



EVALUATION OF POTENTIAL MECHANISMS FOR SMES TO DEMONSTRATE EU TAXONOMY- ALIGNMENT

FINAL REPORT

Ramboll
February – 2023



EUROPEAN COMMISSION

Directorate General for Financial Stability, Financial Services and Capital Markets
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Manuscript completed in December 2022

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PDF ISBN 978-92-76-62093-8 doi: 10.2874/762220 EV-09-23-005-EN-N

Luxembourg: Publications Office of the European Union, 2024

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1. Abstract

The study “Evaluation of potential simplification mechanisms for SMEs to demonstrate EU Taxonomy alignment” was commissioned by the European Commission, DG FISMA, to support the work of the Platform for Sustainable Finance, on data and usability. Based on this report, the subgroup aims to provide evidence-based assessment of the relevance, usability and possible simplifications of evidencing EU Taxonomy technical screening criteria for SMEs in relation to the Climate Delegated Act.

The following sectors were identified as containing the most impacted SMEs by the EU Taxonomy: construction; transport; professional, scientific, and technical activities; manufacturing; and electricity supplies.

These sectors were identified through 4 impact channels:

- Direct relevance
- High capital intensity SMEs
- Indirect impact through supply chains
- SMEs under the scope of the proposed CSRD

Subsequently, within those sectors, 32 economic activities were analysed in depth to identify and analyse the challenges that SMEs might face with regards to the TSC. The report elaborates both on cross-sector and sector-specific challenges and provides potential solutions.

Identified challenges were classified under three main categories (understanding, meeting and reporting) and include eligibility understanding (related to NACE codes and the role of SMEs in supply chains), cross-referencing with other EU legislation, wording, and resource availability.

Executive summary

This document is the final report of the project “Evaluation of potential simplification mechanisms for SMEs to demonstrate EU Taxonomy alignment”.

The study was commissioned by the European Commission, DG FISMA, to support the work of the Platform for Sustainable Finance, Sub-Group 5 on data and usability. On the basis of this report, the subgroup aims to provide evidence-based assessment of the relevance, usability and possible simplifications of evidencing EU Taxonomy technical screening criteria for SMEs in relation to the activities listed in the Climate Delegated Act Annex I (climate change mitigation).

The project consists of two main tasks: 1) to assess to which extent SMEs are impacted by the EU Taxonomy, and 2) to assess the challenges SMEs might face in understanding, meeting and reporting on the EU Taxonomy and recommend solutions.

The first task aims to identify those SME classes most impacted by the EU Taxonomy as listed in Annex I of the Climate Delegated Act on Climate Mitigation¹. The study identifies four potential impact channels that underpin the following working hypotheses/potential impact channels:

- SMEs may be affected by directly by the EU Taxonomy due to **their relevance for climate change mitigation**
- SMEs may be affected by **financial intermediaries or external financing** due to their high capital intensity, a proxy for financing needs
- SMEs may be affected by **supply chains** due to being suppliers of companies that are required to report on the EU Taxonomy according to the NFRD
- SMEs may be affected by **the proposed CSRD** and required to report according to the EU Taxonomy.

The analytical output of each channel and the impact is structured according to relevant company size and sector.

Based on the analysed dataset of 5.9m classified companies, **medium and small companies represent 19%** of SMEs and are clearly outnumbered by micro enterprises (81% of SMEs).

The main affected **EU Taxonomy-relevant sectors** for SMEs are **construction; transport and storage; professional, scientific, and technical activities; manufacturing; and electricity, gas, steam, and air conditioning supplies**.

Companies with a relatively **high capital intensity** and thus financing requirements that are also affected by the EU Taxonomy amount to approximately 464,000 SMEs, first and foremost in **residential and non-residential buildings construction** and other related activities, electrical installations; **freight transport** by road and taxi operations; **manufacturing of metal structures**, and metal related economic activities; **engineering activities** and related technical consultancy; and **production of electricity**.

Sectors affected by **supply chains** are **manufacturing of low carbon technologies, water supply and sewage, and construction and real estate**.

The **extension of the CSRD** affects directly only a limited number of SMEs².

In the second task, the results of the first task are used as a basis to further assess where challenges lie and what solutions are possible for the most effected SMEs with regards to the Technical Screening Criteria (TSC) for the EU Taxonomy Climate Delegated Act Annex (climate change mitigation).

1 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R2139>

2 This observation does not take into account suppliers to CSRD eligible companies. CSRD will extend the scope of eligible companies significantly, so it is likely that the number of suppliers indirectly affected will be significantly bigger too.

In order to allow for in-depth analyses of the challenges and solutions, a prioritisation exercise outlined a subset of 32 economic activities from the Climate Delegated Act Annex I (climate change mitigation) that represent the economic activities of the most impacted SMEs.

To identify and analyse what challenges SMEs might face with regards to the technical screening criteria and what potential solutions could be, the following steps were taken: 1) Exclusion and special considerations for certain criteria; 2) Desk research; 3) Interviews; 4) Final overview of the analysis in a matrix.

The study identifies three types of challenges for SMEs in relation to the technical screening criteria:

- **Understanding:** unclarity in understanding criteria and definitions, such as issues with wording
- **Meeting:** inability to meet the criteria, for example, due to lack of resources
- **Reporting:** data inaccessibility and/or inapplicability of it

Most challenges are found under the so-called “understanding” category, followed subsequently by the “reporting” and “meeting” challenges.

While a large share of the challenges are very specific to a certain activity in a specific sector, some challenges are identified for multiple activities and sectors. These are highlighted in **Error! Reference source not found.**

Figure 1 Challenges found across multiple sectors

SUPPLY CHAIN	NACE CODES	CROSS-REFERENCING
SMEs often only cover a smaller element of the supply chain and find it difficult to see where they fit in. Solution: Specify the definitions further whether these SMEs are included or not	NACE codes tend to further complicate the eligibility exercise rather than enhance it. Solution: Remove NACE codes, emphasize and improve definition	There are many references to other EU legislation, making it challenging and overly complicated to understand. Solution: Include the referenced elements rather than just the reference itself
WORDING	DNSH	RESOURCES
Long sentences and vague wording creates ambiguity and leaves room for interpretation, whereas the Taxonomy requires yes/no answers. Solution: Test for answering yes/no and clarify text where ambiguity is an issue	Based on existing legislation SMEs should already adhere to and are often meant for Member States rather than companies (e.g. permitting) Solution: Refer to national legislation or relevant elements of referenced legislation	Where large companies and SMEs face many of the same challenges with the Taxonomy, large companies have the resources to work on this. Solution: Significant simplification, guidance documents (also for sectors) and forums

The report explores potential solutions and formulates recommendations to address both generic and cross-sector level challenges.

The solutions to the cross-sector challenges can be addressed together, as shown in **Error! Reference source not found.** above. Possible solutions that would address all 6 challenges in the figure include:

- **Practical guidelines for SMEs**, including application examples for various activities, regular updated lists of referenced legislation and their national transposition for each of the member states (including thresholds where relevant) and the actual elements of frameworks that the criteria refers to rather than only referencing the framework should be included (e.g. UNESCO World Heritage sites or the Best Available Technologies (BAT)).
- **A shared platform** providing practical resources for SMEs, such as examples and good practices, and allowing SMEs to exchange their experience with the EU Taxonomy.

Besides general recommendations, several elements in the Taxonomy could also be altered to simplify the EU Taxonomy for SMEs:

- **Improved wording and clarification of the criteria** throughout the EU Taxonomy by avoiding ambiguous phrases that are open to interpretation (such as “where feasible” or “key components”).
- **Clarification of definitions** so that an SME can properly assess what economic activity and criteria it should report on. This can be done by removing the references to NACE codes and improving the definitions of the eligible activities, including further specification of what activities in the supply chain are or are not included (e.g., a sub-contractor of a large development project).
- **Significant simplifications to the Do No Significant Harm** should be made, as they pose significant unnecessary challenges to SMEs.

Besides cross-sector challenges and solutions, many are also found on the activity level for the criteria relevant to the 32 prioritised activities. Below is an extract and recommended solutions. More details are provided in the report

Figure 2 Challenges and recommended solutions for the activities in manufacturing

3.1. Manufacturing of renewable energy technologies	3.5. Manufacturing of energy efficiency equipment for buildings	3.6. Manufacturing of other low carbon technologies
<p>Technologies covered are not stated in the description</p> <ul style="list-style-type: none"> > Insert the concise list of technologies covered under the Directive (EU) 2018/2001, namely wind, solar (thermal and photovoltaic), Geothermal, Ambient energy, Tide, wave and other ocean energy, Hydropower, Biomass, Landfill, Gas, Sewage treatment plant gas, Biogas <p>Difficulty to report for key component manufacturers on eligibility and on alignment (also applicable to 3.5 & 3.6)</p> <ul style="list-style-type: none"> > Define key components precisely (exhaustive list or precise definition) > Develop proxy (industry association or institutions) 	<p>Reference to “highest/two highest populated classes of energy efficiency” according to the Regulation</p> <ul style="list-style-type: none"> > Provide the class of energy efficiency to be in to meet the criteria > E.g. for dishwashers : class A & B <p>DNSH on Circular Economy lack of precision or is not broad enough (also applicable to 3.1 & 3.6)</p> <ul style="list-style-type: none"> > Develop a guide providing exhaustive pass/no pass criteria > Simplify and broaden the scope of the criteria > Coordinate with widely used standards such as EMAS and assess the possibility of automatic “pass” if compliant 	<p>Technologies falling under this activity are unclear and challenging to understand</p> <ul style="list-style-type: none"> > Provide concrete examples of what types of technologies are covered under this activity <p>No threshold to define “substantial life-cycle GHG emission savings”</p> <ul style="list-style-type: none"> > Set a threshold to assess the substantiality of the GHG savings <p>Standards listed for assessment of GHG savings are commonly known but SMEs may face lack of expertise/resources to conduct them</p> <ul style="list-style-type: none"> > Include simplified methodologies for SMEs > Provide subsidies/ support mechanisms for SMEs to assess the GHG savings

Figure 3 - Challenges and recommended solutions for the activities in energy (1/2)

4.1. Electricity generation using solar photovoltaic technology	4.3. Electricity generation from wind power	4.5. Electricity generation from hydropower
<p>PV solar activity actors did not express explicit concern about EU Taxonomy requirements</p> <ul style="list-style-type: none"> > Alignment requirements were seen as straightforward 	<p>Wind power activity actors did not express explicit concern about EU Taxonomy requirements.</p> <ul style="list-style-type: none"> > The concern of the wind industry seems to be having enough “bankable” projects to finance. > However, there is no shortage of actors lining up to finance wind power production 	<p>The DNSH criteria for hydropower are significant for Criteria #3: Substantial use and protection of water and marine resources.</p> <ul style="list-style-type: none"> > SMEs ability to assess their EU taxonomy alignment against the DNSH criteria will likely require third-party environmental impact assessments. > This will be cumbersome for small hydropower facilities, especially those <1MW where the economics are already a challenge. > As the EU Taxonomy does not distinguish its requirements based on capacity of the facility from larger hydropower facilities, complying with DNSH requirements could potentially be cost prohibitive for smaller operators. <p>DNSH criterion 3.3: “All technically feasible and ecologically relevant mitigation measures are implemented to reduce adverse impacts on water as well as on protected habitats and species directly dependent on water.”</p> <ul style="list-style-type: none"> > Hydropower is very site-specific in terms of its design and impacts > The challenge for SMEs in aligning with the DNSH criteria will be on a case-by-case basis

Figure 4 - Challenges and recommended solutions for the activities in energy (2/2)

4.7. Electricity generation from renewable non-fossil gaseous and liquid fuels	4.8. Electricity generation from bioenergy	4.9. Transmission and distribution of electricity
<p>The smaller the organization, the more difficult it will be to comply with DNSH (esp. LCA of their products)</p> <ul style="list-style-type: none"> > Larger actors wanting to use these products (fuel blenders or fuel offtakers) will likely have to verify the LC emissions themselves to meet other certification requirements which may relieve some or all burden for SMEs <p>SMEs are generally not aware of Best Available Techniques (BAT)</p> <ul style="list-style-type: none"> > SMEs would generally have to consult 3rd parties or receive clearer guidance from the Taxonomy on what constitutes the BAT for this activity 	<p>The DNSH criteria for bioenergy were cited as the biggest challenge due to the lack of comprehension by SMEs</p> <ul style="list-style-type: none"> > SMEs in the sector are reportedly unaware of best available techniques, but likely comply with them by default. > Reportedly, there are very few SMEs working with the Taxonomy in the sector and of those who were aware of it, they did not see the value in it. 	<p>It is unlikely that SMEs have significant involvement in the transmission and distribution of electricity where the Taxonomy applies</p> <ul style="list-style-type: none"> > There could be challenges if SMEs have to calculate their carbon intensity, > This is especially true in the case of interconnected networks or cross-border connections where the weighted average carbon intensity is considered and electricity sources vary depending on market conditions, > In this case, there may be a challenge in terms of monitoring and continued compliance

Figure 5 - Challenges and recommended solutions for the activities in water supply, sewerage and waste activities (1/2)

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 wastewater collection and treatment
<p>The net energy efficiency number will not be known by SMEs</p> <ul style="list-style-type: none"> > Adapt to cover specific elements and not system – or remove in this case <p>In the context of the ILI*, SMEs will likely only exchange a part of the system and will therefore not know the leakage level or have access to information on that level</p> <p>Other methodologies than ILI can be used established in accordance with Article 4 of Directive (EU) 2020/2184, however no thresholds are set for these methodologies</p> <ul style="list-style-type: none"> > An appropriate method for calculating the leakage level and setting thresholds should be made available instead of, or in addition to, the current methods and thresholds referenced 	<p>Challenge for the SME to calculate the net average energy consumption reduction of the system</p> <ul style="list-style-type: none"> > It will be a burden for SMEs to calculate the metrics, as the information is not normally available to those performing the activities for only a certain element of the system, which is likely the case for SMEs. <p>20% threshold comes across as an arbitrary figure, making it more challenging to work with</p> <ul style="list-style-type: none"> > Explain what the basis is to make it easier to understand <p>Leakage same as 5.1</p>	<p>Source-control measures are beyond the merit of the wastewater operators and are taken by competent public authorities.</p> <p>The source control criterion specifically mentions "may", making it a "non-criterion"</p> <ul style="list-style-type: none"> > Leave this out as it seems unfair to limit the alignment percentages of the wastewater operators by imposing criteria on which they have no control nor influence. <p>Assessing the direct GHG emissions for the construction and extension of a wastewater treatment plant which are substituting more GHG-intensive treatment systems is not commonly done by SMEs</p> <ul style="list-style-type: none"> > Provide a more simplified method with guidance and application examples

Figure 6 - Challenges and recommended solutions for the activities in water supply, sewerage and waste activities (2/2)

5.7. Anaerobic digestion of bio-waste	5.8. Composting of bio-waste	5.9. Material recovery from non-hazardous waste
<p>For some member states, contingency plans to minimise methane leakage is not required for smaller plants</p> <ul style="list-style-type: none"> > Make references to methods on developing a monitoring and a contingency plan to support meeting this criterion <p>DNSH poll: Re. cross-media affects. Many do not know what this is. Research and own interpretations is required to discover what is meant and how to comply</p> <ul style="list-style-type: none"> > More guidance on cross-media affects <p>DNSH poll: Many are not aware of the CMCs nor the EU regulation, requiring additional effort to understand and report on this criterion.</p> <ul style="list-style-type: none"> > The main focus should be on national legislation, as already included. 	<p>CMC and cross-media affects as in 5.7</p> <ul style="list-style-type: none"> > See 5.7 <p>It is assessed that the last of the DNSH criteria to pollution prevention and control is identical to the second criterion of substantial contribution for this activity.</p> <ul style="list-style-type: none"> > Leave out repetition 	<p>Description: Construction and operation of facilities for the sorting and processing of separately collected non-hazardous waste streams into secondary raw materials involving mechanical reprocessing, except for backfilling purposes.</p> <ul style="list-style-type: none"> > The word "involves" creates confusion <p>In the substantial contribution criteria, it should be clarified what is understood by the secondary raw materials that are suitable for the substitution of virgin materials in production processes.</p> <ul style="list-style-type: none"> > Reformulated or otherwise further explained through examples (i.e. what are examples of substitution of virgin materials)

Figure 7 - Challenges and recommended solutions for the activities in transport (1/2)

6.3. Urban and suburban transport, road passenger transport	6.5. Transport by motorbikes, passenger cars and light commercial vehicles	6.6. Freight transport services by road
<p>Urban and suburban transport, road passenger transport activity actors did not express explicit concern about EU Taxonomy requirements for substantial contribution</p> <ul style="list-style-type: none"> > The industry's concern seems to be whether the criteria can realistically be met out of scope of the project). <p>DNSH on Circular Economy – often no access to the waste management (often in the hands of a specialised company)</p> <ul style="list-style-type: none"> > Exclude SMEs when not in charge of waste management as the criteria is not applicable <p>DNSH on Pollution prevention – reference to "highest/two highest populated classes"</p> <ul style="list-style-type: none"> > Provide the energy efficiency class needed to meet the criterion 	<p>Transport by motorbikes, passenger cars and light commercial vehicles actors did not express explicit concern about taxonomy requirements for substantial contribution</p> <ul style="list-style-type: none"> > The industry's concern seems to be whether the criteria can realistically be met out of scope of the project). <p>DNSH on Circular Economy – see 6.3</p> <p>DNSH on Pollution prevention – see 6.3</p>	<p>Freight transport services by road actors did not express explicit concern about taxonomy requirements for substantial contribution</p> <ul style="list-style-type: none"> > An exception should be made or noted for leasing and rental companies as they may not have information regarding the purpose of the rented/leased vehicle <p>DNSH on Circular Economy – see 6.3</p> <p>DNSH on Pollution prevention – see 6.3</p>

Figure 8 - Challenges and recommended solutions for the activities in transport (2/2)

6.13. Infrastructure for personal mobility, cycle logistics	6.14. Infrastructure for rail transport	6.15. Infrastructure enabling low-carbon road transport and public transport
<p>Infrastructure "dedicated" to personal mobility and cycle logistics – uncertainty about multi-use infrastructure</p> <ul style="list-style-type: none"> > Precise if only infrastructure exclusively dedicated is in the scope or also infrastructure partly dedicated <p>Struggle to access information on future use of the bridge/tunnel/ road for SMEs providing part of the work</p> <p>DNSH on Circular Economy – waste management often not in the hands of the company</p> <ul style="list-style-type: none"> > Alternative criterion besides the current 70% where data is not available <p>EU Construction and Demolition Waste Management Protocol is not commonly known</p> <ul style="list-style-type: none"> > Refer to national guidelines (provide list) or mention the relevant elements of the EU Protocol 	<p>No access to final use of the tracks information for SMEs</p> <ul style="list-style-type: none"> > Increase disclosure requirements on railway operators to allow other companies to have data on the final use <p>DNSH on Circular Economy – see 6.13</p> <p>DNSH on pollution prevention – not applicable to SMEs</p> <ul style="list-style-type: none"> > Keep SMEs out of scope for reporting 	<p>DNSH on Circular Economy – See 6.13</p> <p>DNSH on pollution prevention – not applicable to SMEs</p> <ul style="list-style-type: none"> > Keep SMEs out of scope for reporting <p>DNSH on biodiversity – not applicable to SMEs</p> <ul style="list-style-type: none"> > Keep SMEs out of scope for reporting

Figure 9 - Challenges and recommended solutions for the activities in construction and real estate (1/2)

7.1. Construction of new buildings	7.2. Renovation of existing buildings	7.3. Installation, maintenance and repair of energy efficiency equipment
<p>It is unclear what parts of the construction process are included, e.g. subcontractors.</p> <ul style="list-style-type: none"> > Clarify in the definition what is included <p>The 10% lower than the PED of NZEB is challenging, as this differs a lot across MSs</p> <ul style="list-style-type: none"> > Carbon-based benchmarks or leave out the 10%, also to have an overview of the NZEB per country and what the threshold is <p>EU Construction and Demolition Waste Management Protocol is not commonly known</p> <ul style="list-style-type: none"> > Refer to national guidelines (provide list) or mention the relevant elements of the EU Protocol <p>Waste management, LUCAS survey, formaldehyde, circular economy, etc.</p>	<p>Vague activity description: "Construction and civil engineering works or preparation thereof." And misalignment with 7.7.</p> <ul style="list-style-type: none"> > More specified to renovation works and align with 7.7 or other way around, mention to what level renovation activities are included <p>DNSH similar to 7.1</p> <ul style="list-style-type: none"> > Similar to 7.1 	<p>Vague activity description: It is unclear what individual renovation is, and why the installation, maintenance or repair works are only eligible when they are renovation work.</p> <ul style="list-style-type: none"> > More descriptive title and not only limited to renovation <p>Misaligned with 3.5 and water fittings in Appendix E and DNSH to water of 7.1</p> <ul style="list-style-type: none"> > Align all elements <p>List of equipment is non-exhaustive</p> <ul style="list-style-type: none"> > Check if any elements are missing or take a broader definition of equipment

Figure 10 - Challenges and recommended solutions for the activities in construction and real estate (2/2)

7.4. Installation, maintenance and repair of charging stations for electric vehicles in buildings	7.5. Installation, maintenance and repair of instruments for measuring energy performance of buildings	7.6. Installation, maintenance and repair of renewable energy technologies
<p>Hybrid vehicles are excluded. Companies might not have data on whether their charging stations are used by hybrid or by electric vehicles. In the cases which they do, it is unclear whether one should then split the financial KPIs by the % of usage. This would be unfair as one would have to say no to whether the station is used by an electric or hybrid car.</p> <ul style="list-style-type: none"> > It is recommended to clarify whether hybrid vehicles are included. We would suggest including hybrid and electric. The charging station is meant for electric vehicles mainly, and thus enabling this use of transport. However, the usage of charging stations by hybrid cars, which the company does not control, should not impact the company's alignment score. 	<p>Besides the instruments and devices listed, it seems one bullet is missing, namely the installation, maintenance and repair of valves, tempers, fans and pumps. This controlling equipment seems to be covered in the activity description, but not in the substantial contribution criteria which is inconsistent and could create confusion.</p> <ul style="list-style-type: none"> > Include the installation of controlling equipment 	<p>Referenced directive is unknown.</p> <ul style="list-style-type: none"> > Refer to national legislation, for example: "installation, maintenance, repair and upgrade of heat pumps contributing to the targets for renewable energy in heat and cool in accordance with applicable national legislation on the promotion of the use of energy from renewable sources" with footnote to the directive.

