouped into 20 vulnerable sectors:

Sector	GovReg	CDP	CoM	# of datasets the sector is reported
Agriculture	• Agriculture and food	• Agriculture	• ***Agriculture & Forestry (50%)***	3
Biodiversity	• Biodiversity (including ecosystem-based approaches)	• Conservation	• Environment & Biodiversity	3
Buildings	• Buildings	• Real estate activities • ***Construction (50%)***	• Buildings	3
Business	• Business	• Professional, scientific and technical activities • Wholesale and retail trade • Administrative and support service activities		2
Civil protection	• Civil protection and emergency management		• Civil Protection & Emergency	2
Coastal areas	• Coastal areas			1
Education		• Education	• Education	2
Energy	• Energy	• Electricity, gas, steam and air	• Energy	3

		conditioning supply		
Finance and Insurance	• finance and insurance	• financial		2
Forestry	• Forestry	• Forestry	• ***Agriculture & Forestry (50%)***	3
Health	• Health	• Human health	• Health	3
ICT	• ICT (information and communications technology)	• Information and communication	• ICT (Information & communication technologies)	3
Industry	• Industry	• Repair of motor vehicles • Manufacturing • ***Construction (50%)***		2
Land use planning	• Land use planning • Rural development • Urban		• Land use	2
Marine and fisheries	• Marine and fisheries	• Fisheries		2
Public administration		Public administration and defence		1
Tourism	• Tourism	• Accommodation and food service activities • Arts, entertainment and recreation	• Tourism	3
Transport	• Transport	• Transportation and storage	• Transport	3
Waste		• Waste management	• Waste	2
Water management	• Water management	• Sewerage, wastewater management and remediation activities • Water supply	• Water	3

Notes: For construction (in the CDP dataset) and Agriculture and forestry (in the CoM dataset), the number of records was split 50-50 over two sectors to better match the sectors in the other datasets.

Each split of records over two sectors, reduces the weight of the reported number of records. E.g. on the agriculture and forestry case: there will be records in the reporting where agriculture AND forestry would have been ticked if these two separate options would be available. Similarly, each of the sectors above where for one or more datasets individual sectors were grouped for this exercise, their weight is increased as there will be records where multiple of these sectors are selected and here their sum is taken. The table above shows that maximum three sectors from a source are merged and always maximum for one source sectors are merged. From the 20 sectors, 50% is present in all three datasets, while two only appear in one dataset.

x. Technical Details: Scoring of the sectors in the different datasets and combined scoring

For each dataset, 2 scoring methods are used.

1. 5-point scale
   In a first approach, each dataset is sorted from small to large. The four sectors with the lowest values get 0 points, the four next get 0.25 points and so on until the four sectors with the highest values get 1 point.
   If 2 sectors have exactly the same number of records and there are already four sectors in a group, these sectors get the average points (e.g. 0.625 when between the groups receiving 0.5 and 0.75 points).
   A last step is calculating the average score for the three datasets (sum of scores divided by 3).

2. Min-max
   In a second method, the maximum value in each dataset is sought. For each dataset, the value given to a sector is the ration of the number of records for a sector over that maximum value. Each dataset has therefore minimum one sector with score 1.

   Also here, the average is calculated (sum of scores for each dataset dived by 3). While the range is identical (0-1) as in the first method, the scores in between can take any value.
   As the differences between the individual sector are large, when the min-max range is used compared to the quintiles, this method has the biggest effect on the average from both scorings, and on the ranking. The quintiles method is more conservative and split the sectors in 5 groups. Annex 4: Ranking of the different sectors based on scoring per methodology and combined scoring

   Starting from the average score for each sector, a ranking is made for both methods.
   Sectors are sorted from the highest to the lowest value and get a ranking 1 -20. If 2 sectors have exactly the same score, they both get the lowest rank (e.g. in a list with scores 0.9, 0.8, 0.8, 0.7 the ranking will be 1, 2, 2, 4).