Figure 11 - Challenges and recommended solutions for the activities in forestry, information and communication and professional, scientific and technical activities

1.3. Forest management	8.2. Data-driven solutions for GHG emission reductions	9.1. Close to market research, development and innovation
<p>It is not common for SMEs to report a full management plan</p> <ul style="list-style-type: none"> > Set a minimum hectare demand of land (15-20 ha is suggested) <p>Audit requirements and third party verification can be a financial strain</p> <ul style="list-style-type: none"> > Use forest certification schemes, such as FSC or PEFC <p>DNSH CE: SMEs with less than 13ha exempted from climate benefit analysis</p> <ul style="list-style-type: none"> > Guideline e.g., for the third party Forest Inventory companies to do the climate benefit analysis > Provide requirements how often, now inventory analysis is done +/- every 10 years 	<p>It will be a struggle for SMEs to perform a full life-cycle GHG assessment. The life-cycle assessment is hard for smaller companies with limited resources, as the calculations are complex.</p> <ul style="list-style-type: none"> > It should be considered if SMEs should be required to make a full life-cycle analysis, or if a simpler framework could be offered to them <p>The criterion also states that the ICT solutions should demonstrate substantial life cycle GHG emission savings compared to the best performing alternative solution/technology. It is not clear from the EU Taxonomy what the benchmark for the best performing alternative is.</p> <ul style="list-style-type: none"> > Provide methodology on how to determine the benchmark for the best performing alternative <p>For circular economy, it could be a challenge for companies that lease equipment or go to a cloud provider, to understand their responsibility of waste management.</p> <ul style="list-style-type: none"> > For the DNSH criterion on circular economy it should be specified how companies using a cloud service or leased equipment are required to comply with the criterion. 	<p>Double reporting demand ("while respecting the relevant criteria for DNSH")</p> <ul style="list-style-type: none"> > Clarify the criteria to be reporting against without having the double reporting demand <p>Far too much to check and report on. Criteria are not a clear yes/no. SMEs will "give up on page two".</p> <ul style="list-style-type: none"> > Simplify, this should be the activity that is most important for SMEs and their role in the sustainable transition.

2. Introduction

This document is the final report of the project “Evaluation of potential mechanisms for SMEs to demonstrate EU Taxonomy alignment”.

With this project, the Platform for Sustainable Finance aims to provide evidence-based recommendations to assess the relevance, usability and possible simplifications of evidencing EU Taxonomy technical screening criteria for SMEs in relation to climate change mitigation and to further enable SME access to green finance.

This report should be read considering that only the technical screening criteria in the EU Taxonomy Climate Delegated Act Annex 1 (climate change mitigation) have been considered and that the EU Taxonomy is an evolving framework.

The project has been divided into three tasks:

- Task 1: Assessment of the extent to which SMEs are impacted by the Taxonomy
- Task 2: Analysis of Taxonomy screening criteria and SMEs' ability to assess Taxonomy alignment
- Task 3: Recommendations to support SMEs in their effort to assess and report Taxonomy alignment

This report will offer an executive summary, then the methodology and results of task 1 in section 3. For practical and continuity reasons, the reporting on tasks 2 and 3 will be presented together per selected economic activity in section 4. And finally, a summary matrix in the form of an excel table will be attached.

3. Assessment of the extent to which SMEs are impacted by the Taxonomy

3.1. Methodological note

The analysis aims to identify those SME classes most impacted by the EU Taxonomy as listed in Annex I of the Climate Delegated Act on Climate Mitigation³ along four potential impact channels that underpin the following working hypotheses / potential impact channels:

1. SMEs may be affected by the EU Taxonomy due to **their relevance for climate change mitigation**, i.e., their NACE code falls under at least one of the economic activities relevant for climate mitigation, and SME decides to voluntarily disclose due to the high relevance of its economic activity for climate change mitigation (**Group A**);
2. SMEs may be affected by **financial intermediaries or external financing** due to their high capital intensity, a proxy for financing needs, e.g., to finance investments and growth (**Group B**);
3. SMEs may be affected by **supply chains** due to being suppliers of companies that are required to report on the EU Taxonomy according to the NFRD (**Group C**), based on qualitative analysis (cf. Annex 2);
4. SMEs affected by **the proposed CSRD⁴** are required to report according to the EU Taxonomy (**Group CSRD**).

The expected analytical output of each of the above impact channels will be structured according to the most relevant:

- **company size** according to the accounting directive (medium, small or micro company, if any);
- **sector** (e.g., NACE code sector or sub-sector, if any).

Further analysis will be conducted to find out about effects of **combining** impact channels.

Finally, **key takeaways** from the analyses will be summarised, i.e., observations about most impacted SME classes overall.

Data⁵ from approximately 9.4m companies were obtained from various sources such as Amadeus from Bureau van Dijk and Orbis. Approximately 5.9m (63%) of those companies could be classified into the categories large, medium, small, and micro, according to the Accounting Directive⁶, the basis for the EU Taxonomy. 3.5m (37%) companies could not be classified due to lacking data, e.g., number of employees, and are thus excluded from further analyses. The representativeness of the dataset was compared to the SME Performance review by the European Commission, cf. Annex 1, Table 39.

The two largest contributing countries, in terms of total number of companies, are Germany (28%), followed by France (14%). However, Germany shows a significant number of unclassified companies (2.1m).

In total, **medium and small companies total 19% of all classified companies**, clearly outnumbered by the share of micro enterprises (81%).

3 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R2139>

4 https://www.europarl.europa.eu/meetdocs/2014_2019/plmrep/COMMITTEES/JURI/DV/2022/07-13/CSRD-consolidatedtext-final_EN.pdf

5 Additional information on data can be found in Annex 1: Methodological Annex

6 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013L0034>

Table 1 Overview of total dataset by country and company size, number of companies, relative shares

Country	Large	Medium	Small	Micro	Classified	Unclassified	Total	Classified %	Unclassified %
Austria	651	1,007	5,601	6,859	14,118	23,711	37,829	37%	63%
Belgium	2,264	6,137	19,058	77,325	104,784	209,559	314,343	33%	67%
Bulgaria	548	2,755	23,662	341,187	368,152	21,423	389,575	95%	5%
Croatia	351	1,507	11,919	107,676	121,453		121,453	100%	0%
Cyprus	5	9	12	7	33	1	34	97%	3%
Czech Republic	790	1,970	8,513	51,655	62,928	21,716	84,644	74%	26%
Denmark	2,203	3,633	13,030	136,765	155,631	90,238	245,869	63%	37%
Estonia	152	775	6,489	99,239	106,655	15,870	122,525	87%	13%
Finland	1,548	3,767	19,774	107,809	132,898	15,287	148,185	90%	10%
France	11,591	30,468	164,873	878,975	1,085,907	196,061	1,281,968	85%	15%
Germany	16,543	37,629	230,567	308,022	592,761	2,071,167	2,663,928	22%	78%
Greece	146	177	221	151	695		695	100%	0%
Hungary	935	3,623	30,702	293,739	328,999	53,642	382,641	86%	14%
Ireland	242	611	3,239	13,256	17,348	16,989	34,337	51%	49%
Italy	5,938	18,555	127,697	363,756	515,946	3	515,949	100%	0%
Latvia	187	809	7,374	85,058	93,428	10,424	103,852	90%	10%
Lithuania	436	1,716	10,269	60,073	72,494	33,039	105,533	69%	31%
Luxembourg	281	453	2,080	12,897	15,711	33,483	49,194	32%	68%
Malta	2	6	14	100	122		122	100%	0%
Netherlands	2,739	3,888	17,485	60,547	84,659	203,082	287,741	29%	71%
Poland	2,576	6,947	27,775	76,455	113,753	242,233	355,986	32%	68%
Portugal	1,149	4,977	42,781	297,512	346,419	30,760	377,179	92%	8%
Romania	1,052	4,753	40,954	697,035	743,794		743,794	100%	0%
Slovakia	592	2,102	17,228	170,222	190,144	28,659	218,803	87%	13%
Slovenia	320	1,288	9,940	116,792	128,340	131,513	259,853	49%	51%
Spain	2,526	6,162	56,047	197,318	262,053	21,671	283,724	92%	8%
Sweden	1,898	5,475	34,313	237,444	279,130	29,202	308,332	91%	9%
Total	57,665	151,199	931,617	4,797,874	5,938,355	3,499,733	9,438,088	63%	37%
Total %	1%	3%	16%	81%	100%	37%	100%		

Table 2 Overview of total dataset by NACE sector and company size, number of companies

Sector	Large	Medium	Small	Micro	Total
A - Agriculture - forestry and fishing	338	2,185	22,412	111,580	136,515
B - Mining and quarrying	259	623	2,782	5,070	8,734
C - Manufacturing	15,100	38,249	153,463	331,280	538,092
D - Electricity- gas- steam and air conditioning supply	1,759	2,158	7,984	37,874	49,775
E - Water supply- sewerage- waste management and rer	1,077	3,377	10,644	16,414	31,512
F - Construction	2,940	13,540	134,665	542,358	693,503
G - Wholesale and retail trade - repair of motor vehicles a	12,190	36,819	235,285	963,068	1,247,362
H - Transportation and storage	2,498	8,690	50,934	209,178	271,300
I - Accommodation and food service activities	391	2,431	38,729	294,076	335,627
J - Information and communication	2,446	7,036	38,503	238,189	286,174
K - Financial and insurance activities	6,051	5,824	18,717	249,910	280,502
L - Real estate activities	1,538	4,472	38,122	406,971	451,103
M - Professional- scientific and technical activities	5,853	10,805	80,180	703,852	800,690
N - Administrative and support service activities	2,061	6,206	44,944	235,912	289,123
O - Public administration and defence, compulsory social	127	254	592	1,129	2,102
P - Education	212	1,116	7,567	68,833	77,728
Q - Human health and social work activities	2,120	5,098	27,025	141,136	175,379
R - Arts- entertainment and recreation	312	1,142	9,306	88,051	98,811
S - Other service activities	392	1,170	9,733	152,815	164,110
T - Activities of households as employers		4	26	131	161
U - Activities of extraterritorial organisations and bodies	1		4	47	52
Total	57,665	151,199	931,617	4,797,874	5,938,355

3.2. Results

3.2.1. Group A – SMEs relevant for climate change mitigation

To find out how many SMEs are in principle EU Taxonomy eligible, based on their main economic activity, EU Taxonomy-relevant NACE codes as listed in Annex I of the Climate Delegated Act were mapped against actual company NACE codes from the dataset.

Key results:

- **A total of 1.05m (18%) SMEs out of 5.9m total classified companies have been found EU Taxonomy eligible for the mitigation objective**, based on the NACE codes listed in Annex 1 of the Climate Delegated Act. Though this is an approximation due to potential inconsistencies, e.g., between actual economic activities on the company level and company NACE classification⁷, it is a plausible result given the limited scope of EU Taxonomy eligible economic activities. **Four countries make up 54% of the total number of companies: France, Germany, Romania, and Italy.**

Table 3 Overview number of EU Taxonomy eligible companies by country and company size

Country	Large	Large %	Medium	Medium %	Small	Small %	Micro	Micro %	Total	Country %
Austria	146	5%	209	7%	1,283	44%	1,246	43%	2,884	0%
Belgium	431	3%	1,154	8%	3,238	21%	10,304	68%	15,127	1%
Bulgaria	132	0%	555	1%	4,599	10%	41,905	89%	47,191	4%
Croatia	87	0%	404	1%	3,208	12%	23,632	86%	27,331	3%
Cyprus	1	100%		0%		0%		0%	1	0%
Czech Republic	187	2%	476	4%	2,181	20%	8,298	74%	11,142	1%
Denmark	334	2%	619	4%	2,213	15%	11,800	79%	14,966	1%
Estonia	34	0%	155	1%	1,593	9%	16,358	90%	18,140	2%
Finland	350	1%	869	3%	5,012	18%	21,967	78%	28,198	3%
France	1,861	1%	5,830	4%	26,926	17%	121,469	78%	156,086	15%
Germany	2,828	2%	9,318	7%	61,081	46%	58,477	44%	131,704	12%
Greece	36	27%	21	16%	43	33%	31	24%	131	0%
Hungary	235	0%	747	1%	6,634	12%	49,604	87%	57,220	5%
Ireland	13	1%	50	3%	394	20%	1,498	77%	1,955	0%
Italy	1,083	1%	3,428	3%	27,976	26%	74,551	70%	107,038	10%
Latvia	45	0%	184	1%	1,846	11%	14,432	87%	16,507	2%
Lithuania	99	1%	373	2%	2,633	18%	11,819	79%	14,924	1%
Luxembourg	45	7%	70	10%	139	21%	417	62%	671	0%
Malta		0%		0%	1	10%	9	90%	10	0%
Netherlands	310	3%	546	6%	3,251	35%	5,106	55%	9,213	1%
Poland	625	3%	1,848	8%	6,621	28%	14,377	61%	23,471	2%
Portugal	240	0%	923	2%	7,688	13%	48,948	85%	57,799	5%
Romania	289	0%	1,174	1%	10,700	6%	158,071	93%	170,234	16%
Slovakia	118	0%	416	1%	3,336	11%	27,096	88%	30,966	3%
Slovenia	70	0%	299	1%	2,565	11%	20,928	88%	23,862	2%
Spain	532	1%	1,307	3%	11,577	23%	37,385	74%	50,801	5%
Sweden	335	1%	1,059	2%	6,775	15%	37,651	82%	45,820	4%
Total	10,466	1%	32,034	3%	203,513	19%	817,379	77%	1,063,392	100%

⁷ The database only assigns one NACE code per company. However, in reality a company could be active in multiple NACE codes. As the database only captures one NACE code, i.e., the primary activity a company is active in, there could be minor inconsistencies as a company deemed as non-eligible may have a small share of turnover that is eligible under the EU Taxonomy. Such inconsistencies are not captured in this study.

Table 4 Overview number of EU Taxonomy eligible companies by NACE sector and company size

Sector	Large	Large %	Medium	Medium %	Small	Small %	Micro	Micro %	Total	Sector %
F - Construction	2,553	1%	10,434	2%	88,525	20%	337,438	77%	438,950	41%
H - Transportation and storage	1,378	1%	5,330	2%	35,715	16%	182,085	81%	224,508	21%
M - Professional- scientific and technical activities	1,057	1%	3,900	3%	27,452	18%	122,516	79%	154,925	15%
C - Manufacturing	2,921	3%	6,583	7%	26,634	30%	52,350	59%	88,488	8%
D - Electricity- gas- steam and air conditioning supply	1,129	2%	1,657	4%	7,204	16%	36,013	78%	46,003	4%
N - Administrative and support service activities	264	1%	592	2%	3,308	10%	27,742	87%	31,906	3%
E - Water supply- sewerage- waste management and	906	3%	2,813	11%	8,883	34%	13,909	52%	26,511	2%
J - Information and communication	201	1%	535	2%	2,832	12%	20,388	85%	23,956	2%
A - Agriculture - forestry and fishing	53	0%	151	1%	2,482	11%	19,405	88%	22,091	2%
S - Other service activities		0%	19	0%	356	7%	4,473	92%	4,848	0%
L - Real estate activities	4	0%	20	2%	122	10%	1,060	88%	1,206	0%
Total	10,466	1%	32,034	3%	203,513	19%	817,379	77%	1,063,392	100%

- Variation of EU Taxonomy eligible SMEs across company sizes ranges from slightly below 20% (micro enterprises) to slightly above 20% (small and medium companies), a relatively homogeneous result.

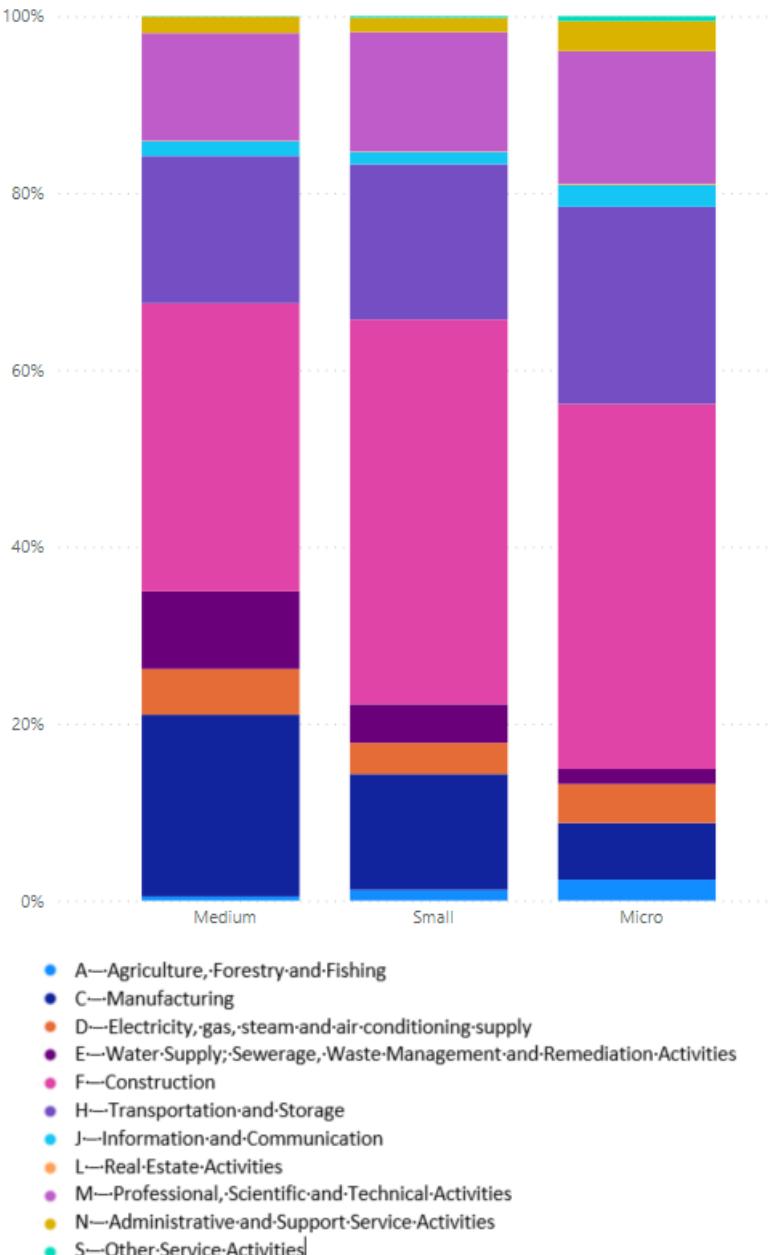
Table 5 Overview share of EU Taxonomy eligibility (Y/N) by company size

Taxonomy eligible	Large	Medium	Small	Micro	Total
No	81.88%	78.86%	78.17%	83.06%	82.17%
Yes	18.12%	21.14%	21.83%	16.94%	17.83%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

- The numbers confirm that the EU Taxonomy is only relevant for limited parts of the economy, at least with respect to eligible turnover. It should be noted that in some cases the NACE code does not reflect a company's primary activity⁸, e.g., GARDENA Deutschland GmbH classified as M70.1 (Activities of Head Offices), which among other products produces appliances for smart and energy efficient irrigation systems that could be EU Taxonomy eligible. The picture might also be different with respect to capital expenditures by SMEs as long as those capital expenditures would qualify as EU Taxonomy eligible.
- The distribution of sectoral EU Taxonomy eligible economic activities varies according to size class:
 - **Construction** has the largest relative share across all size classes with the exception of large companies. Particularly among small and micro enterprises the relative share is over 40%. One explanation might be the high number of small and micro enterprises working as subcontractors to larger construction companies.
 - **Transportation** and storage share is largest with small and micro enterprises, though still significant for medium-sized companies and the second largest relative share across all size classes.
 - **Professional, scientific and technical activities** are particularly important among small and micro enterprises. This can be attributed to a large number of smaller companies focused on service activities related to EU Taxonomy eligible activities.
 - **Manufacturing** has the second largest share with large and medium-sized companies and is still significant with small and micro companies. One explanation might be the vertical range of manufacturing across separate companies (relative long supply chains) in conjunction with a relative high asset base.

8 The database only captures one NACE code per company. As SMEs are not obliged to report information publicly, certain data inconsistencies are to be expected. Furthermore, national statistic bureaus and governmental institutions may use different industry classification logics than the NACE code system. The designation of economic activities in the taxonomy differs from the NACE classification. As the dataset is based on the NACE classification system the latter sector designations are used.

Figure 12 - Sector distribution of EU Taxonomy eligible economic activities by size class mapped to the NACE classification system



- In-depth analysis of sub-sectoral distribution in the **construction sector** shows significant relative shares of small and micro enterprises in construction of buildings, and in installations, both labour-intensive economic activities that require neither many assets nor a large enterprise size.

Table 6 Breakdown of construction related economic activities by company size class, number of companies

Sector	Large	Medium	Small	Micro	Total
F - Construction	2,553	10,434	88,525	337,438	438,950
F41.2.0 - Construction of residential and non-residential buildings	933	3,754	36,433	162,461	203,581
F43.2.2 - Plumbing- heat and air-conditioning installation	114	1,066	16,324	55,404	72,908
F43.2.1 - Electrical installation	245	1,266	14,745	55,447	71,703
F41.1.0 - Development of building projects	405	1,354	8,055	42,899	52,713
F42.1.1 - Construction of roads and motorways	353	1,201	4,489	6,014	12,057
F42.9.9 - Construction of other civil engineering projects n.e.c.	80	360	2,090	5,866	8,396
F42.2.1 - Construction of utility projects for fluids	84	500	2,369	3,307	6,260
F42.2.2 - Construction of utility projects for electricity and telecommunications	116	392	1,428	2,714	4,650
F41 - Construction of buildings	20	83	870	1,122	2,095
F42.9.1 - Construction of water projects	46	104	468	955	1,573
F42 - Civil engineering	15	113	643	296	1,067
F42.1.2 - Construction of railways and underground railways	89	166	336	469	1,060
F42.1.3 - Construction of bridges and tunnels	52	75	255	372	754
F43 - Specialised construction activities	1		20	112	133

- In **transport**, freight transport accounts for about two-thirds of all SMEs across all size classes. Taxi transport has a significant relative share with micro enterprises (21%).

Table 7 Breakdown of transport related economic activities by company size class, number of companies

Sector	Large	Medium	Small	Micro	Total
H - Transportation and storage	1,378	5,330	35,715	182,085	224,508
H49.4.1 - Freight transport by road	446	3,269	26,983	109,432	140,130
H49.3.2 - Taxi operation	5	29	915	38,227	39,176
H49.3.9 - Other passenger land transport n.e.c.	94	572	2,508	12,642	15,816
H53.2.0 - Other postal and courier activities	47	119	891	7,078	8,135
H52.2.1 - Service activities incidental to land transportation	150	283	1,518	5,948	7,899
H49.3.1 - Urban and suburban passenger land transport	257	493	1,141	2,807	4,698
H52.2.2 - Service activities incidental to water transportation	65	177	618	1,678	2,538
H50.1.0 - Sea and coastal passenger water transport	29	36	136	1,496	1,697
H50.2.0 - Sea and coastal freight water transport	85	151	441	986	1,663
H50.3.0 - Inland passenger water transport	4	22	117	717	860
H50.4.0 - Inland freight water transport	8	26	141	634	809
H49.2.0 - Freight rail transport	64	90	138	143	435
H53.1.0 - Postal activities under universal service obligation	29	14	115	200	358
H49.1.0 - Passenger rail transport- interurban	46	33	35	52	166
H49.5.0 - Transport via pipeline	49	16	18	45	128

- Within the **professional, scientific and technical activities**, the most important economic activity is engineering activities and related technical consultancy, which is mainly carried out by small and micro enterprises.

Table 8 Breakdown of professional-, scientific and technical activities by company size class, number of companies

Sector	Large	Medium	Small	Micro	Total
M - Professional- scientific and technical activities	1,057	3,900	27,452	122,516	154,925
M71.1.2 - Engineering activities and related technical consultancy	876	3,188	23,001	102,791	129,856
M71.2.0 - Technical testing and analysis	127	530	3,315	17,082	21,054
M71.1 - Architectural and engineering activities and related technical consultancy	10	76	758	2,190	3,034
M72.1 - Research and experimental development on natural sciences and engine	44	104	366	441	955
M71 - Architectural and engineering activities- technical testing and analysis			2	12	26

- In-depth analysis of sub-sectoral distribution in the **manufacturing sector** shows significant relative shares of SMEs in manufacturing of metal structures, and metal related economic activities, both rather asset-intensive economic activities.

Table 9 Breakdown of manufacturing related economic activities by company size class, number of companies

Sector	Large	Medium	Small	Micro	Total
C - Manufacturing	2,921	6,583	26,634	52,350	88,488
C25.1.1 - Manufacture of metal structures and parts of structures	206	1,364	8,056	13,000	22,626
C33.1.2 - Repair of machinery	54	306	3,523	13,478	17,361
C16.2.3 - Manufacture of other builders' carpentry and joinery	83	408	3,285	8,740	12,516
C23.6.1 - Manufacture of concrete products for construction purposes	105	477	1,422	2,294	4,298
C33.1.5 - Repair and maintenance of ships and boats	19	78	665	2,741	3,503
C27.4.0 - Manufacture of electric lighting equipment	74	214	721	1,335	2,344
C25.9.3 - Manufacture of wire products- chain and springs	53	244	732	685	1,714
C28 - Manufacture of machinery and equipment n.e.c.	54	162	855	536	1,607
C20.1.6 - Manufacture of plastics in primary forms	164	236	411	397	1,208
C33.1.7 - Repair and maintenance of other transport equipment	19	63	289	809	1,180
C28.1.4 - Manufacture of other taps and valves	133	266	487	260	1,146
C25.2.9 - Manufacture of other tanks- reservoirs and containers of metal	13	154	541	416	1,124
C28.1.3 - Manufacture of other pumps and compressors	114	180	426	393	1,113
C29.1.0 - Manufacture of motor vehicles	156	89	231	600	1,076
C24.1.0 - Manufacture of basic iron and steel and of ferro-alloys	170	98	246	553	1,067
C28.1.2 - Manufacture of fluid power equipment	60	118	426	435	1,039
C20.1.4 - Manufacture of other organic basic chemicals	140	132	199	395	866
C27.5.1 - Manufacture of electric domestic appliances	89	95	225	405	814
C24.2.0 - Manufacture of tubes- of steel	70	157	293	251	771
C27.3.2 - Manufacture of other electronic and electric wires and cables	100	145	272	216	733
C24.5.3 - Casting of light metals	46	130	294	236	706
C20.1.5 - Manufacture of fertilisers and nitrogen compounds	59	87	190	369	705
C28.1.1 - Manufacture of engines and turbines- vehicle and cycle engines	72	80	207	345	704
C24.4.2 - Aluminium production	144	112	176	176	608
C23.3.2 - Manufacture of bricks- in baked clay	30	83	177	298	588
C24.3.3 - Cold forming or folding	23	100	216	236	575
C25.2.1 - Manufacture of central heating radiators and boilers	32	57	164	320	573
C27.3.3 - Manufacture of wiring devices	30	70	225	220	545
C20.1.3 - Manufacture of other inorganic basic chemicals	82	101	141	189	513
C24.5.1 - Casting of iron	49	129	187	144	509
C25 - Manufacture of fabricated metal products- except machinery and equipment	8	36	214	246	504
C23.3.1 - Manufacture of ceramic tiles and flags	50	63	86	222	421
C30.2.0 - Manufacture of railway locomotives and rolling stock	78	79	120	137	414
C23.2.0 - Manufacture of refractory products	24	50	127	129	330
C20.1.1 - Manufacture of industrial gases	55	56	87	109	307
C27.2.0 - Manufacture of batteries and accumulators	45	44	90	107	286
C24.3.4 - Cold drawing of wire	33	78	96	30	237
C23.1.1 - Manufacture of flat glass	28	19	37	152	236
C22 - Manufacture of rubber and plastic products	10	26	58	118	212
C24.5.2 - Casting of steel	20	68	74	50	212
C16 - Manufacture of wood and of products of wood and cork- manufacture of articles of st	5	30	171	206	
C23.5.1 - Manufacture of cement	66	24	26	45	161
C27 - Manufacture of electrical equipment	5	15	76	52	148
C26 - Manufacture of computer- electronic and optical products	9	15	56	67	147
C24.3.2 - Cold rolling of narrow strip	17	15	42	35	109
C27.3.1 - Manufacture of fibre optic cables	8	12	23	33	76
C23 - Manufacture of other non-metallic mineral products	1	3	23	46	73
C30.1 - Building of ships and boats		1	18	51	70
C24.3.1 - Cold drawing of bars	10	15	22	15	62
C23.4.3 - Manufacture of ceramic insulators and insulating fittings	4	17	16	22	59
C17 - Manufacture of paper and paper products	4	3	12	27	46
C30.9 - Manufacture of transport equipment n.e.c.	3	4	19	14	40

3.2.2. Group B – SMEs affected by financial intermediaries

SMEs use external financing in addition to retained earnings for financing primarily fixed investments (ca. 40%), and inventories and working capital (ca. 37.5%)⁹.

To find out how SMEs are affected by financial intermediaries' requests alongside financing activities¹⁰, the **capital intensity ratio** (CIR, total fixed assets divided by turnover) was used as proxy, building on the working hypothesis that **a relatively high CIR reflects a higher likelihood of (external) bank financing, need for transition finance**, and thus requests by financial institutions to report EU Taxonomy-related data.

To benchmark against a CIR, the median CIR of large, medium and small companies guided the selection of the threshold for filtering out capital intensive companies. CIRs across those sized classes are quite similar, concluding that they underpin a plausible working hypothesis as being largely representative for the economy. The relatively higher CIR median with micro enterprises should be interpreted more carefully due to the significance of outliers (cf. high CIR average with micro enterprises). By using the median, outliers are largely eliminated compared to the CIR average that is distorted by a relative low number of companies with extreme ratios.

Table 10 - CIR median and CIR average by size class

Table	Large	Medium	Small	Micro
CIR median	0.76	0.73	0.72	0.93
CIR average	2.79	12.14	11.62	4,081.34

Key results:

- A total of 2.6m (44%) SMEs out 5.9m total companies have a CIR equal to or above the threshold of 0.76¹¹. Three countries account for 45% of the total number of companies: France, Romania, and Italy. Compared to Group A, Germany, has a very low share because of lacking available total fixed asset data across SME companies. In all size classes, except large companies, the number of German companies is, in certain parts, significantly below the number of French, Romanian, and Italian companies.

9 ECB, June 1st, 2022: [Survey on the access to finance of enterprises \(SAFE\)](#), page 19, chart 6.

10 It is suggested by EBA in its [Final Report of the Final draft implementing technical standards on prudential disclosures on ESG risks in accordance with Article 449a CRR](#) that „institutions [to] replicate the GAR as defined in the COM DA and to disclose extended information on the level of Taxonomy alignment of exposures towards non-financial corporates not subject to NFRD disclosure obligations, for the calculation of an ‘BTAR’., page 9, number 8.c.

11 The median of 0.76 was chosen as the threshold, representing the completest data set (large enterprises) in the absence of a better approach. The median across large, medium and small enterprises is largely homogenous. The median for micro enterprises should be taken with a grain of salt (see explanation in the text).

Table 11 Overview number of companies with a high CIR by country and company size

Country	Large	Large%	Medium	Medium%	Small	Small%	Micro	Micro%	Total	Country%
Austria	290	14%	262	12%	913	43%	676	32%	2,141	0%
Belgium	989	8%	2,542	19%	4,422	34%	5,110	39%	13,063	0%
Bulgaria	334	0%	1,618	1%	12,569	7%	167,580	92%	182,101	7%
Croatia	234	0%	882	2%	5,814	11%	47,850	87%	54,780	2%
Cyprus	2	14%	2	14%	5	36%	5	36%	14	0%
Czech Republic	350	1%	822	3%	3,083	11%	23,381	85%	27,636	1%
Denmark	1,052	10%	840	8%	1,455	13%	7,567	69%	10,914	0%
Estonia	67	0%	307	1%	2,564	5%	52,228	95%	55,166	2%
Finland	740	1%	1,468	2%	7,267	12%	52,417	85%	61,892	2%
France	5,760	1%	12,366	3%	67,718	14%	401,420	82%	487,264	19%
Germany	7,158	11%	6,657	11%	28,306	45%	21,032	33%	63,153	2%
Greece	117	23%	139	28%	160	32%	87	17%	503	0%
Hungary	422	0%	1,840	1%	13,963	8%	168,615	91%	184,840	7%
Ireland	178	6%	408	13%	771	24%	1,848	58%	3,205	0%
Italy	3,866	1%	12,042	4%	79,464	23%	244,322	72%	339,694	13%
Latvia	89	0%	353	1%	2,689	8%	29,710	90%	32,841	1%
Lithuania	213	1%	714	2%	3,603	11%	28,774	86%	33,304	1%
Luxembourg	150	2%	307	5%	1,782	27%	4,407	66%	6,646	0%
Malta	3	3%	4	4%	21	21%	72	72%	100	0%
Netherlands	1,095	70%	334	21%	82	5%	48	3%	1,559	0%
Poland	1,340	3%	3,253	6%	9,946	19%	37,726	72%	52,265	2%
Portugal	663	0%	3,228	2%	26,099	12%	179,985	86%	209,975	8%
Romania	519	0%	2,238	1%	19,246	6%	309,717	93%	331,720	13%
Slovakia	231	0%	894	1%	6,951	6%	99,719	93%	107,795	4%
Slovenia	196	0%	673	1%	4,257	9%	44,863	90%	49,989	2%
Spain	1,495	1%	3,457	2%	30,371	18%	134,090	79%	169,413	6%
Sweden	970	1%	2,015	1%	11,507	8%	132,547	90%	147,039	6%
Total	28,523	1%	59,665	2%	345,028	13%	2,195,796	84%	2,629,012	100%

- On average, medium- and small sized companies are slightly less capital intense than large companies.¹² Micro enterprises seem to be an outlier; working hypothesis is that the data is distorted because of capital intense holding companies that qualify as micro enterprises what is confirmed by their very high average CIR ratio.

Table 12 Overview share of companies with a high CIR (Y/N) by company size

CIR above 0.76	Large	Medium	Small	Micro	Total
No	51%	61%	63%	54%	56%
Yes	49%	39%	37%	46%	44%
Total	100%	100%	100%	100%	100%

- The sectoral distribution of companies across sectors varies according to size class:
 - Manufacturing has the largest relative share in all size classes but micro enterprises, as can be expected, due to machinery required for the production process.
 - Relatively high shares can also be observed in wholesale and retail trade as well as in professional, scientific and technical activities.
 - Construction still comes with a significant share, however less dominant.
 - Compared to a CIR average-based approach with a relatively high threshold that is dominated by real estate and financial services (cf. Figure 13 below), a CIR median-based approach seems to be a more balanced reflection of capital intensity across the economy.

12 This is in principle supported by the findings of the ECB Survey on the access to finance of enterprises (SAFE), page 20, chart 7. Source: See above.

Figure 13 - Sector distribution of capital-intensive companies by size class, median-based approach with threshold at 0.76

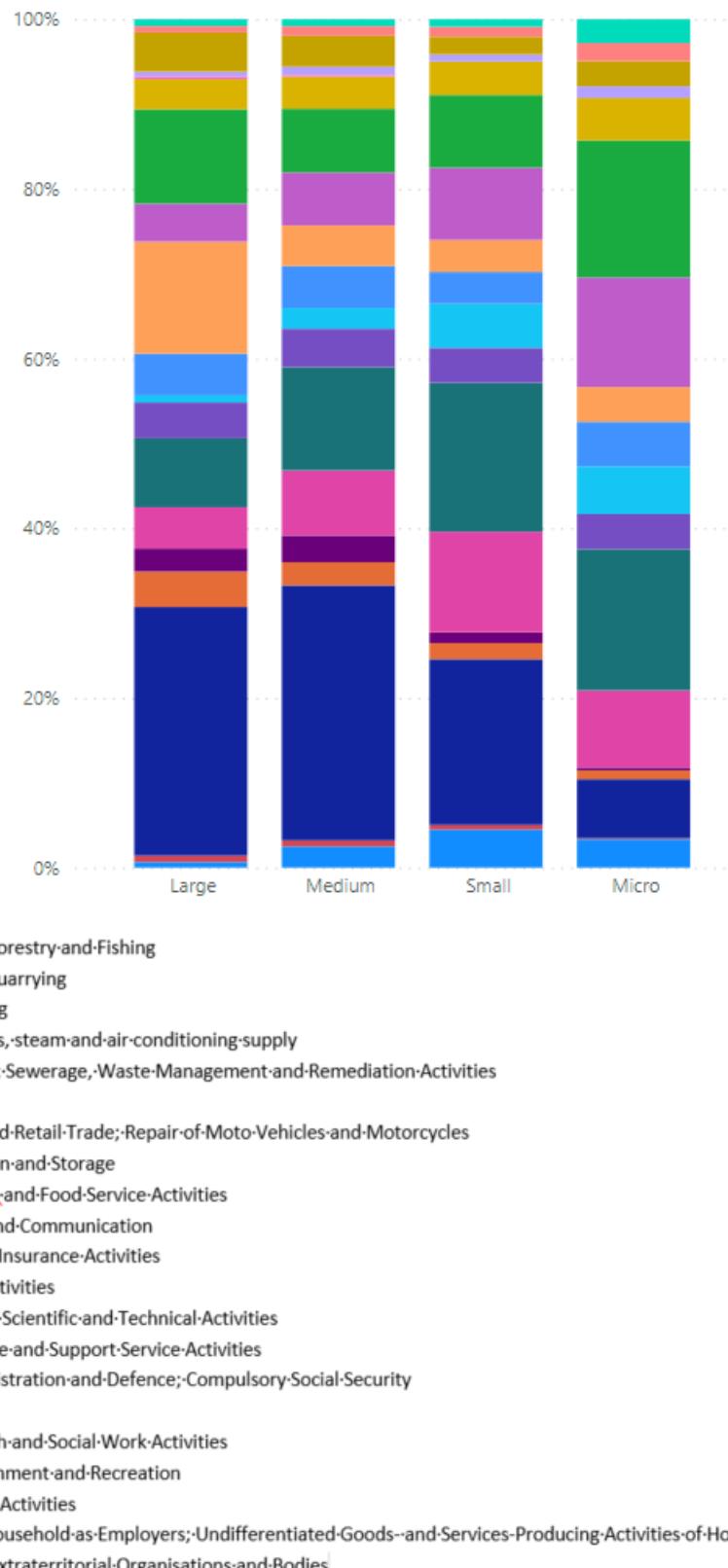
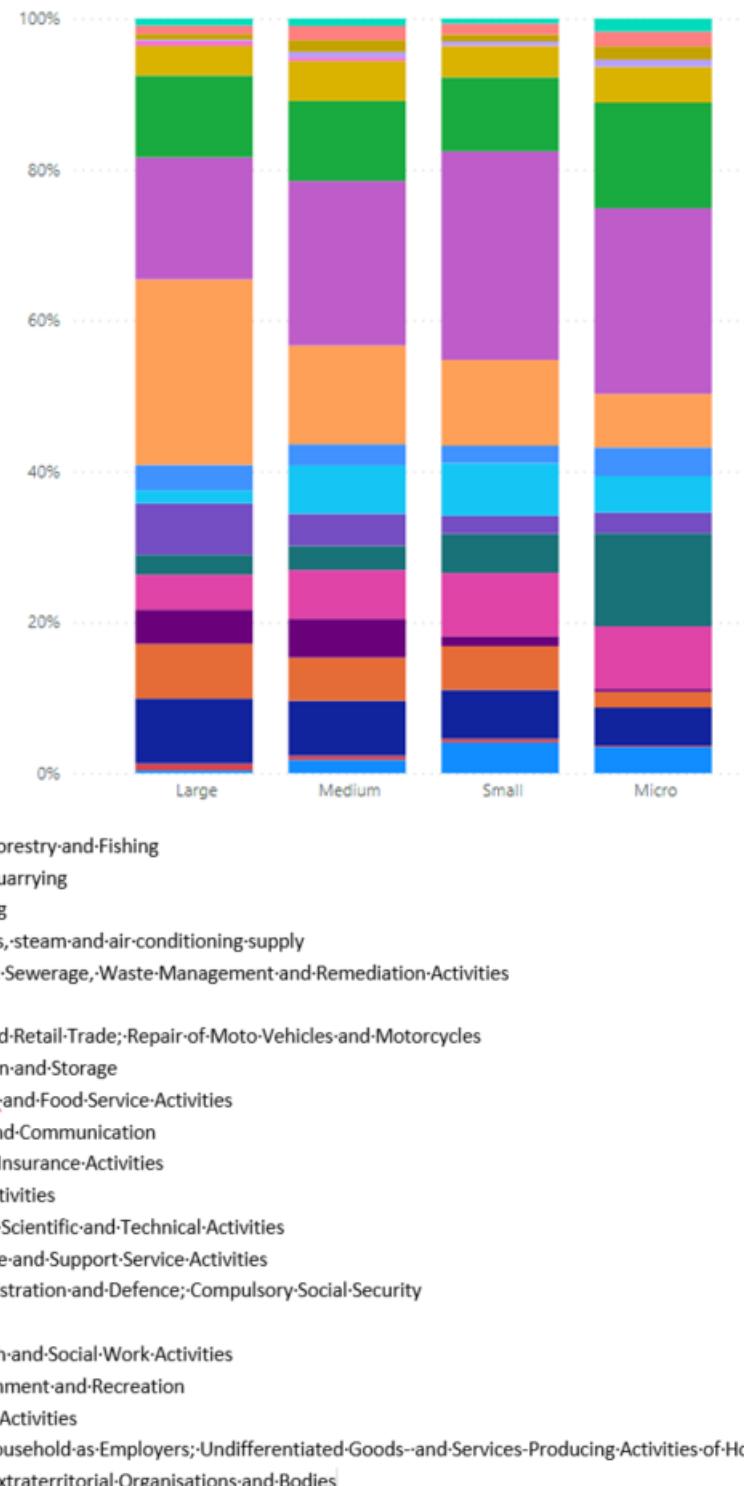


Figure 14 - Sector distribution of capital-intensive companies by size class, average-based approach with threshold at 2.79



- In-depth analysis of sub-sectoral distribution in the manufacturing sector shows again significant relative shares of SMEs in machining, and metal related economic activities, both rather asset-intensive economic activities. However, a number of other manufacturing sub-sectors follow close.