Only once, the difference in rank based on the different methods is 3 (for marine and fisheries, 19 and 16 respectively for the quintiles and the min-max method), in all other cases it is maximum 2.

When the sum of these ranks is made, each sector gets a theoretical score between 2 and 40 (in case they have respectively rank 1 or rank 20 for both methods). In this dataset, the sum of the ranking is between 4 and 39.

Sorting according to the sum of these ranks, there are 4 gaps of minimum 4 points in the dataset (between 4 and 8, 11 and 15, 22 and 26 and 26 and 32). These are used to create 5 clusters of sectors. Alternative methods, like ranking based on the average score of both methods instead of the sum, does not give results with a significant difference.

As a reminder, grouping different sectors from the original datasets into one sector for this exercise relatively increases the weight of the sector, while splitting a sector in 2 reduces its weight. For Health and Biodiversity (ranking 1 and 2 in this analysis), none of these happened. Agriculture and forestry were split in the Covenant of Mayors dataset, while construction was split in the CDP dataset (over building and industry). Buildings, agriculture and forestry are all in the second group ranking 4-6 as most vulnerable sectors in this analysis. Only half of the sectors were present in all 3 datasets, 9 out of them in the first half (top 10) of the most vulnerable sectors. Only ICT appears as a sector in all datasets with a relative low number of records. It might indicate a blind spot with high vulnerability but low knowledge on how to adapt.

VI. Appendix: Members and Observers of the Platform on Sustainable Finance

Platform Plenary

a. Chair

Organisation	Name
Comisión Nacional del Mercado de Valores (CNMV)	Helena Viñes Fiestas

b. Members

Organisation	Name/permanent representative
Agent Green	Theodor F. Cojoianu
Allianz SE	Jörg Ladwein
Association 2 Degrees Investing Initiative	Nicola Koch
AXA	Clémence Humeau
BusinessEurope	Erik Berggren
CDP Worldwide (Europe) gemeinnützige GmbH	Hélène Procoudine-Gorsky
Climate Bonds Initiative (CBI)	Sean Kidney
EPIA SolarPower Europe	Giulia Genuardi
Eurochambres	Karolina Opielewicz
Eurometaux	Mukund Bhagwat
European Alliance for Sustainable Finance in waste management and recycling	Daniel Houska
European Banking Federation aisbl	Hans Biemans
International Sustainable Finance Centre z.	Linda Zeilina
Natural Resources Institute Finland	Esa-Jussi Viitala
Orgalim	Andreas Brunsgaard
Skandinaviska Enskilda Banken (SEB) AB (publ)	Karl-Oskar Olming
SMEunited	Gerhard Hümer

Sustainalytics	Anne Schömaker
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Type A	Bernabé Alonso Farinas
Type A	Enrico Benetto
Type A	Andreas Höpner
Type A	Camille Leca
Type A	Ottorino Morresi
Type A	Linda Romanovska
Type A	Agnieszka Slomka-Golebiowska
Type B	Marie Baumgarts

c. Directly appointed members

Organisation	Permanent representative
European Banking Authority (EBA)	Ali Erbilgic
European Environment Agency (EEA)	Beate Hollweg
European Investment Bank (EIB)	Aldo Romani
European Investment Fund (EIF)	Merilin Hörats
European Insurance and Occupational Pensions Authority (EIOPA)	Pamela Schürmans
European Securities and Markets Authority (ESMA)	Angeliki Vogiatzi
EU Agency for Fundamental Rights (FRA)	Adrianna Bochenek

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European Financial Reporting Advisory Group (EFRAG)	Kerstin Lopatta

European Network of the Heads of Environment Protection Agencies (EPA Network)	Natalie Glas
European Stability Mechanism (ESM)	Carlos Martins
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Bloomberg L.P.	Nadia Humphreys
Business and Science Poland	Łukasz Błoński
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Subgroup 3: Monitoring of capital flows

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