Table 13 Breakdown of manufacturing related economic activities by company size class, number of companies (excerpt)

Sector	Large	Medium	Small	Micro	Total
C - Manufacturing	8,338	17,888	67,326	152,255	245,807
C25.6.2 - Machining	81	563	4,811	7,812	13,267
C25.1.1 - Manufacture of metal structures and parts of structures	113	584	3,153	5,614	9,464
C18.1.2 - Other printing	49	285	1,698	6,137	8,169
C31.0.9 - Manufacture of other furniture	65	239	1,429	5,808	7,541
C33.1.2 - Repair of machinery	21	110	1,313	5,755	7,199
C14.1.3 - Manufacture of other outerwear	41	159	1,102	5,044	6,346
C10.7.1 - Manufacture of bread-	38	110	1,007	4,835	5,990
C25.9.9 - Manufacture of other fabricated metal products n.e.c.	71	334	1,810	3,773	5,988
C16.1.0 - Sawmilling and planing of wood	47	184	1,099	3,923	5,253
C32.5.0 - Manufacture of medical and dental instruments and supplies	114	248	839	4,045	5,246
C16.2.3 - Manufacture of other builders' carpentry and joinery	28	108	1,093	3,775	5,004
C25.1.2 - Manufacture of doors and windows of metal	22	115	1,192	3,331	4,660
C33.2.0 - Installation of industrial machinery and equipment	68	227	1,185	3,059	4,539
C22.2.9 - Manufacture of other plastic products	135	456	1,579	2,134	4,304
C16.2.9 - Manufacture of other products of wood-straw and plaiting mate	13	79	562	3,209	3,863
C23.7.0 - Cutting, shaping and finishing of stone	8	76	863	2,859	3,806
C25.6.1 - Treatment and coating of metals	43	246	1,526	1,893	3,708
C25.7.3 - Manufacture of tools	46	278	1,514	1,437	3,275
C11.0.2 - Manufacture of wine from grape	54	187	872	2,061	3,174
C28.2.9 - Manufacture of other general-purpose machinery n.e.c.	138	364	1,276	1,365	3,143
C32.9.9 - Other manufacturing n.e.c.	33	104	495	2,237	2,869
C15.2.0 - Manufacture of footwear	44	152	882	1,705	2,783
C18.1.3 - Pre-press and pre-media services		21	330	2,430	2,781
C14.1.9 - Manufacture of other wearing apparel and accessories	15	50	352	2,145	2,562
C28.9.9 - Manufacture of other special-purpose machinery n.e.c.	106	264	887	1,227	2,484
C31.0.1 - Manufacture of office and shop furniture	26	94	548	1,540	2,208
C13.9.2 - Manufacture of made-up textile articles-	25	96	511	1,575	2,207
C32.1.2 - Manufacture of jewellery and related articles	10	49	319	1,766	2,144
C27.9.0 - Manufacture of other electrical equipment	97	193	711	1,031	2,032
C22.2.3 - Manufacture of builders' ware of plastic	38	123	466	1,400	2,027

- In-depth analysis of sub-sectoral distribution in the **wholesale and retail trade sector** shows significant relative shares of SMEs in motor vehicles maintenance and repair, as well as in clothing and other retail sales, typical SME sectors dominated by micro enterprises.

Table 14 Breakdown of manufacturing related economic activities by company size class, number of companies (excerpt)

Sector	Large	Medium	Small	Micro	Total
G - Wholesale and retail trade - repair of motor vehicles and motorcycles	2,309	7,249	60,435	364,190	434,183
G45.2.0 - Maintenance and repair of motor vehicles	19	102	3,002	28,141	31,264
G47.7.1 - Retail sale of clothing in specialised stores	94	218	1,796	20,533	22,641
G46.9.0 - Non-specialised wholesale trade	65	327	2,891	18,599	21,882
G47.7.8 - Other retail sale of new goods in specialised stores	28	90	1,971	19,775	21,864
G47.1.1 - Retail sale in non-specialised stores with food- beverages or tobacco	58	115	883	18,081	19,137
G47.9.1 - Retail sale via mail order houses or via Internet	24	62	433	16,071	16,590
G47.1.9 - Other retail sale in non-specialised stores	24	56	868	14,638	15,586
G46.1.9 - Agents involved in the sale of a variety of goods	29	66	873	13,821	14,789
G45.1.1 - Sale of cars and light motor vehicles	36	203	1,497	12,323	14,059
G46.7.3 - Wholesale of wood- construction materials and sanitary equipment	89	372	3,430	9,427	13,318
G46.6.9 - Wholesale of other machinery and equipment	169	579	3,482	7,750	11,980
G47.5.9 - Retail sale of furniture- lighting equipment and other household articles	35	78	1,547	8,607	10,267
G46.4.9 - Wholesale of other household goods	69	274	1,706	7,051	9,100
G47.9.9 - Other retail sale not in stores- stalls or markets	8	42	426	8,554	9,030
G47.5.2 - Retail sale of hardware- paints and glass in specialised stores	20	93	1,954	6,883	8,950
G46.4.2 - Wholesale of clothing and footwear	75	208	1,308	6,534	8,125
G45.3.2 - Retail trade of motor vehicle parts and accessories	6	44	979	6,574	7,603
G46.1.8 - Agents specialised in the sale of other particular products	16	47	601	5,372	6,036
G46.4.6 - Wholesale of pharmaceutical goods	231	404	1,491	3,636	5,762
G47.7.7 - Retail sale of watches and jewellery in specialised stores	23	73	661	5,003	5,760
G47.7.3 - Dispensing chemist in specialised stores	10	65	3,185	2,096	5,356
G46.3.4 - Wholesale of beverages	56	241	1,030	3,986	5,313
G47.7.2 - Retail sale of footwear and leather goods in specialised stores	27	71	532	4,594	5,224
G46.7.4 - Wholesale of hardware- plumbing and heating equipment and supplies	58	264	1,598	2,768	4,688
G47.6.4 - Retail sale of sporting equipment in specialised stores	12	35	572	3,997	4,616
G47.7.6 - Retail sale of flowers- pet animals and pet food in specialised stores	8	17	291	3,976	4,292
G45.3.1 - Wholesale trade of motor vehicle parts and accessories	55	182	922	3,023	4,182
G46.4.1 - Wholesale of textiles	20	82	824	2,787	3,713
G47.5.1 - Retail sale of textiles in specialised stores	5	19	209	3,427	3,660
G47.4.1 - Retail sale of computers- peripheral units and software in specialised stores	6	24	289	3,196	3,515
G46.3.9 - Non-specialised wholesale of food- beverages and tobacco	32	102	642	2,668	3,444
G47.7.9 - Retail sale of second-hand goods in stores		22	209	3,191	3,422
G47.7.5 - Retail sale of cosmetic and toilet articles in specialised stores	14	27	306	3,034	3,381
G46.7.5 - Wholesale of chemical products	99	224	914	2,139	3,376
G47.2.9 - Other retail sale of food in specialised stores	4	11	176	3,149	3,340
G46.4.5 - Wholesale of perfume and cosmetics	27	97	530	2,656	3,310
G46.3.8 - Wholesale of other food- crustaceans and molluscs	42	107	723	2,353	3,225
G46.3.1 - Wholesale of fruit and vegetables	26	127	749	2,283	3,185
G46.2.1 - Wholesale of grain- seeds and animal feeds	49	152	717	2,151	3,069
G46.5.1 - Wholesale of computers- computer peripheral equipment and software	43	89	611	2,253	2,996
G47.6.2 - Retail sale of newspapers and stationery in specialised stores	2	11	146	2,795	2,954
G47.7.4 - Retail sale of medical and orthopaedic goods in specialised stores	14	28	450	2,454	2,946
G46.5.2 - Wholesale of electronic and telecommunications equipment and supplies	40	110	656	2,005	2,811
G46.4.3 - Wholesale of electrical household appliances	39	137	623	2,005	2,804
G46.4.7 - Wholesale of furniture- carpets and lighting equipment	22	84	614	1,953	2,673
G46.6.1 - Wholesale of agricultural machinery- equipment and supplies	26	114	789	1,737	2,666
G46.1.4 - Agents involved in the sale of machinery- ships and aircraft	12	55	500	2,070	2,637
G46.1.7 - Agents involved in the sale of food- beverages and tobacco	8	24	224	2,301	2,557
G47.3.0 - Retail sale of automotive fuel in specialised stores	10	38	543	1,844	2,435
G46.1.6 - Agents involved in the sale of textiles- footwear and leather goods	2	9	168	2,211	2,390
G47.5.4 - Retail sale of electrical household appliances in specialised stores	1	12	260	2,017	2,290
G46.7.2 - Wholesale of metals and metal ores	71	224	780	1,145	2,220
G46.1.3 - Agents involved in the sale of timber and building materials	4	13	197	1,956	2,170

- In-depth analysis of sub-sectoral distribution in the **professional, scientific and technical activities sector** shows significant relative shares of SMEs in various consultancy activities, a sector largely dominated by micro enterprises.

Table 15 Breakdown of professional, scientific and technical activities related economic activities by company size class, number of companies (excerpt)

Sector	Large	Medium	Small	Micro	Total
M - Professional- scientific and technical activities	3,168	4,478	29,537	353,628	390,811
M70.2.2 - Business and other management consultancy activities	363	737	5,880	106,099	113,079
M69.2.0 - Accounting- tax consultancy	102	256	3,202	55,939	59,499
M71.1.2 - Engineering activities and related technical consultancy	471	1,073	6,725	50,714	58,983
M74.9.0 - Other professional- scientific and technical activities n.e.c.	117	200	1,671	23,202	25,190
M73.1.1 - Advertising agencies	47	159	1,577	21,260	23,043
M70.1.0 - Activities of head offices	1,660	946	3,068	15,988	21,662
M71.1.1 - Architectural activities	18	77	1,225	16,516	17,836
M74.1.0 - Specialised design activities	5	29	499	10,028	10,561
M69.1.0 - Legal activities	26	80	981	9,173	10,260
M71.2.0 - Technical testing and analysis	65	197	1,271	8,313	9,846
M72.1.9 - Other research and experimental development on natural sciences	144	320	1,052	5,488	7,004
M74.2.0 - Photographic activities	3	6	104	6,703	6,816
M70.2.1 - Public relations and communication activities	6	37	334	5,389	5,766
M74.3.0 - Translation and interpretation activities	3	9	86	4,166	4,264
M73.2.0 - Market research and public opinion polling	20	52	330	3,186	3,588
M75.0.0 - Veterinary activities	2	18	224	3,253	3,497
M73.1.2 - Media representation	21	70	296	2,277	2,664
M72.1.1 - Research and experimental development on biotechnology	31	87	300	1,220	1,638
M71.1 - Architectural and engineering activities and related technical consu	5	43	315	1,184	1,547
M74 - Other professional- scientific and technical activities	1	4	63	1,188	1,256
M72.2.0 - Research and experimental development on social sciences and h	8	12	65	1,096	1,181

The results could be interpreted as suggesting that **capital intensity is not a particularly good explanatory factor** with respect to sectoral focus areas of SMEs. Also, the sector distribution deviates little from the population. The explanatory power is also limited by the restricted data situation in some countries. SMEs may still seek external financing for various reasons, e.g., renovation of premises, regardless of the CIR. Further in-depth analyses would be required to assess, e.g., investment gaps in light of challenges with respect to data availability and confidentiality.

3.2.3. Group C – SMEs affected by supply chain

To find out how SMEs are affected due to being **suppliers of NFRD-companies** that must report according to the EU Taxonomy, a qualitative desk research of industry reports, market outlooks, regulations, and sectoral sustainability commitments was conducted with the aim to understand the structure of and to identify relevant supply chain clusters in three steps (see **Error! Reference source not found.**)

Step 1

The sectors and economic activities covered in the Climate Delegated Act's Annex I¹³ were first clustered based on **supply chain similarities**, e.g., in the chemical sector, and then assessed whether to be included in an in-depth supply chain analysis. This was done by qualitative analysis of industry reports on each cluster of sectors or economic activities.¹⁴ The objective was to better understand if SMEs play a role in the supply chain of each respective cluster.

Three (sub-)sectors have been identified according to their importance of having SMEs in their supply chains, for details cf. Annex 2:

- manufacturing of low carbon technologies
- water supply and sewage
- construction and real estate

13 [Climate Delegated Act Annex I](#)

14 Cf. Annex 2.

Step 2

The identified relevant sectors formed the basis for further in-depth research on SMEs embedded in the above sectors' supply chains. The **qualitative assessment** followed a standardised structure starting with analysing the annual reports of the largest companies in each of the three sectors as identified in the company data set. This allowed us to understand what materials and products each large company procures. Additionally, industry reports offered more insight in each of the sector's supply chains. This qualitative desk research concluded with the **identification of relevant NACE codes that are supplying each of these sectors**. The results of the qualitative assessment, including identified NACE codes, background information, and sources, can be found in **Error! Reference source not found..**

Step 3

These NACE Codes were subsequently applied as filter criteria to the company data set. The **quantitative analysis** focused on understanding the distribution of companies by size within each of the relevant NACE Codes. This allowed an analyse of the impact of supply chains for medium, small, and micro enterprises respectively.

Key results:

- A total of 0.92m (19%) out 5.9m companies could be affected by supply chains in the three (sub-)sectors mentioned above. The four largest countries account for 54% of the total number of companies: Germany, France, Romania, and Italy.

Table 16 Overview number of companies potentially part of identified supply chains by country and company size

Country	Large	Large% Medium	Medium% Small	Small% Micro	Micro% Total	Total	Country%			
Austria	207	7%	263	9%	1,319	44%	1,188	40%	2,977	0%
Belgium	505	4%	1,200	9%	2,877	20%	9,463	67%	14,045	2%
Bulgaria	187	1%	678	2%	4,517	14%	27,551	84%	32,933	4%
Croatia	102	0%	428	2%	2,965	14%	18,028	84%	21,523	2%
Cyprus	1	50%	1	50%		0%		0%	2	0%
Czech Republic	339	4%	622	7%	2,141	23%	6,049	66%	9,151	1%
Denmark	402	3%	691	5%	2,493	16%	11,582	76%	15,168	2%
Estonia	43	0%	218	2%	1,469	11%	12,182	88%	13,912	1%
Finland	464	2%	1,169	5%	4,678	20%	17,396	73%	23,707	3%
France	2,287	2%	7,122	5%	29,814	21%	101,833	72%	141,056	15%
Germany	4,546	3%	12,862	9%	68,360	47%	60,603	41%	146,371	16%
Greece	42	25%	35	21%	54	32%	36	22%	167	0%
Hungary	317	1%	952	2%	6,897	14%	41,068	83%	49,234	5%
Ireland	14	1%	67	3%	407	21%	1,483	75%	1,971	0%
Italy	1,796	2%	5,583	5%	36,682	33%	66,868	60%	110,929	12%
Latvia	56	0%	187	2%	1,472	13%	9,598	85%	11,313	1%
Lithuania	76	1%	342	3%	2,093	19%	8,405	77%	10,916	1%
Luxembourg	34	6%	41	8%	126	24%	328	62%	529	0%
Malta		0%		0%		0%	2	100%	2	0%
Netherlands	341	3%	586	6%	3,581	36%	5,539	55%	10,047	1%
Poland	805	4%	1,916	9%	6,412	30%	12,526	58%	21,659	2%
Portugal	257	1%	1,174	2%	8,780	18%	38,011	79%	48,222	5%
Romania	360	0%	1,294	1%	9,080	9%	94,905	90%	105,639	11%
Slovakia	235	1%	605	2%	3,500	12%	25,810	86%	30,150	3%
Slovenia	110	1%	400	2%	2,606	13%	17,391	85%	20,507	2%
Spain	605	1%	1,482	3%	12,050	25%	34,893	71%	49,030	5%
Sweden	390	1%	1,279	3%	6,508	16%	31,513	79%	39,690	4%
Total	14,521	2%	41,197	4%	220,881	24%	654,251	70%	930,850	100%

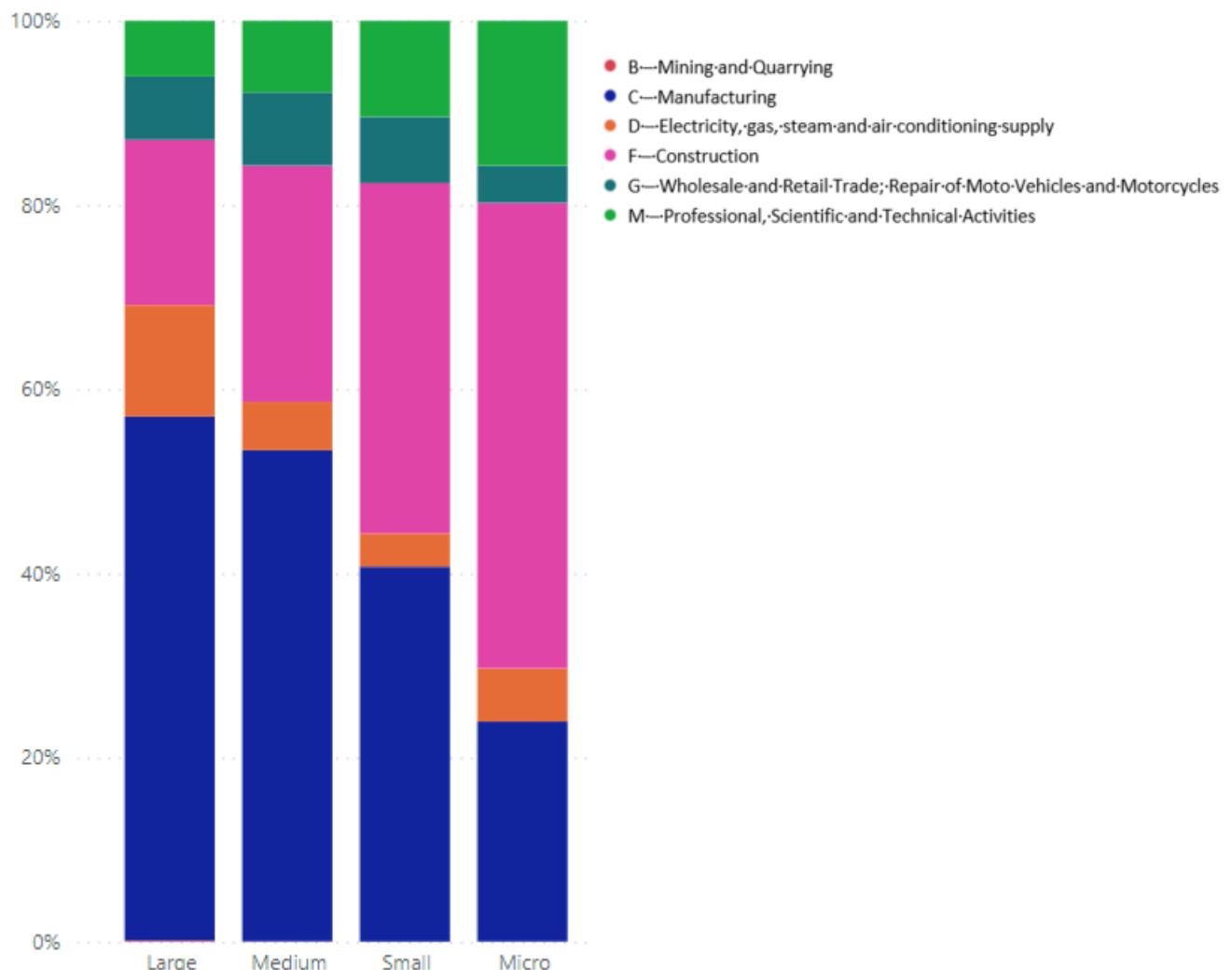
- Large, medium-, and small-sized companies are similarly likely to be part of supply chains as identified above (approximately 25%). The data shows that micro enterprises are to a lesser extent likely to be embedded in supply chains (14%); working hypothesis is that micro enterprises work to a lesser extent in complex (sub-)sectors with high vertical disintegration that are in focus in this analysis.

Table 17 Overview share of companies potentially part of identified supply chains (Y/N) by company size

Embedded in Supply Chain	Large	Medium	Small	Micro	Total
Yes	25%	27%	24%	14%	16%
No	75%	73%	76%	86%	84%
Total	100%	100%	100%	100%	100%

- The sectoral distribution of supply chain relevant companies varies according to size class:
 - Manufacturing** is dominant in the large and medium sized brackets, while construction, and electricity, gas, steam, and air-conditioning supply have a lower relative share.
 - Conversely, small and micro enterprises have a significantly higher share in **construction**, and in **professional, scientific and technical activities**.

Figure 15 Sector distribution of companies affected by their supply chain by size class



- In-depth analysis of sub-sectoral distribution in the **manufacturing sector** shows again significant relative shares of SMEs in machining, and metal related economic activities.

Table 18 Breakdown of manufacturing related economic activities relevant for supply chains of SMEs by company size class, number of companies (excerpt)

Sector	Large	Medium	Small	Micro	Total
C - Manufacturing	8,262	21,976	89,932	156,309	276,479
C25.6.2 - Machining	123	1,057	10,089	16,557	27,826
C25.1.1 - Manufacture of metal structures and parts of structures	206	1,364	8,056	13,000	22,626
C32.5.0 - Manufacture of medical and dental instruments and supplies	172	522	3,013	9,926	13,633
C16.2.3 - Manufacture of other builders' carpentry and joinery	83	408	3,285	8,740	12,516
C25.9.9 - Manufacture of other fabricated metal products n.e.c.	124	739	3,600	7,532	11,995
C16.1.0 - Sawmilling and planing of wood	106	372	2,313	8,087	10,878
C25.1.2 - Manufacture of doors and windows of metal	58	304	2,728	6,844	9,934
C25.6.1 - Treatment and coating of metals	73	522	3,281	4,007	7,883
C16.2.9 - Manufacture of other products of wood-straw and plaiting mate	33	144	1,093	5,971	7,241
C23.7.0 - Cutting- shaping and finishing of stone	8	108	1,443	5,278	6,837
C28.2.9 - Manufacture of other general-purpose machinery n.e.c.	233	741	2,644	2,832	6,450
C25.7.3 - Manufacture of tools	94	530	2,975	2,704	6,303
C32.9.9 - Other manufacturing n.e.c.	59	240	1,190	4,753	6,242
C28.9.9 - Manufacture of other special-purpose machinery n.e.c.	215	706	2,123	2,657	5,701
C26.5.1 - Manufacture of instruments and appliances for measuring- testi	254	582	1,955	2,119	4,910
C27.9.0 - Manufacture of other electrical equipment	161	466	1,616	2,267	4,510
C23.6.1 - Manufacture of concrete products for construction purposes	105	477	1,422	2,294	4,298
C25.5.0 - Forging- powder metallurgy	168	538	1,598	1,736	4,040
C32.1.2 - Manufacture of jewellery and related articles	25	91	574	2,942	3,632
C26.1.1 - Manufacture of electronic components	223	414	1,227	1,671	3,535
C29.3.2 - Manufacture of other parts and accessories for motor vehicles	576	694	867	1,220	3,357
C28.2.5 - Manufacture of non-domestic cooling and ventilation equipment	148	413	1,284	1,446	3,291
C28.2.2 - Manufacture of lifting and handling equipment	173	466	1,360	1,282	3,281
C16.2.4 - Manufacture of wooden containers	16	183	1,228	1,568	2,995
C22.2.1 - Manufacture of plastic plates- tubes and profiles	218	564	1,017	954	2,753
C29.2.0 - Manufacture of bodies (coachwork) for motor vehicles- manufa	92	324	1,105	1,144	2,665
C27.1.2 - Manufacture of electricity distribution and control apparatus	145	316	1,148	1,034	2,643
C22.1.9 - Manufacture of other rubber products	103	297	908	1,147	2,455
C28.9.3 - Manufacture of machinery for food- beverage and tobacco pro	81	348	1,007	986	2,422
C27.4.0 - Manufacture of electric lighting equipment	74	214	721	1,335	2,344

- In-depth analysis of sub-sectoral distribution in the **construction sector** shows dominance of four economic activities with SMEs: construction of residential and non-residential buildings (49% of micro enterprises, 43% of small companies), electrical installation, other specialised construction activities, and building development, in total 94% of micro enterprises and 84% of small companies.

Table 19 Breakdown of construction related economic activities relevant for supply chains of SMEs by company size class, number of companies

Sector	Large	Medium	Small	Micro	Total
F - Construction	2,606	10,580	84,049	330,656	427,891
F41.2.0 - Construction of residential and non-residential buildings	933	3,754	36,433	162,461	203,581
F43.2.1 - Electrical installation	245	1,266	14,745	55,447	71,703
F43.9.9 - Other specialised construction activities n.e.c.	160	1,151	11,572	48,613	61,496
F41.1.0 - Development of building projects	405	1,354	8,055	42,899	52,713
F42.1.1 - Construction of roads and motorways	353	1,201	4,489	6,014	12,057
F42.9.9 - Construction of other civil engineering projects n.e.c.	80	360	2,090	5,866	8,396
F42.2.1 - Construction of utility projects for fluids	84	500	2,369	3,307	6,260
F42.2.2 - Construction of utility projects for electricity and telecommunicat	116	392	1,428	2,714	4,650
F41 - Construction of buildings	20	83	870	1,122	2,095
F42.9.1 - Construction of water projects	46	104	468	955	1,573
F42 - Civil engineering	15	113	643	296	1,067
F42.1.2 - Construction of railways and underground railways	89	166	336	469	1,060
F42.1.3 - Construction of bridges and tunnels	52	75	255	372	754
F42.2 - Construction of utility projects	6	41	160	56	263
F42.9 - Construction of other civil engineering projects	2	10	81	54	147
F42.1 - Construction of roads and railways			10	55	11
					76

- In-depth analysis of sub-sectoral distribution in the **electricity, gas, steam, and air-conditioning supply sector** shows a clear dominance in the production of electricity. (86% of micro enterprises, 67% of small companies).

Table 20 Breakdown of energy related economic activities relevant for supply chains of SMEs by company size class, number of companies

Sector	Large	Medium	Small	Micro	Total
D - Electricity- gas- steam and air conditioning supply	1,759	2,158	7,984	37,874	49,775
D35.1.1 - Production of electricity	484	785	5,388	32,537	39,194
D35.3.0 - Steam and air conditioning supply	162	442	1,014	1,185	2,803
D35.1.4 - Trade of electricity	282	207	409	1,219	2,117
D35.2.1 - Manufacture of gas	27	35	277	1,568	1,907
D35.1.3 - Distribution of electricity	290	265	320	443	1,318
D35 - Electricity- steam and air conditioning supply	87	57	133	318	595
D35.1 - Electric power generation- transmission and distribution	125	99	91	141	456
D35.2.3 - Trade of gas through mains	96	104	100	148	448
D35.2.2 - Distribution of gaseous fuels through mains	99	84	140	96	419
D35.1.2 - Transmission of electricity	67	46	65	184	362
D35.2 - Manufacture of gas- distribution of gaseous fuels through mains	40	34	47	35	156

3.2.4. Group CSRD – SMEs that fall within the scope of the CSRD

This group is slightly different as it covers listed SMEs that do not have to report under the current scope of the NFRD, but that will soon fall under the scope of the CSRD.

The data set is filtered on (i) listing status and (ii) according to the proposed scope of the CSRD with respect to the thresholds set for undertakings specified in the proposed revision of Article 19a (1) referring to Directive 2013/34/EU Article 3. It must be noted that the final CSRD has not yet been published at the time this report has been written. The European Parliament and Council have recently reached a provisional political agreement on the CSRD¹⁵. It will apply to all large companies and all companies listed on regulated market, which includes listed SMEs. However, special rules will apply for SMEs, including simplified disclosure requirements and sufficient time to prepare (e.g., transitional period, meaning that they will be exempted from the application of the directive until 2028). For this project, the CSRD as initially proposed by the European Commission is the basis for the analysis (i.e., inclusion of listed SMEs, except listed micro-enterprises), which is aligned with the recently agreed on scope of the CSRD.

Key results:

- Approximately 60k (1%) of the companies in the dataset are likely to fall under the scope of the proposed CSRD. Only 4% of those are medium and small companies. Germany, France, and Italy account for 58% of all CSRD companies. The result is plausible as only a limited number of SMEs is actually listed on the stock exchange. Micro enterprises are out of scope.

15 Council of the EU (2022) [New rules on corporate sustainability reporting: provisional political agreement between the Council and the European Parliament](#)

Table 21 Overview number of companies potentially part of identified supply chains by country and company size

Country	Large	Large% Medium	Medium% Small	Small% Total	Country%
Austria	651	97%	9	1%	8
Belgium	2,264	98%	24	1%	30
Bulgaria	548	86%	34	5%	53
Croatia	357	90%	27	7%	14
Cyprus	5	71%	1	14%	1
Czech Republic	790	99%	5	1%	1
Denmark	2,203	96%	39	2%	63
Estonia	152	97%		0%	4
Finland	1,549	93%	64	4%	44
France	11,591	98%	156	1%	110
Germany	16,543	99%	111	1%	57
Greece	146	52%	96	34%	41
Hungary	935	99%	4	0%	1
Ireland	249	100%	1	0%	
Italy	5,939	97%	107	2%	52
Latvia	187	96%	4	2%	3
Lithuania	436	98%	5	1%	2
Luxembourg	284	96%	2	1%	11
Malta	3	60%		0%	2
Netherlands	2,739	99%	10	0%	4
Poland	2,576	83%	236	8%	280
Portugal	1,149	98%	15	1%	12
Romania	1,052	85%	92	7%	93
Slovakia	592	95%	11	2%	18
Slovenia	320	98%	5	2%	2
Spain	2,526	97%	41	2%	46
Sweden	1,982	81%	157	6%	298
Total	57,768	96%	1,256	2%	1,250
					60,274
					100%

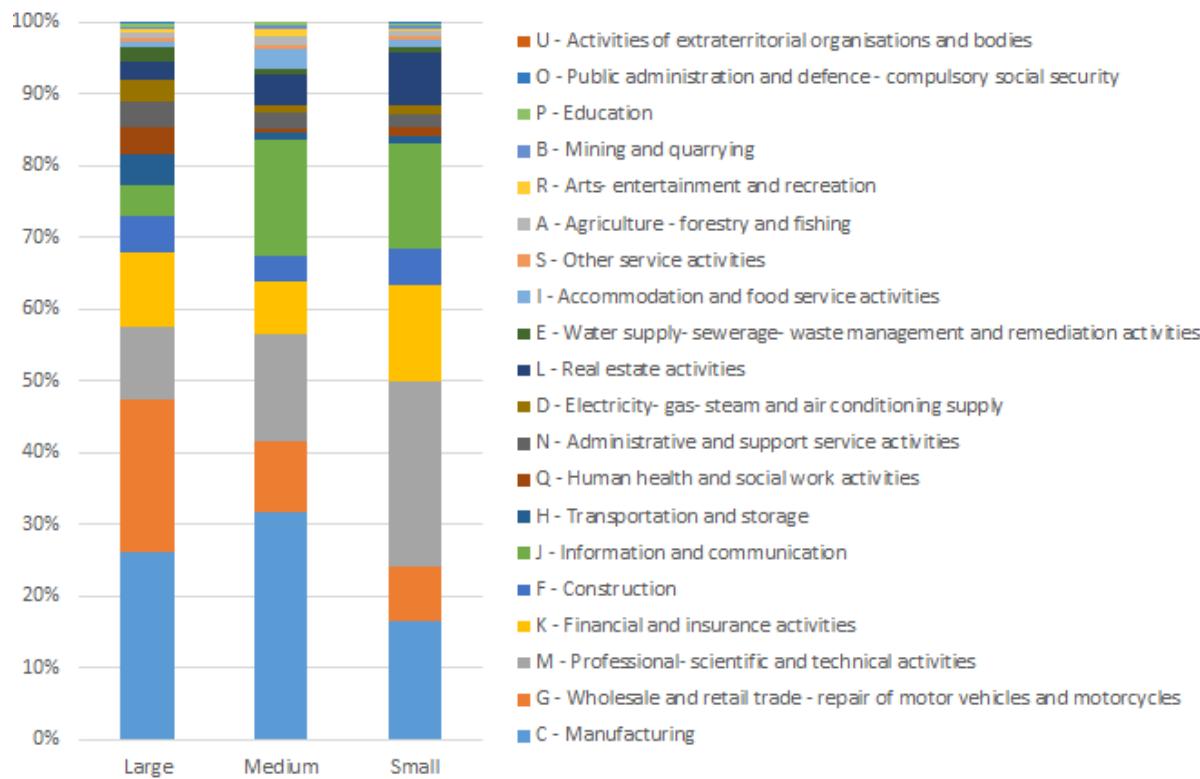
- The above is confirmed by the low relative share of CSRD-companies in relation to the dataset, apart from large companies. Only about 0.8% of medium-sized and 0.1% of small companies may fall under the proposed CSRD.

Table 22 Share of CSRD-companies by company size

CSRD	Large	Medium	Small	Total
No		99.2%	99.9%	94.7%
Yes	100.0%	0.8%	0.1%	5.3%
Total	100.0%	100.0%	100.0%	100.0%

- The sectoral distribution of companies under the proposed CSRD varies according to size class:
 - Manufacturing** is by far the dominant sector in the large and medium sized brackets, while the service sector is dominant with small companies. Most of the other sectors have a relatively low share.
 - A significant share of CSRD-companies is likely not to be EU Taxonomy eligible as per their main turnover under the first delegated act on climate mitigation**, e.g., in wholesale and retail trade and professional scientific and technical activities. Repair of motor vehicles and financial and insurance activities might increasingly become relevant as the repaired / financed vehicle is deemed as low carbon.

Figure 16 Sector distribution of companies (potentially) falling under the proposed CSRD, by size class



- In-depth analysis of sub-sectoral distribution in the **manufacturing sector** shows a variety of sub-sectors, with automotive, plastics, machinery, electronics, and chemicals with the highest relative shares. **Pharmaceuticals are particularly important for medium and small companies**; however, according to the climate delegated act, this sector is not EU Taxonomy eligible.

Table 23 Breakdown (excerpt) of manufacturing related companies (potentially) falling under the proposed CSRD, by size class

Sector	Large	Medium	Small	Total
C - Manufacturing	15,100	399	206	15,705
C29.3.2 - Manufacture of other parts and accessories for motor vehicles	576	7	2	585
C21.2.0 - Manufacture of pharmaceutical preparations	398	30	21	449
C26.5.1 - Manufacture of instruments and appliances for measuring- testing and navigation	254	1	7	262
C22.2.9 - Manufacture of other plastic products	255	3	1	259
C28.2.9 - Manufacture of other general-purpose machinery n.e.c.	233	8	6	247
C26.1.1 - Manufacture of electronic components	223	8	7	238
C22.2.2 - Manufacture of plastic packing goods	229	5	2	236
C28.9.9 - Manufacture of other special-purpose machinery n.e.c.	215	11	5	231
C20.5.9 - Manufacture of other chemical products n.e.c.	216	7	4	227
C22.2.1 - Manufacture of plastic plates- tubes and profiles	218	6	3	227

- The analysis shows that listed small and medium-sized companies are negligible in numbers and in many cases not EU Taxonomy eligible according to the climate delegated act.

3.2.5. Overlap Analysis

The objective of the overlap analysis is to identify sectoral SME company clusters, which are of high relevance for further analyses. For this, the number of companies falling into multiple groups has been analysed.

Step 1

First look at is the number of companies that fall into **all groups** (combined numbers of Group A + Group B + Group C + Group CSRD). Only an estimate 4,000 companies fall into all four groups, most of which are large companies because of the inclusion of CSRD-relevant companies. **This combination is of low relevance** for the above purpose.

Table 24 Number of companies by combination of groups A + B + C + CSRD

A^B^C^CSRD	Large	Medium	Small	Total
Yes	3,896	90	109	4,095

Step 2

To avoid the limitation by CSRD-relevant companies, the next analytical step is to **combine Group A + Group B + Group C**. In total, approximately 270,000 (= 4% of total dataset) of climate mitigation relevant SMEs are also likely to be affected by financial intermediaries and being involved in a supply chain. By design the result is a subset of Group C. Of the four sectors that account for Group C (companies linked to supply chains) construction (57%) and professional, scientific, and technical activities (22%) are most important. Small and micro enterprises account for 18% and 78%, respectively. The key findings in terms of affected size class and sectors are the same as above under Group C.

Table 25 Number of companies by combination of groups A + B + C, sectoral split

Sector	Large	Large %	Medium			Small	Small %	Micro	Micro %	Total	Sector %
			Medium	%	Small						
F - Construction	1,219	1%	3,610	2%	27,543	18%	124,168	79%	156,540	57%	
M - Professional- scientific and technical activities	471	1%	1,073	2%	6,725	11%	50,714	86%	58,983	22%	
D - Electricity- gas- steam and air conditioning supply	932	3%	1,398	5%	6,247	20%	22,134	72%	30,711	11%	
C - Manufacturing	1,274	5%	2,400	9%	8,211	31%	14,746	55%	26,631	10%	
Total	3,896	1%	8,481	3%	48,726	18%	211,762	78%	272,865	100%	

Step 3

The overlap between Group A and Group B provides the number of SMEs affected by the EU Taxonomy AND potentially by financial intermediaries, in total, approximately 464,000 (= 8% of total dataset). Again, construction, and transport and storage, professional, scientific, and technical activities, and manufacturing are the main SME-related sectors (72% of medium, 81% of small companies, 81% of micro enterprises). However, it must be mentioned that service-focused micro enterprises heavily influence the findings, as these have the largest share in both transport and storage, professional, scientific, and technical activities. Relevant sectors and sub-sectors are the same as in Group A.

Table 26 Number of companies by combination of groups A + B, sectoral split

Sector	Large	Large %		Medium		Medium %		Small %		Micro		Micro %	Total	Sector %
		Large	%	Medium	%	Small	%	Micro	%	Micro	%			
F - Construction	1,254	1%	3,817	2%	30,878	18%	140,285	80%	176,234	37%				
H - Transportation and storage	792	1%	1,837	2%	11,005	12%	80,862	86%	94,496	20%				
M - Professional- scientific and technical activities	568	1%	1,350	2%	8,402	12%	60,360	85%	70,680	15%				
C - Manufacturing	1,678	4%	2,968	8%	10,465	28%	22,722	60%	37,833	8%				
D - Electricity- gas- steam and air conditioning supply	932	3%	1,398	5%	6,247	20%	22,134	72%	30,711	7%				
N - Administrative and support service activities	212	1%	392	2%	1,961	9%	18,434	88%	20,999	4%				
J - Information and communication	110	1%	230	2%	1,146	9%	11,257	88%	12,743	3%				
E - Water supply- sewerage- waste management and	653	5%	1,666	14%	3,696	30%	6,202	51%	12,217	3%				
A - Agriculture - forestry and fishing	28	0%	87	1%	1,384	12%	10,365	87%	11,864	3%				
S - Other service activities		0%	7	0%	93	5%	1,666	94%	1,766	0%				
L - Real estate activities	3	0%	17	2%	93	12%	673	86%	786	0%				
Total	6,230	1%	13,769	3%	75,370	16%	374,960	80%	470,329	100%				

3.3. Summary of key findings

The main findings from the analyses of the four groups (A, B, C, CSRD) and in particular the overlaps between groups are, sorted by priority / importance based on the number of identified SMEs for further analyses. For limitations cf. section **Error! Reference source not found.**:

- High priority areas
 - The main affected EU Taxonomy-relevant **sectors** across the groups, including overlaps and with the exception of the CSRD group, are **construction; transport and storage; professional, scientific, and technical activities; manufacturing; and electricity, gas, steam, and air conditioning supply**.
 - On the **country level** four countries stand out in terms of the number of SMEs, France, Germany, Romania, and Italy, though in Germany lacking data was an issue. Whereas according to Eurostat, the relative importance of SMEs is particularly high in Greece, Malta, the Baltic States, and Bulgaria. In each of these countries, SMEs accounted for more than three quarters of the non-financial business economy workforce¹⁶.
 - Overlap analysis of SMEs affected by the EU Taxonomy AND requests by financial intermediaries shows approximately 464,000 SMEs, again in the five sectors mentioned above. Relevant **sub-sectors** are amongst others:
 - Residential and non-residential buildings construction and other related activities, e.g., electrical installations;
 - Freight transport by road and taxi operations;
 - Manufacturing of metal structures, and metal related economic activities;
 - Engineering activities and related technical consultancy;
 - Production of electricity.
- Medium priority areas
 - **Sectors related to supply chains** are manufacturing of low carbon technologies, water supply and sewage, construction and real estate. In this study, the supply chains related to NFRD companies have been considered. The supply chain affected through the future CSRD is not included but is expected to be significantly larger.
 - **The extension of the CSRD** (Group CSRD) affects directly a limited number of SMEs¹⁷. Due to their legal obligation to report according to the EU Taxonomy, the sub-set of affected listed SMEs is addressed in the analysis of the taxonomy screening criteria
- Low priority areas
 - Application of the technical screening criteria of Annex I of the Climate Delegated Act for larger parts of service-related micro enterprises (e.g., freight transportation, taxi operations, and consulting activities) is straightforward. Hence, focus of further analysis should be on other parts of the economy, i.e, medium and small enterprises.

16 [Business economy - size class analysis – Sectoral analysis](#)

17 As mentioned earlier in this report, this observation does not consider suppliers to CSRD eligible companies. CSRD will extend the scope of eligible companies significantly, so it is likely that the number of suppliers indirectly affected will be significantly bigger too.

3.4. Limitations

The scope of this analysis is limited due to several factors.

First, **lacking availability and completeness of data** due to SMEs limited legal obligation to publicly disclose any data are the most hampering factors.

Due to a lack of data availability, over 3.5m (37%) out of the total dataset consisting of 9.5m companies could not be classified. For consistency reasons across all EU member states, the classification is based on the Accounting Directive¹⁸, which requires two out of three parameters to classify the size of a company (headcount, net turnover, balance sheet total). Companies that did not report this information could not be categorised, leading to partially high ratios of unclassified companies on the country level up to 78%.

In some countries, the available number of companies from databases compared to the actual total number according to the European Commission's SME performance review deviates significantly; it is in some cases very low (e.g., Greece and Cyprus).

Besides data limitations, there also are **causal limitations** that should be taken into consideration when interpreting this report.

Second, **NACE-codes are only approximations** because the dominant NACE code might not reflect the real breadth of economic activities at the company level. In addition, holding companies might have a distorting effect in the absence of a consolidated company perspective that would require further in-depth analyses. Further to the above, NACE codes in the EU Taxonomy are indicative, activity definitions under the EU Taxonomy prevail over NACE codes in case the NACE code is broader than the activity, the economic activity meets the description but does not have a NACE code, or the NACE code is not mentioned in the Climate DA.¹⁹

Third, based on discussions with PSF's SG5, **the indirect impact of the EU Taxonomy from NFRD companies to upstream SMEs is likely limited**. Larger companies will try to obtain relevant data from their suppliers to fulfil their own reporting requirements (e.g., DNSH criteria). However, this requested data may not be relevant to the SMEs' EU Taxonomy-related reporting as the larger company could be associated with a different Taxonomy-relevant economic activity than the SME. SMEs in Group C will only be impacted if those SMEs embedded in supply chains are required to calculate downstream companies' EU Taxonomy aligned share. Otherwise, they will more than likely not be impacted by the Taxonomy in a direct way through supply chain dependencies. Additionally, another potential limitation could be that some SMEs included in the dataset might supply their services and / or products to enterprises located outside of the EU, in which case the number of impacted SMEs through requests from their clients could in fact be smaller as their clients would not fall under the scope of the NFRD.

Fourth, **EU Taxonomy aligned investments made by SMEs are outside the scope of this report**. An example of such an investment would be an SME that invests in electric vehicles that are aligned with the technical screening criteria set in Annex I of the Climate Delegated Act. Such green investments can be made by any SME and are not necessarily linked to its main economic activity. While capital expenditure is important, SMEs would need to align primarily to their main economic activity with the EU Taxonomy requirements that is relevant for net turnover.

Fifth, though the analysis covers all economic activities listed in Annex I of the Climate Delegated Act, **it does not distinguish between green, enabling and transitional activities**.

Sixth, enabling economic activities as, e.g., listed under 3.6 of Annex I of the Climate Delegated Act, at this stage cannot be identified by this analysis as the suggested NACE codes cover a wide

18 Accounting Directive 2013/34/EU <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013L0034>

19 For further detail cf. Draft Commission notice on the interpretation of certain legal provisions of the Disclosures Delegated Act under Article 8 of EU Taxonomy Regulation on the reporting of eligible economic activities and assets, https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/sustainable-finance-taxonomy-article-8-report-eligible-activities-assets-faq-part-2_en.pdf

range of economic activities that would only partially qualify as enabling economic activities. Further work would need to be conducted to obtain an in-depth understanding about SMEs engaged in those enabling economic activities. However, the technical screening criteria of various enabling activities will be further considered in Task 2.

Seventh, the other five environmental objectives such as climate adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, and protection and restoration of biodiversity and ecosystems are not considered.

4. Analysis of Taxonomy screening criteria and SME's ability to assess Taxonomy-alignment, and recommendations to support SMEs

4.1. Methodological note

The data set gathered for Task 1 of this assignment, and elaborated on in the previous chapter, is used as a basis to further assess where challenges lie for the most impacted SMEs with regards to understanding, meeting, and reporting on the Technical Screening Criteria (TSC) for climate change mitigation. Within the data set, it is important to prioritize the subset of SMEs that will be most impacted by the EU Taxonomy to allow for in-depth analyses of the challenges and solutions.

This section describes the methodology used to prioritise the economic activities and sectors that form the basis for further analysis.

4.1.1. Activity selection procedure

The selection of activities for this study were conducted through a multi-step process starting with the results of the data set assessed in Task 1. The selection procedure in the sub-sections below attempted to zoom in on the activities where the largest number of SMEs are active. The ultimate target was to select roughly 30 activities, ideally representing >95% of the SMEs estimated to be affected by the Taxonomy.

4.1.1.1 Step 1: Creating a sub-data set to prioritise

The most impacted SMEs that follow as an output from Task 1 include SMEs in Group A: SMEs relevant for climate change mitigation, Group B: SMEs likely affected by financial intermediaries, Group C: SMEs affected by supply chain and Group CSRD: SMEs that fall within the scope of the CSRD. To focus on the SMEs that will be most affected, we focused on the SMEs in the three following groups:

- Group A+B: SMEs that are relevant for climate change mitigation and are likely to be affected by financial intermediaries.
- Group A+C: SMEs that are relevant for climate change mitigation and are likely to be affected by the supply chain.
- Group A+CSRD: SMEs that are relevant for climate change mitigation and that are listed and will therefore likely fall within the scope of the CSRD.

Filtering the data set on the three groups results in a total number of SMEs of 147,481 out of the total 1,082,816, equalling nearly **14% of the total number of classified SMEs**. Note that these numbers include only the SMEs that fall within the small and medium sized enterprise categories, as these are the two groups in scope for the analysis, due to the low usability of data on micro-enterprises as explained in the limitations in section **Error! Reference source not found..**

4.1.1.2 Step 2: Mapping NACE codes to EU Taxonomy economic activities

The next step is to map the NACE codes of these SMEs to the Taxonomy activities under Annex 1 of the Climate Delegated Act covering the environmental objective of climate change mitigation. Annex 1 indicated which NACE codes could be linked to each economic activity. Based on this, the SMEs are mapped to the EU Taxonomy activities in Annex 1 for climate change mitigation. This mapping is done on the “exact match” between the NACE code of the SME and the NACE codes mentioned in the economic activities of the Taxonomy, which is not necessarily in all cases a mapping at the 4-digit level NACE code. An example of this is where NACE code F42 is mentioned under a Taxonomy activity, we only take into account all economic activities that include exactly F42, and not the subcategories under this NACE code such as F42.1.0. In this

example, if the “exact mapping” was not used, the SMEs under the NACE code of F42.1.1 - Construction of roads and motorways would be linked to Activity 7.5 - Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings as this Taxonomy activity mentions NACE code F42. Using the “exact match” for mapping provides a more precise overview of what SMEs are mapped to what economic activities.

As mentioned in section **Error! Reference source not found.**, there are limitations to this approach, as there is only one NACE code given per SME, even though the SME might be involved in several economic activities. Furthermore, a NACE code can be linked to several EU Taxonomy economic activities. For example, the NACE code D35.1.1 for the production of electricity is linked to 12 different activities within the Energy sector. Therefore, it should be highlighted that the SMEs mapped to an economic activity should be seen as “potentially” covered under that activity.

It should be noted that the sectors outlined by the EU Taxonomy differ from those addressed in the NACE codes and in the data analysis from the previous chapter. The following table illustrates how a Taxonomy sector can include multiple NACE sectors, and how these NACE sectors are divided among the different Taxonomy sectors based on the NACE codes of the economic activities.

Table 27: Split of NACE sectors per each Taxonomy sector

Taxonomy Sector
Transport
F - Construction
H - Transportation and storage
N - Administrative and support service activities
C - Manufacturing
Construction and real estate
F - Construction
C - Manufacturing
Manufacturing
C - Manufacturing
E - Water supply- sewerage- waste management and remediation activities
Energy
D - Electricity- gas- steam and air conditioning supply
F - Construction
H - Transportation and storage
Water supply, sewerage, waste management and remediation
F - Construction
E - Water supply- sewerage- waste management and remediation activities
H - Transportation and storage
Forestry
A - Agriculture - forestry and fishing

The total number of mapped Taxonomy economic activities amount to 83. The graph below shows how many SMEs are counted as being “potentially” linked to each economic activity.

Table 28: Number of SMEs that can be potentially linked to each Taxonomy activity through NACE code

	Activity	SME Count
1.1	Afforestation	166
1.2	Rehabilitation and restoration of forests, including reforestation and natural forest regeneration after an extreme event	166
1.3	Forest management	166
1.4	Conservation forestry	166
3.1	Manufacture of renewable energy technologies	1,358

	Activity	SME Count
3.2	Manufacture of equipment for the production and use of hydrogen	1,358
3.3	Manufacture of low carbon technologies for transport	43
3.4	Manufacture of batteries	100
3.5	Manufacture of energy efficiency equipment for buildings	20,795
3.6	Manufacture of other low carbon technologies	1,364
3.7	Manufacture of cement	50
3.8	Manufacture of aluminium	712
3.9	Manufacture of iron and steel	1,836
3.10	Manufacture of hydrogen	14
3.11	Manufacture of carbon black	14
3.12	Manufacture of soda ash	14
3.13	Manufacture of chlorine	14
3.14	Manufacture of organic basic chemicals	23
3.15	Manufacture of anhydrous ammonia	16
3.16	Manufacture of nitric acid	16
3.17	Manufacture of plastics in primary form	35
4.1	Electricity generation using solar photovoltaic technology	7,993
4.2	Electricity generation using concentrated solar power (CSP) technology	7,993
4.3	Electricity generation from wind power	7,993
4.4	Electricity generation from ocean energy technologies	7,993
4.5	Electricity generation from hydropower	7,993
4.6	Electricity generation from geothermal energy	7,993
4.7	Electricity generation from renewable non-fossil gaseous and liquid fuels	7,993
4.8	Electricity generation from bioenergy	6,173
4.9	Transmission and distribution of electricity	696
4.13	Manufacture of biogas and biofuels for use in transport and of bioliquids	312
4.14	Transmission and distribution networks for renewable and low-carbon gases	3,107
4.15	District heating/cooling distribution	1,456
4.16	Installation and operation of electric heat pumps	1,548
4.17	Cogeneration of heat/cool and power from solar energy	7,629

	Activity	SME Count
4.18	Cogeneration of heat/cool and power from geothermal energy	7629
4.19	Cogeneration of heat/cool and power from renewable non-fossil gaseous and liquid fuels	7,629
4.20	Cogeneration of heat/cool and power from bioenergy	7,629
4.21	Production of heat/cool from solar thermal heating	1,456
4.22	Production of heat/cool from geothermal energy	1,456
4.23	Production of heat/cool from renewable non-fossil gaseous and liquid fuels	1,456
4.24	Production of heat/cool from bioenergy	1,456
4.25	Production of heat/cool using waste heat	1,456
5.1	Construction, extension and operation of water collection, treatment and supply systems	3,276
5.2	Renewal of water collection, treatment and supply systems	3,276
5.3	Construction, extension and operation of wastewater collection and treatment	2,824
5.4	Renewal of wastewater collection and treatment	374
5.5	Collection and transport of non-hazardous waste in source segregated fractions	100
5.6	Anaerobic digestion of sewage sludge	374
5.7	Anaerobic digestion of bio-waste	2,607
5.8	Composting of bio-waste	2,607
5.9	Material recovery from non-hazardous waste	2,550
5.10	Landfill gas capture and utilisation	157
5.11	Transport of CO2	2,883
5.12	Underground permanent geological storage of CO2	21
6.1	Passenger interurban rail transport	279
6.2	Freight rail transport	281
6.3	Urban and suburban transport, road passenger transport	845
6.4	Operation of personal mobility devices, cycle logistics	204
6.5	Transport by motorbikes, passenger cars and light commercial vehicles	491
6.6	Freight transport services by road	438
6.7	Inland passenger water transport	29
6.8	Inland freight water transport	14
6.9	Retrofitting of inland water passenger and freight transport	74

	Activity	SME Count
6.10	Sea and coastal freight water transport, vessels for port operations and auxiliary activities	393
6.11	Sea and coastal passenger water transport	181
6.12	Retrofitting of sea and coastal freight and passenger water transport	506
6.13	Infrastructure for personal mobility, cycle logistics	22,372
6.14	Infrastructure for rail transport	43,480
6.15	Infrastructure enabling low-carbon road transport and public transport	6,189
6.16	Infrastructure enabling low carbon water transport	741
6.17	Low carbon airport infrastructure	42,637
7.1	Construction of new buildings	49,596
7.2	Renovation of existing buildings	954
7.3	Installation, maintenance and repair of energy efficiency equipment	2,237
7.4	Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)	2,180
7.5	Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings	2,180
7.6	Installation, maintenance and repair of renewable energy technologies	2,180
7.7	Acquisition and ownership of buildings	80
8.1	Data processing, hosting and related activities	168
8.2	Data-driven solutions for GHG emissions reductions	179
9.1	Close to market research, development and innovation	26,210
9.2	Research, development and innovation for direct air capture of CO2	26,210

4.1.1.3 Step 3: Removing “Duplicate” SMEs

The NACE code mapping in the previous step resulted in 147,481 SMEs estimated to be affected by the Taxonomy. However, once NACE codes were mapped to those SMEs as shown in Table 28, the total number increased to 387,842 SMEs as the majority individual NACE codes are mapped to more than one activity. Within the new total of 387,842 SMEs, 83 activities were identified. In order to have a more accurate representation of the total number of SMEs operating within each activity, the final selection procedure needed to account for the “duplicate” NACE code mapping i.e., where individual NACE codes are mapped to more than one activity, artificially inflating the number of SMEs operating within each activity. The target of the selection procedure was thus to explore the sub-data set and remove duplicates where relevant, reaching a figure at or near the total estimated number of SMEs affected by the Taxonomy for this study (147,481).

To achieve this, the long list of activities (83 total) and their mapped NACE Codes (102 total) representing the 387,842 SMEs were brought into a spreadsheet. A new column

was added and each row was coded either a 0 or 1. “0” represents those rows where the NACE code was only mapped to one specific activity. “1” represents rows where the same NACE code was mapped to multiple activities. The result of this was sub-list of activities that all had multiple NACE codes mapped to them (Figure 17).

Figure 17: Coding activities which have multiple NACE codes mapped to them

Taxonomy Activity	NACE full	Count of Column 1
Construction of new buildings	F41.2.0 - Construction of residential and non-resid	40187
Low carbon airport infrastructure	F41.2.0 - Construction of residential and non-resid	40187
Manufacture of energy efficiency equipment for buildings	C25.1.1 - Manufacture of metal structures and par	9420
Construction of new buildings	F41.1.0 - Development of building projects	9409
Infrastructure for personal mobility, cycle logistics	F43.2.1 - Electrical installation	16011
Infrastructure for rail transport	F43.2.1 - Electrical installation	16011
Manufacture of energy efficiency equipment for buildings	C16.2.3 - Manufacture of other builders' carpentry	3693
Infrastructure enabling low-carbon road transport and public tr	F42.1.1 - Construction of roads and motorways	5690
Infrastructure for personal mobility, cycle logistics	F42.1.1 - Construction of roads and motorways	5690
Manufacture of energy efficiency equipment for buildings	C23.6.1 - Manufacture of concrete products for cc	1899
Transmission and distribution networks for renewable and low	F42.2.1 - Construction of utility projects for fluids	2869
Transport of CO2	F42.2.1 - Construction of utility projects for fluids	2869
Manufacture of energy efficiency equipment for buildings	C27.4.0 - Manufacture of electric lighting equipme	935
Manufacture of energy efficiency equipment for buildings	C28.1.4 - Manufacture of other taps and valves	753
Manufacture of energy efficiency equipment for buildings	C25.2.9 - Manufacture of other tanks- reservoir a	695
Manufacture of energy efficiency equipment for buildings	C28.1.3 - Manufacture of other pumps and compre	606
Transmission and distribution of electricity	D35.1.3 - Distribution of electricity	585
Infrastructure enabling low carbon water transport	F42.9.1 - Construction of water projects	572
Manufacture of energy efficiency equipment for buildings	C28.1.2 - Manufacture of fluid power equipment	544
Cogeneration of heat/cool and power from bioenergy	D35.1.1 - Production of electricity	6173
Cogeneration of heat/cool and power from geothermal energy	D35.1.1 - Production of electricity	6173
Cogeneration of heat/cool and power from renewable non-fo	D35.1.1 - Production of electricity	6173
Cogeneration of heat/cool and power from solar energy	D35.1.1 - Production of electricity	6173
Electricity generation from bioenergy	D35.1.1 - Production of electricity	6173
Electricity generation from geothermal energy	D35.1.1 - Production of electricity	6173
Electricity generation from hydropower	D35.1.1 - Production of electricity	6173
Electricity generation from ocean energy technologies	D35.1.1 - Production of electricity	6173
Electricity generation from renewable non-fossil gaseous and	D35.1.1 - Production of electricity	6173
Electricity generation from wind power	D35.1.1 - Production of electricity	6173
Electricity generation using concentrated solar power (CSP) tec	D35.1.1 - Production of electricity	6173
Electricity generation using solar photovoltaic technology	D35.1.1 - Production of electricity	6173
Manufacture of iron and steel	C24.2.0 - Manufacture of tubes- pipes- hollow pro	450
Manufacture of aluminium	C24.5.3 - Casting of light metals	424

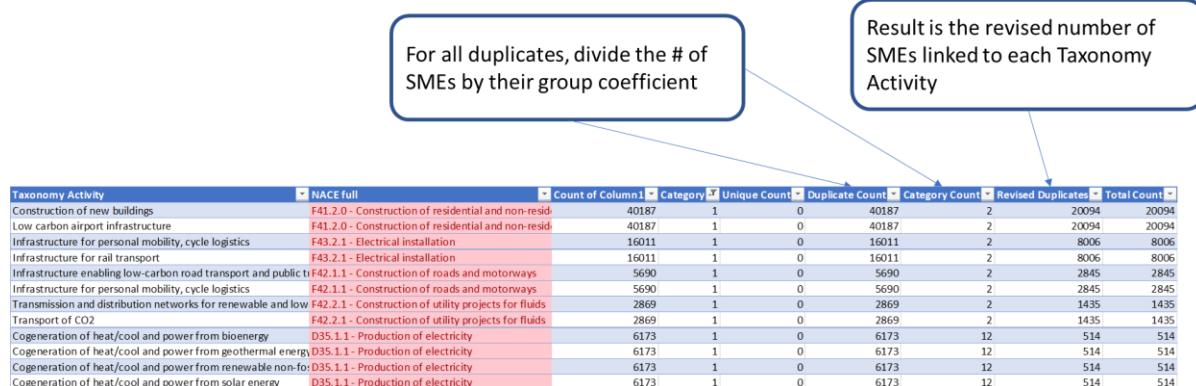
Next, those rows coded in red (coded with a 1), were sorted alphabetically by NACE code. NACE codes with multiple activities where then grouped and coded with a “group coefficient” representing the number of times an individual NACE Code appeared in the dataset. For example, in Figure 18, F41.2.0 – Construction of Residential and Non-Residential buildings appears twice, being mapped to both activities: Construction of New Buildings and Low-Carbon Airport Infrastructure.

Figure 18: NACE codes grouped by the number of times they appear in the data set

Taxonomy Activity	NACE full	Count of Column 1	Category	Unique Count	Duplicate Count	Category Count
Construction of new buildings	F41.2.0 - Construction of residential and non-resid	40187	1	0	40187	2
Low carbon airport infrastructure	F41.2.0 - Construction of residential and non-resid	40187	1	0	40187	2
Infrastructure for personal mobility, cycle logistics	F43.2.1 - Electrical installation	16011	1	0	16011	2
Infrastructure for rail transport	F43.2.1 - Electrical installation	16011	1	0	16011	2
Infrastructure enabling low-carbon road transport and public tr	F42.1.1 - Construction of roads and motorways	5690	1	0	5690	2
Infrastructure for personal mobility, cycle logistics	F42.1.1 - Construction of roads and motorways	5690	1	0	5690	2
Transmission and distribution networks for renewable and low	F42.2.1 - Construction of utility projects for fluids	2869	1	0	2869	2
Transport of CO2	F42.2.1 - Construction of utility projects for fluids	2869	1	0	2869	2
Cogeneration of heat/cool and power from bioenergy	D35.1.1 - Production of electricity	6173	1	0	6173	12
Cogeneration of heat/cool and power from geothermal energy	D35.1.1 - Production of electricity	6173	1	0	6173	12
Cogeneration of heat/cool and power from renewable non-fo	D35.1.1 - Production of electricity	6173	1	0	6173	12
Cogeneration of heat/cool and power from solar energy	D35.1.1 - Production of electricity	6173	1	0	6173	12

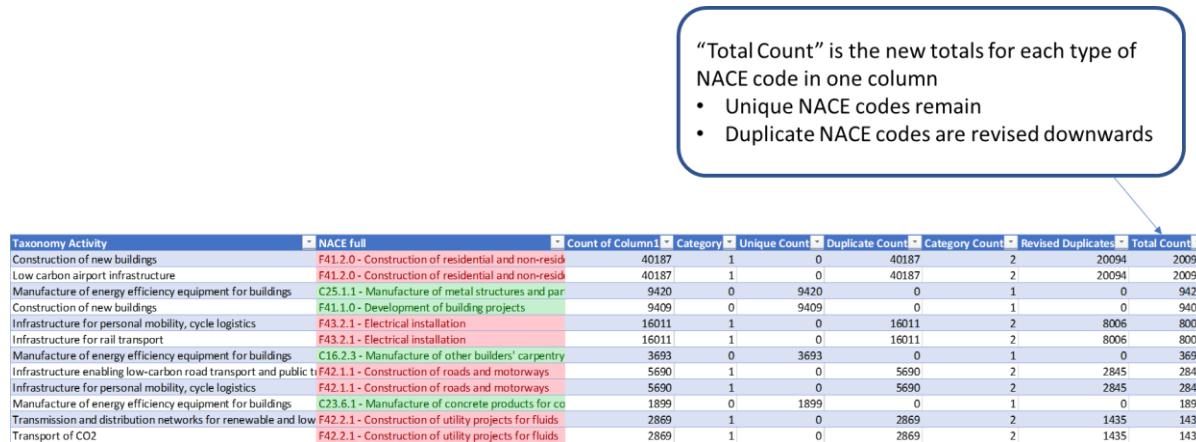
The count of SMEs mapped to each row was then divided by its corresponding group coefficient. The result is that the total number of SMEs is downsized because “duplicates” or SMEs likely appearing more than once due to overlapping NACE codes have been removed (Figure 19).

Figure 19: Remove duplicates to arrive at revised SME count for each row in the data set



A new total number of SMEs was then summed including the revised SME counts for each row with duplicates as well as the original counts for those rows that had unique NACE codes (green highlight, Figure 20).

Figure 20: Revised count of total number of SMEs in the data set



4.1.1.3 Step 4: Removing economic activities based on real-world context

Even with the revised data set now accounting for NACE codes mapped to multiple activities which were previously inflating the real count of SMEs, there were still certain activities with a significant overlap between NACE codes that were seen but were not viewed as realistic based on real world circumstances. This was especially true for activities in the energy sector.

Economic activities found in the Taxonomy for the energy sector are those linked to “D” NACE codes – “electricity, gas, steam and air conditioning supply” of which there are 27 in the data set. The D-NACE codes link to activities mainly in the upstream of the energy value chain: generation of heat and electricity from renewable energy technologies.

It is clear from the analysis presented in chapter 0 that the use of NACE codes results in a significant overestimation of the number of SMEs linked to each activity. For example, if SME “A” is linked to NACE code D35.1 - Electric power generation, transmission and distribution, every taxonomy eligible activity that is linked to D35.1 will also be linked to that SME. The SME might generate revenues from wind power, but they will also be mapped along with every other activity in NACE code D35.1 including PV solar, geothermal energy, hydropower, etc., which results in identical amounts of SMEs in certain classes (see SME Count in Table 29).

Table 29 Activities in the energy sector (sorted per SME Count)

	Activity	NACE	SME Count
4.20	Cogeneration of heat/cool and power from bioenergy	D35.1.1 - Production of electricity	646
4.18	Cogeneration of heat/cool and power from geothermal energy	D35.1.1 - Production of electricity	646
4.19	Cogeneration of heat/cool and power from renewable non-fossil gaseous and liquid fuels	D35.1.1 - Production of electricity	646
4.17	Cogeneration of heat/cool and power from solar energy	D35.1.1 - Production of electricity	646
4.9	Transmission and distribution of electricity	D35.1.3 - Distribution of electricity	585
4.8	Electricity generation from bioenergy	D35.1.1 - Production of electricity	514
4.6	Electricity generation from geothermal energy	D35.1.1 - Production of electricity	514
4.5	Electricity generation from hydropower	D35.1.1 - Production of electricity	514
4.4	Electricity generation from ocean energy technologies	D35.1.1 - Production of electricity	514
4.7	Electricity generation from renewable non-fossil gaseous and liquid fuels	D35.1.1 - Production of electricity	514
4.3	Electricity generation from wind power	D35.1.1 - Production of electricity	514
4.2	Electricity generation using concentrated solar power (CSP) technology	D35.1.1 - Production of electricity	514
4.1	Electricity generation using solar photovoltaic technology	D35.1.1 - Production of electricity	514
4.13	Manufacture of biogas and biofuels for use in transport and of bioliquids	D35.2.1 - Manufacture of gas	312
4.14	Transmission and distribution networks for renewable and low-carbon gases	D35.2.2 - Distribution of gaseous fuels through mains	224
4.15	District heating/cooling distribution	D35.3.0 - Steam and air conditioning supply	132
4.16	Installation and operation of electric heat pumps	D35.3.0 - Steam and air conditioning supply	132
4.24	Production of heat/cool from bioenergy	D35.3.0 - Steam and air conditioning supply	132
4.22	Production of heat/cool from geothermal energy	D35.3.0 - Steam and air conditioning supply	132
4.23	Production of heat/cool from renewable non-fossil gaseous and liquid fuels	D35.3.0 - Steam and air conditioning supply	132

Activity		NACE	SME Count
4.21	Production of heat/cool from solar thermal heating	D35.3.0 - Steam and air conditioning supply	132
4.25	Production of heat/cool using waste heat	D35.3.0 - Steam and air conditioning supply	132
4.9	Transmission and distribution of electricity	D35.1.2 - Transmission of electricity	111

Given that each SME is linked to multiple activities of the same NACE codes, regardless of their actual activities, it is worth further detailing where the most significant number of SMEs are within the eligible activities. This is especially relevant considering that electricity and heat generation activities are generally not owned and managed by SMEs, but by large entities due to the significant CAPEX costs associated with developing and operating large generation assets.

Over the last 20 years the EurObserv'ER has published an annual “State of Renewable Energy in Europe” barometer report, the latest of which was published in 2021.²⁰ The report details the state of development of each energy sector including the socio-economic indicators (i.e., number of jobs) associated with most kinds of energy generation. These also happen to be roughly the same category of activities applicable to Taxonomy activities.

According to the 2021 EurObserv'ER report, there were roughly 1.3 million jobs in the EU-27 linked to 11 energy categories in 2021 (Table 30).

Table 30: Number of jobs (000s) per energy sector.²¹

Location	Total (000s)	Heat pump	Solid biofuels	Wind	PV	Biofuels	Biogas	Hydro	Solar thermal	MSW	Ocean Energy	Geothermal
Total EU-27	1313	319	283	280	166	142	49	36	20	13	10	6

Of those activities, ~95% are linked to just 8 of the 11 categories.

- Heat pumps
- Solid biofuels
- Wind
- PV
- Biofuels
- Biogas
- Hydropower

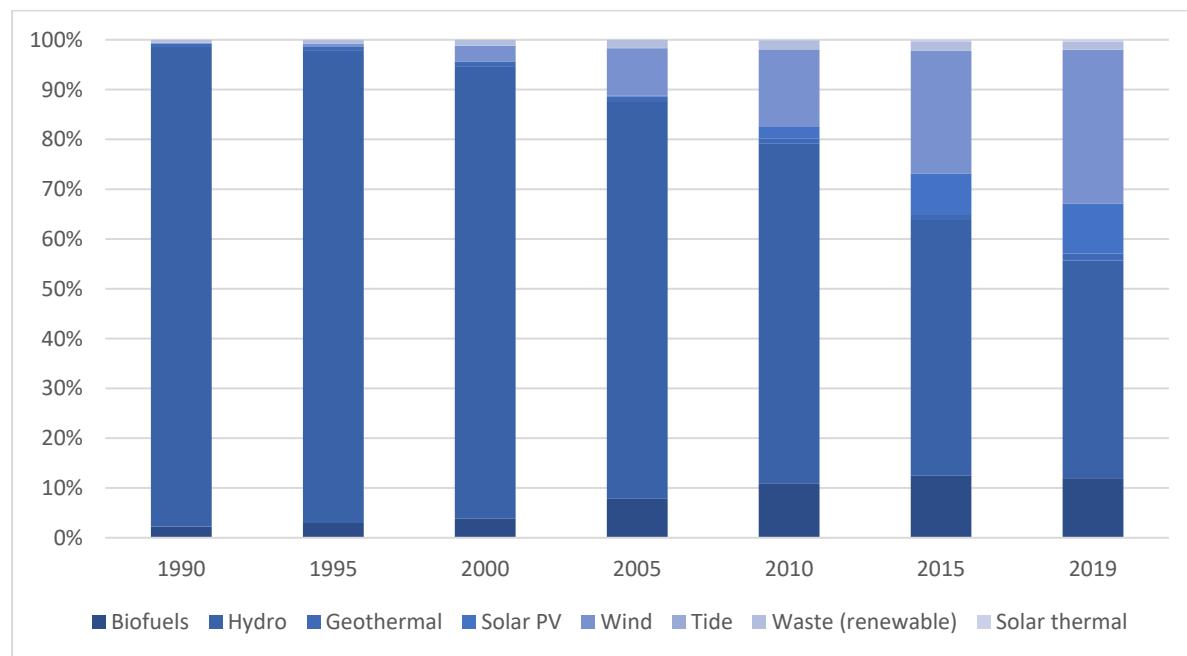
Although this dataset from EurObserv'ER does not report directly on SMEs, but rather jobs regardless of employer size, it is nonetheless a valid proxy and a good indicator of economic activities in each sector. This is further corroborated by examining the low-carbon energy supply mix in Europe where amongst renewable sources, wind, PV solar, and Biofuels represent by far

20 <https://www.eurobserv-er.org/pdf/20th-annual-overview-barometer/>

21 Note: Ocean energy is not included in the EuroobverER report. Job estimates for ocean energy come from the [EU Blue Economy Report 2022](#)

the largest shares of the energy generation.²²

Figure 21: 2019 EU Low-Carbon Energy Supply Mix by %, nuclear removed (IEA 2019)²³



Linking this back to the 23 eligible Taxonomy activities in Table 28: Number of SMEs that can be potentially linked to each Taxonomy activity through NACE code, we can see that there is a further narrowing of selection that can be done to identify what activities do most SMEs realistically have.

Within the activities in Table 28, electricity generation from wind, PV solar, hydropower and non-fossil gaseous and liquid fuels (including biobased ones) represent >95% of the jobs and thus likely SMEs operating in those activities. Electricity generation from ocean energy technologies, geothermal energy and concentrated solar power were thus removed from the list of activities.

Likewise, for cogeneration and production of heat/cool and power from bioenergy and from renewable non-fossil gaseous and liquid fuels likely represent the vast majority of SMEs operating in those activities. Two selection points should be noted here:

- Most production/cogeneration activities likely involve the use of heat pumps to transfer the heat from the electricity generation process to a secondary cycle. This aligns with the data in Table 31 showing that the largest category of jobs in renewable energies are related to heat pumps. As a result, production/cogeneration of heat/cool within the activities with the most jobs were selected (bioenergy, renewable non-fossil gaseous and liquid fuels).
- Cogeneration/production of heat/cool and power from solar energy has not been selected because cogeneration from solar does not involve PV solar, but rather solar thermal (CSP) which does not have many jobs or energy production linked to it.

22 <https://www.iea.org/regions/europe>

23 <https://www.iea.org/regions/europe>

A summary of the eight activities excluded can be seen in Table 31 below.

Table 31: Energy sector activities removed from selection process

Activities		NACE	SME Count
4.18	Cogeneration of heat/cool and power from geothermal energy	D35.1.1 - Production of electricity	646
4.17	Cogeneration of heat/cool and power from solar energy	D35.1.1 - Production of electricity	646
4.6	Electricity generation from geothermal energy	D35.1.1 - Production of electricity	514
4.4	Electricity generation from ocean energy technologies	D35.1.1 - Production of electricity	514
4.2	Electricity generation using concentrated solar power (CSP) technology	D35.1.1 - Production of electricity	514
4.18	Cogeneration of heat/cool and power from geothermal energy	D35.3.0 - Steam and air conditioning supply	132
4.21	Production of heat/cool from solar thermal heating	D35.3.0 - Steam and air conditioning supply	132
4.25	Production of heat/cool using waste heat	D35.3.0 - Steam and air conditioning supply	132

The results of the selection of energy sector activities thus brings the number of activities down from the full list of 23 to a final list of 15 shown in Table 32.

Table 32: List of energy sector activities most relevant after duplicates were removed

Activities		NACE	SME Count
4.20	Cogeneration of heat/cool and power from bioenergy	D35.1.1 - Production of electricity	646
4.19	Cogeneration of heat/cool and power from renewable non-fossil gaseous and liquid fuels	D35.1.1 - Production of electricity	646
4.9	Transmission and distribution of electricity	D35.1.3 - Distribution of electricity	585
4.8	Electricity generation from bioenergy	D35.1.1 - Production of electricity	514
4.5	Electricity generation from hydropower	D35.1.1 - Production of electricity	514
4.7	Electricity generation from renewable non-fossil gaseous and liquid fuels	D35.1.1 - Production of electricity	514
4.3	Electricity generation from wind power	D35.1.1 - Production of electricity	514

Activities		NACE	SME Count
4.1	Electricity generation using solar photovoltaic technology	D35.1.1 - Production of electricity	514
4.13	Manufacture of biogas and biofuels for use in transport and of bioliquids	D35.2.1 - Manufacture of gas	312
4.14	Transmission and distribution networks for renewable and low-carbon gases	D35.2.2 - Distribution of gaseous fuels through mains	224
4.15	District heating/cooling distribution	D35.3.0 - Steam and air conditioning supply	132
4.16	Installation and operation of electric heat pumps	D35.3.0 - Steam and air conditioning supply	132
4.24	Production of heat/cool from bioenergy	D35.3.0 - Steam and air conditioning supply	132
4.23	Production of heat/cool from renewable non-fossil gaseous and liquid fuels	D35.3.0 - Steam and air conditioning supply	132
4.9	Transmission and distribution of electricity	D35.1.2 - Transmission of electricity	111

The selection process applied here helps account for the obvious overlap of multiple activities being applied to for the same SMEs. This list thus captures the most relevant activities with the highest counts of SMEs in the energy sector while filtering out those overlapping activities that have been allocated to SMEs based on NACE codes alone.

4.1.1.5 Step 5: Excluding and including activities based on SG5 feedback

In addition to the energy sector activities excluded from the selection process, through discussion with SG5, additional activities were excluded based on their expertise and knowledge of SME activities in other Taxonomy activities.

Table 33: Activities excluded from the final selection list by SG5

Excluded Activities		SME Count
3.8	Manufacture of aluminium	712
3.9	Manufacture of iron and steel	1,836
4.14	Transmission and distribution networks for renewable and low carbon gases	1,666
5.11	Transport of CO2	1,442
6.16	Infrastructure enabling low carbon water transport	619
6.17	Low carbon airport infrastructure	20,444
9.2	Research, development and innovation for direct air capture of CO2	8,741

Having excluded 22 activities in this exercise due to both real world conditions and SG5 expertise, step 3 of the process was then done again, applying the new revised group coefficients to each set of activities with multiple NACE codes attached to it to account for the excluded activities. Lastly seven activities are to be included in the final selection of priority activities based on expertise by the SG5 group (Table 34).

Table 34: Activities added to the final selection list by SG5

Included Activities		SME Count
1.3	Forest Management	42
3.1	Manufacturing of renewable energy technologies	194
3.6	Manufacture of other low carbon technologies	198
6.5	Transport by motorbikes, passenger cars and light commercial vehicles	219
6.6	Freight transport services by road	307
6.3	Urban and suburban transport, road passenger transport	396
8.2	Data-driven solutions for GHG emissions reductions	95

4.1.1.6. Step 6: Selection results

The result is a final count of 139,626 SMEs being mapped across all non-excluded EU Taxonomy activities. We selected the top 25 activities as priority-activities. These cover 134,947 SMEs, approximating to 97% of the final count. To these activities, we added the seven activities from Table 34. This results in 98% of the final count covered. The final selection of the activities is shown in Table 35 below.

Table 35: Final selection of activities from selection procedure (sorted on % of total SMEs)

Final Selection of Activities		SME Count	% Total
7.1	Construction of new buildings	49,596	35.7%
6.14	Infrastructure for rail transport	21,886	15.8%
3.5	Manufacture of energy efficiency equipment for buildings	20,795	15.0%
9.1	Close to market research, development and innovation	13,106	9.4%
6.13	Infrastructure for personal mobility, cycle logistics	11,167	8.0%
6.15	Infrastructure enabling low-carbon road transport and public transport	3,075	2.2%
4.5	Electricity generation from hydropower	1,337	1.0%
4.7	Electricity generation from renewable non-fossil gaseous and liquid fuels	1,337	1.0%
4.3	Electricity generation from wind power	1,337	1.0%
4.1	Electricity generation using solar photovoltaic technology	1,337	1.0%

Final Selection of Activities		SME Count	% Total
4.20	Cogeneration of heat/cool and power from bioenergy	1,125	0.8%
4.19	Cogeneration of heat/cool and power from renewable non-fossil gaseous and liquid fuels	1,125	0.8%
7.2	Renovation of existing buildings	953	0.7%
4.8	Electricity generation from bioenergy	882	0.6%
5.1	Construction, extension and operation of water collection, treatment and supply systems	821	0.6%
5.2	Renewal of water collection, treatment and supply systems	821	0.6%
4.9	Transmission and distribution of electricity	696	0.5%
5.3	Construction, extension and operation of wastewater collection and treatment	533	0.4%
5.7	Anaerobic digestion of bio-waste	460	0.3%
5.8	Composting of bio-waste	460	0.3%
7.3	Installation, maintenance and repair of energy efficiency equipment	457	0.3%
5.9	Material recovery from non-hazardous waste	441	0.3%
7.4	Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)	400	0.3%
7.5	Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings	400	0.3%
7.6	Installation, maintenance and repair of renewable energy technologies	400	0.3%
6.3	Urban and suburban transport, road passenger transport	396	0.3%
6.6	Freight transport services by road	307	0.2%
6.5	Transport by motorbikes, passenger cars and light commercial vehicles	219	0.2%
3.6	Manufacture of other low carbon technologies	198	0.1%
3.1	Manufacture of renewable energy technologies	194	0.1%
8.2	Data-driven solutions for GHG emissions reductions	95	0.1%
1.3	Forest management	42	0.0%

4.1.2. Criteria analysis through interviews and desk research

In order to identify the challenges SMEs will face when understanding, meeting and reporting on the technical screening criteria, a working document was created for each of the Taxonomy sectors for which activities in the final selection were included as listed in Table 34. In this working document, the Taxonomy climate delegated act' activities were listed, along with all the technical screening criteria for the activity. These are the criteria for substantial contribution to climate change mitigation, DNSH to climate change adaptation, DNSH to sustainable use and protection of water and marine resources, DNSH to transition to a circular economy, DNSH to pollution prevention and control and DNSH to protection and restoration of biodiversity and ecosystems. For each of the criteria, excluding the criteria for climate change adaptation, we analyse whether SMEs will encounter challenges in understanding, meeting and reporting on the criteria, what these criteria are, the level of difficulty of the challenge and what could be the challenge.

To clarify, in this study we refer to understanding, meeting and reporting on the technical screening criteria as the costs and efforts required to assess the degree of alignment and to evidence this alignment. For the identified challenges it is stated whether this challenge is a challenge to understanding, to meeting or to reporting on the criteria ("Challenge Type").

Understanding, meeting and reporting in this analysis should be interpreted as the following:

- Understanding: unclarity in understanding criteria and definitions, such as issues with wording
- Meeting: inability to meet the criteria, for example, due to lack of resources
- Reporting: data inaccessibility and/or inapplicability of it

The following examples of challenges will further clarify this distinction:

- Understanding: "There is lack of clarity around what is meant by technical and physical means and which parts of the construction process are included in this activity."
- Meeting: "The requirement to have a GHG LCA assessment and a verification by a 3rd party will likely from challenge due to the lack of resources of SMEs required to perform an LCA."
- Reporting: "The requirement of source control is challenging as most of the source-control measures are beyond the merit of the wastewater operators and are taken by competent public authorities."

As the EU Taxonomy refers to existing legislation for many of the criteria, there will also be a focus on this in the analysis. For each of the criteria, the referenced legislation and other standards are listed. Through a qualitative assessment of interviews and desk research, the legislation and standards are analysed on whether they form a challenge to the SMEs, whether there are any other proxies not referenced that might be relevant for the sector or activity, and what a potential solution could be. We consider EU legislation (such as Directives, Protocols, Regulations, Standards, BAT-AEL, etc.) or non-EU specific standards (such as the ISO standards).

To identify and analyse what challenges SMEs might face with regards to the technical screening criteria and what the potential solutions could be, the following steps are performed:

1. Exclusion and special considerations for some criteria
2. Desk research
3. Interviews
4. Final overview of analysis in the spreadsheet

We elaborate on these steps in the following sections.

4.1.2.1 Step 1: Exclusion and special considerations for some criteria

As a first step, we aim to create a list of prioritised criteria to be considered in the further analysis of desk research and interviews. To do this, the following criteria are excluded from the analysis:

- The criteria that include N/A
- The criteria for DNSH to climate change adaptation, as this is not in the scope of the present project.

Furthermore, the generic DNSH criteria in the appendices of Annex 1 of the delegated act are generic across all the sectors and activities and are therefore assessed in a separate section on generic level in section 4.2.3 and not included in the activity specific analysis. The generic DNSH criteria are mainly based on existing legislation, as are many of the activity-specific substantial contribution and DNSH criteria. To identify any challenges for these criteria where the legislation is referenced, a legislative analysis is performed as indicated in the following step.

4.1.2.2 Step 2: Desk research

To assess where challenges lie for SMEs in understanding, meeting and reporting on the technical screening criteria, desk research is performed. This desk research includes legislative research, as shortly introduced in the previous section, and desk research on existing position papers of certain organisations on the usability of the EU Taxonomy and its criteria for SMEs.

The legislative research is focused on the existing EU legislation which the criteria refer to. In this research, we have analysed two different cases in which SMEs will probably encounter additional administrative burden:

- When the requirements in the Taxonomy are more ambitious than just complying with the existing legislation (e.g., “PED 10% lower than the threshold set for the nearly zero-energy building (NZEB) requirements in national measures implementing Directive 2010/31/EU”)
- When SMEs are not in the scope of existing legislation

To analyse the extent of the additional administrative burden with regards to the above-mentioned cases, where available we reviewed the following documents in the legislative research:

- Transposition reports which could identify either gold plating practices (e.g., Member states putting even stricter requirements on businesses than initially foreseen) or diversity of transposition (creating additional complexity on cross-border transactions)
- Evaluation report to identify whether significant burden is put on businesses, hence on SMEs in case of the Taxonomy

Besides the legislative research, the desk research also includes reviewing position papers published by sector organisations and networks, on the application and usability of the EU Taxonomy for the SMEs in a specific sector. These position papers often provide insights into what challenges SMEs could expect when using the EU Taxonomy and understanding, meeting and reporting on the technical screening criteria relevant to their activity. Furthermore, occasionally they mention solutions to these challenges, which are considered in the analysis.

4.1.2.3 Step 3: Interviews

In addition to the desk research, the assessment is also based on interviews with multiple stakeholders that can provide insights to the project. A total of 47 interviews were held, further elaborated in Annex 5. The following stakeholders were interviewed for the following reasons:

TEG members that have played a role in the development of the criteria: In the interviews we explore the existing criteria and how they have been developed. This gives insight to several of the existing criteria and the challenges that might be faced by the SMEs to understand, meet and report on these criteria. Furthermore, insights are gained on which alternative criteria were previously considered and why they were not included in the recommendations made by the TEG. These insights will be useful when assessing the solutions to certain challenges.

- **European SME and sector organisations:** For the selected activities and their sectors listed in Table 35, sector organisations working across the EU and having SMEs among their members are identified. In these interviews, we aim to have an understanding of whether and how SMEs in the specific sector or even activity work with the Taxonomy criteria, and the challenges potentially encountered by them when doing so. Furthermore, we explore what solutions could possibly simplify the exercise for SMEs in that sector and why.
- **Ramboll technical experts:** As Ramboll is a global company with its strongest presence in the EU, and operates across multiple sectors on a technical level, a pool of experts has been established. The expert panel consists of individuals who have certain expertise and knowledge on the sectors and relevant economic activities, as well as the criteria for these activities with respect to all five environmental objectives (excluding climate change adaptation as this is out of scope). In the interviews, the experts review the criteria for each of the selected activities in which their expertise lies. For each of the criteria, they provide insights into what challenges might be encountered by an SME when wanting to understand, meet and report on the criteria. Furthermore, the experts give insights into existing legislation and common and best practices within each economic activity and for the specific criteria. From there, they will support in finding solutions that should be considered for the identified challenges.
- **SMEs:** The final stakeholders interviewed are the SMEs within the various selected activities as listed in Table 35. These SMEs are identified through the interviews and communication with the SME and sector organisations, and additionally through online search. Preferably the SMEs have already been working with the EU Taxonomy or are at least familiar with it. The aim of these interviews is to validate the findings in terms of identified challenges and potential solutions with regards to the technical screening criteria.

4.1.2.4 Step 4: Assessment results

These above steps result in the following assessment points for each of the activities outline in Table 35 where applicable to the criteria of that activity:

- Sector (e.g., Construction and Real Estate)
- Activity # (e.g., 7.1)
- Activity (e.g., Construction of new buildings)
- Criteria type (e.g., Substantial contribution to climate change mitigation)
- Criteria (e.g., Constructions of new buildings for which: 1. The Primary Energy Demand (PED), defining the energy performance of the building resulting from the construction, is at least 10 % lower than the threshold set for the nearly zero-energy building (NZEB) requirement ...)
- EU legislation referenced in criteria (e.g., EN13187 (Thermal Performance of Buildings - Qualitative Detection of Thermal Irregularities in Building Envelopes - Infrared Method) and EN 13829 (Thermal performance of buildings))
- Comments on regulation application to SMEs (e.g., in scope or out of scope)
- Comments on evaluation of legislation (specifically on administrative burden)
- Comments on transposition of legislation
- Identified challenge (e.g., thermal integrity is not mandatory under EU legislation, but is included in this criteria)
- Challenge type (Understanding "U", Meeting "M" or Reporting "R")
- Why is this a challenge? (e.g., administrative burden to undergo a thermal integrity test)
- Concrete solutions how the criteria can be simplified, reformulated and/or explained

Where relevant, the columns are filled out based on the conducted interviews and desk research. In the following chapters the analysis results from the spreadsheet are included on a non-sector specific level (such as the generic DNSH criteria) and sector specific level for the selected activities within each sector.

The results should be read keeping in mind the following elements:

- Some identified challenges are not only applicable to SMEs. However, **many of the identified challenges are applicable to both SMEs and large companies**, so not only specifically to SMEs. This is because many of the criteria are focused around understanding them, and the usability of the criteria. The challenge to understanding will apply to all companies that intend to use the Taxonomy. The difference is that SMEs will often not have the resources to address these challenges, whereas large companies will likely hire consultants or put together a whole Taxonomy team in their business as further elaborated in section 4.2. It should not matter whether the criteria are SME-specific or apply to both SMEs and large enterprises, as SMEs face a challenge regardless of whether it also applies to large enterprises.
- The present study has been carried out from the SME point of view. Therefore, in order to correctly identify the SME-specific problems in comparison to the problems of large enterprises, it would be necessary to conduct a specific study on the usability of the Taxonomy from the perspective of large enterprises. This was not in the framework of the present study.
- The report contains recommendations with regards to **changes of the thresholds of criteria**, which will indeed make it easier to meet as also mentioned in the methodological notes. These recommendations to the thresholds which were encountered through the process of interviewing and desk research, they have been included in the results.

The challenges and recommendations are often expressed from an **industry perspective**. This is the perspective gained by the study team through interviews and the review of position papers, and it is the most relevant considering the focus of the present study on potential simplification mechanisms for SMEs and the future work of the Technical Expert Group (TEG) on the usability of the EU Taxonomy.

4.2. Cross-sector analysis

This section highlights non-sector specific observations, challenges and recommendations for simplification. In addition, generic DNSH appendices are analysed in chapter 4.2.3.

4.2.1. Cross-sector challenges

During the analysis, several non-sector specific challenges were identified.

First, **SMEs find it difficult to start working on the Taxonomy and to see how and which elements are relevant to them**. They are still focused on figuring out where they fit in the Taxonomy in terms of eligibility and understanding of economic activities, and how to understand when an activity, product or service can be considered as related to an environmentally sustainable activity. So they are not even working with the criteria themselves yet. Second, **NACE codes**, that are used to provide a non-exhaustive list of potential activities that could fit under a Taxonomy activity, are posing challenges across sectors. Indeed, the use of NACE code leads in most cases to confusion instead of providing guidance. Challenges encountered in relation to NACE code include:

- In some cases, NACE codes cover a wide range of activities and therefore do not provide any insight on the activities covered. For example, NACE code C27 – Manufacture of electrical equipment is mapped to multiple activities across the Taxonomy, ranging from manufacturing of various technologies to installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings. In such cases, a company falling under NACE code C27 could struggle to identify under which Taxonomy activity their activities fall.
- NACE codes mentioned as being potentially relevant for each activity are **not exhaustive**, making it difficult for SMEs (and their industry associations) to consider adapting the Taxonomy if their NACE code(s) are not explicitly mentioned. For example, for Activity 3.5 – Manufacture of Energy Efficiency Equipment for Buildings, NACE code 23.12 is not

explicitly mentioned, although SMEs are strongly represented in this NACE code (e.g., glass transformation to add thermal properties, in the case of windows). This activity provides thermal properties to the glass and contributes directly to the fulfilment of the final product criterion and could therefore be assessed as a 'key component'. However, as the NACE code is not explicitly mentioned, it is not clear to companies whether their activities falling under NACE code 23.12 are eligible or not.

Third, most of the challenges in understanding, meeting and reporting on the criteria are found across all companies, regardless of their size (SMEs or large companies). However, **while larger companies have the resources to set up a Taxonomy team or hire consultants to tackle the Taxonomy issues they face, SMEs do not have the resources to do so**. The resource issue is inversely proportional to the company size within SMEs: the administrative burden is relatively heavier for a small company with 15 employees than for a medium-sized company with 200 employees.

Fourth, where SMEs tend to represent **a part of the supply chain**, most of the **criteria relate to the final product or service provided**. This makes it difficult for SMEs to understand when they fall within the scope of an activity, especially if they want to report for reasons of access to finance, client requirements, or any other reasons. In addition, this could pose a problem in accessing the information to report on the criteria, as they usually only have information on their share of the final product, or their service provided.

For example, for Activity 3.5 – Manufacture of Energy Efficiency for Buildings, Substantial contribution criteria states "the economic activity manufactures one or more of the following products and their key components: Windows with U-value lower or equal to 1,0 W/m²K". Our research and interviews show that it is practically impossible for SMEs responsible for only one transformative step of the glass, to know if the final product complies with the Taxonomy criteria, and thus if their own activity can be considered as aligned.

Fifth, **the definition of activities often refers to EU legislation** (mainly regulations or directives). This could generally increase the burden for SMEs to understand what is covered under the activity, as they will need to investigate the referenced EU legislation, in some cases identify their national transposition, and evaluate which elements apply and what the requirements are. Specific examples are provided throughout the analysis in the chapters below for certain activities (e.g., section 4.4.1 on activity 3.1 - Manufacture of renewable energy technologies). In addition, the reference of legislation across criteria development may be seen as counterintuitive in the development of the EU Taxonomy that aims to provide activity-specific criteria.

Sixth, following the same idea, **enabling activities are not clearly defined, but refer to another article of the Taxonomy Directive, which in turn refers to another article**. Such references to several articles of the legislation or other regulatory frameworks creates burden for companies to understand the description of the activity and assess whether their activities are eligible. When consulting the delegated act, the definition of an enabling is not clearly indicated under the activity to which it can be linked, but instead refers to an existing generic definition, that must be found by consulting another Article.

Seventh, throughout the Delegated Act, **sentences tend to be unclear and too long, and wording is often deemed unclear or unprecise**, making the process of understanding more complex. Multiple occurrences of this challenge have been encountered throughout the study. Concrete examples are provided throughout this document.

Eighth, Best Available Techniques (BAT) are mentioned across multiple criteria. **In many sectors, SMEs are probably not aware of BAT** and would need to consult with third parties or receive clearer guidance from the Taxonomy on which reference technologies they should compare with. As technologies are in constantly evolving, SMEs would need to make a constant effort to stay up to date.

Ninth, it was noted that **several criteria for the different activities could hinder innovation, for example by referring to an exhaustive list of what falls under the activity**. Considering that the purpose of the Taxonomy is to direct financing towards activities that support the

sustainable transition, and that SMEs are known to be catalysts of innovation, this seems counterproductive. Especially considering that the activities of the Taxonomy and its criteria are not regularly reviewed and updated, there should be more flexibility in the criteria and the description of the activities. However, possible solutions to this challenge should be carefully considered because a criterion that is too vague can also lead to problems of understanding.

As seen in Table 36, half of the challenges identified are in understanding the criteria (as defined in 4.1.2). It should be noted that this does not include the more general challenges that are applicable to all activities, such as the challenge to working with NACE codes. The second most often found challenges were related to reporting on the criteria and the third most to meeting the criteria. The challenges to understanding the criteria will also likely apply to larger corporates, as it is a matter of wording or need for clarification. The challenges to reporting and meeting the criteria will more often be SME specific. None of the challenge types should be prioritized over the other. Implementing the solutions to understanding, meeting and reporting should all be seen on a similar level of criticality.

Table 36: Distribution of challenge type for all identified challenges across all in-scope sectors

Challenge Type	% of total challenges
Understanding	50%
Reporting	38%
Meeting	13%

The categorisation of challenges has also been assessed on sector level, as seen in Table 17 below.

Table 37: Distribution of challenge type for all identified challenges per all in-scope sectors

Sector	Challenge Type	% Challenge Type in Sector
Forestry	M	57%
	R	29%
	U	14%
Manufacturing	U	64%
	R	32%
	M	5%
Energy	U	50%
	R	30%
	M	20%
Water supply, sewerage, waste management and remediation	U	45%
	R	41%
	M	14%
Transport	R	77%

Sector	Challenge Type	% Challenge Type in Sector
	U	15%
	M	8%
Construction and real estate	U	61%
	R	30%
	M	9%
Information and communication	U	33%
	M	33%
	R	33%
Professional, scientific and technical activities	U	78%
	R	22%

For most sectors the challenges to understanding were most common. The exception are the forestry sector and the transport sector. Notably, where for most activities the challenges to meeting are least common, it is the most common for the forestry sector.

4.2.2. Recommendations to simplify the cross-sector challenges

Throughout the interviews with experts, sector associations and companies, numerous high-level suggestions were made to support companies, particularly SMEs, in understanding, meeting and reporting on the EU Taxonomy:

- **More guidance is needed, and examples should be provided for each activity in order to simplify and make the criteria understandable and workable for the SMEs.** We recommend to provide concrete guidelines at sector or activity level on how to implement the Taxonomy as a SME, including application examples for various activities, regularly updated lists of referenced legislation and their national transposition for each of the member states (including thresholds where relevant) and a list of the reference Best Available Techniques (BAT) and their applicable criteria (i.e. all of the recommendations in the BAT or only the AEL) to avoid SMEs having to look into each legislation.
- It is recommended to **develop a platform (general platform, national platform, or sector-specific) providing practical resources**, examples, good practices and allowing SMEs to exchange on their experience with the Taxonomy.
- **Regarding enabling activities, a simplification suggestion could be to include the definition directly under each activity to facilitate the understanding the concept by a SME looking at the activity.** Such rephrasing could be:

'An activity in this category is an enabling activity if it directly enables other activities to make substantial contribution (as defined in the section below), where it complies with the technical screening criteria set out in this section, and provided that such economic activity

a) does not lead to a lock of assets that undermine long-term environmental goals, considering the economic lifetime of those assets; and

b) has a substantial positive environmental impact, based on life-cycle considerations.

- **Regarding the NACE codes, it is recommended to leave these out** for each activity and instead be clearer in the description of the activity so that SMEs will understand what activity they fall under and thus what criteria will apply to them.

- Challenges to understanding can likely be solved through clarification, more direct wording, examples, concrete lists of elements (rather than references to where these elements are mentioned, e.g., directives, regulations, BAT, UNESCO World Heritage sites, etc.) and overviews of how the referenced legislation is implemented in the various member states. Regarding challenges falling under the “Meeting” category, specific focus should be taken to aligning the criteria with existing proxies, such as labels and certifications, to simplify and make meeting the criteria less resource heavy.
- A general comment on the solutions, is that other existing standards and certificates have been considered when identifying the challenges and solutions. Especially within the construction sector, there are many different standards and certificates that are commonly used, depending on the region and purpose of the certification. Furthermore, new standards and certificates are constantly being developed. For those SMEs already working with standards or certification, **it would be a great help to have a list for each criterion which covers existing standards or certifications**. The challenge here though is that the list will probably need to be constantly updated and that all certification schemes and standards used in the EU will need to be analysed and mapped to the criteria of the Taxonomy to find out which one’s match. Many of the most commonly used certification schemes and standards are already doing this. It could be expected that in the future their criteria will transition to or include more elements from the Taxonomy. In this way, it is expected that in the future, these proxies and the EU taxonomy will be more aligned.

4.2.3. Challenges to the generic DNSH criteria

Generic Do No Significant Harm criteria have been developed in appendices of the Delegated Act and are referred to throughout the Delegated Act document. The present section highlights general findings on the appendices and provides insights on the challenges for each appendix individually.

The three appendices in scope of the present study (Appendices B, C and D) all refer to compliance with various EU legislations (regulations and directives). Appendix A was excluded of the analysis; however, some findings were identified during the research and therefore are briefly addressed in this section. Appendix E has not been considered under this chapter for the generic DNSH criteria, but under the construction activities covered in section 4.8. This is because Appendix E specifically applies to only those activities.

In general, it was noted in the interviews and confirmed in the TEG report, that in such cases for the Generic DNSH criteria, it would be reasonable to assume that the generic criteria in the appendices are automatically met when activities are carried out in respect of the law, unless the contrary is demonstrated²⁴.

In addition, the legislation referenced in these criteria often does not directly impose requirements on corporates, including SMEs, but rather on national permitting authorities. This affects the interpretability of the criteria and thus the potential to assess whether SMEs operating a specific activity do comply. In essence, they are being asked to assess their activities against criteria that do not apply to them. As the requirements are already addressed by the authorities in the permitting stage, the activity would automatically comply with these criteria.

Lastly, it is also a huge effort and additional administrative burden for SMEs to understand what is required to comply with the DNSH, as they will have to look up each regulation or directive and understand how it is transposed to their member state.

24 See p. 32 [Sustainable finance TEG Final report taxonomy](#)

Appendix A – Generic criteria for DNSH to climate change adaptation

Criteria description: *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:*

- a) *screening of the activity to identify which physical climate risks from the list in Section II of this Appendix may affect the performance of the economic activity during its expected lifetime;*
- b) *where the activity is assessed to be at risk from one or more of the physical climate risks listed in Section II of this Appendix, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity;*
- c) *an assessment of adaptation solutions that can reduce the identified physical climate risk.*

The climate risk and vulnerability assessment is 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 is performed, at least by using climate projections at the smallest appropriate scale;*
- 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 consistent with the expected lifetime of the activity, including, at least, 10to30 year climate projections scenarios for major investments.*

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, scientific peer-reviewed publications, and open source or paying models.

For existing activities and new activities using existing physical assets, the economic operator implements physical and non-physical solutions ('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. An adaptation plan for the implementation of those solutions is drawn up accordingly.

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.

The adaptation solutions 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 or rely on blue or green infrastructure to the extent possible.

Currently it is unclear to companies how to practically approach the criteria listed in Appendix A. While many requirements are given on what should be considered when addressing this appendix, it does not give any guidance on how to do the assessment and what level is sufficient. Companies are looking for answers to questions such as: How granular will the assessment need to be to be sufficient? How do I do this analysis? How do I apply these criteria to my specific activity? Generally, companies have not yet taken measures that would help meet the criteria. While the mitigation solutions are commonly addressed through the authorising process, the previous step, namely the identifying the material risks, is missing. When the criteria are applied and a detailed climate risk and vulnerability assessment is performed, it is very often time and resource consuming, and requires the right (local) knowledge to perform it properly. Moreover, the data on which the assessment should be based is often not available.

Appendix B – Generic criteria for DNSH to sustainable use and protection of water and marine resources

Criteria description: 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 of the European Parliament and of the Council and a water use and protection management plan, developed thereunder for the potentially affected water body or bodies, in consultation with relevant stakeholders.

Where an Environmental Impact Assessment is carried out in accordance with Directive 2011/92/EU of the European Parliament and of the Council and includes an assessment of the impact on water in accordance with Directive 2000/60/EC, no additional assessment of impact on water is required, provided the risks identified have been addressed.²⁵

The two criteria for DNSH in relation to water described above clearly refer to compliance with existing EU directives.

First, Appendix B refers to the Water Framework Directive (Directive 2000/60/EC), which should be adhered to. This directive is transposed into national laws, it applies to authorities (national and local) and it is integrated with permit delivery for relevant projects. Therefore, compliance with this directive is not in the hands of the companies, but rather in the hands of the authorities, that should ensure that the law is complied with.

Similar to the first criterion, the second refers to the compliance to Directive 2011/92/EU on Environmental Impact Assessment. This directive is aimed at Member States that should implement the EU legislation in their national/local legislation. Therefore, it does not apply directly to companies, but is translated into local laws. Passing this criterion could be understood as complying with the local/national legislation as well.

Appendix C – Generic criteria for DNSH to pollution prevention and control regarding the use and presence of chemicals

Criteria description: The activity does not lead to the manufacture, placing on the market or use of:

- a) substances, whether on their own, in mixtures or in articles, listed in Annexes I or II to Regulation (EU) 2019/1021 of the European Parliament and of the Council, except in the case of substances present as an unintentional trace contaminant;
- b) mercury and mercury compounds, their mixtures and mercury-added products as defined in Article 2 of Regulation (EU) 2017/852 of the European Parliament and of the Council;
- c) substances, whether on their own, in mixture or in articles, listed in Annexes I or II to Regulation (EC) No 1005/2009 of the European Parliament and of the Council;
- d) substances, whether on their own, in mixtures or in an article, listed in Annex II to Directive 2011/65/EU of the European Parliament and of the Council, except where there is full compliance with Article 4(1) of that Directive;
- e) substances, whether on their own, in mixtures or in an article, listed in Annex XVII to Regulation (EC) 1907/2006 of the European Parliament and of the Council, except where there is full compliance with the conditions specified in that Annex;
- f) substances, whether on their own, in mixtures or in an article, meeting the criteria laid down in Article 57 of Regulation (EC) 1907/2006 and identified in accordance with Article 59(1) of that Regulation, except where their use has been proven to be essential for the society;
- g) other substances, whether on their own, in mixtures or in an article, that meet the criteria laid down in Article 57 of Regulation (EC) 1907/2006, except where their use has been proven to be essential for the society

²⁵ Climate Delegated Act

The criteria laid out in Appendix C all relate to compliance with existing EU regulations and directives on various contents. A total of 7 pieces of legislations are mentioned which companies would need to consult and understand, in order to then check national implementation and assess whether they meet the criteria. This will require a considerable amount of resources and is therefore particularly challenging for SMEs.

Appendix D – Generic criteria for DNSH to protection and restoration of biodiversity and ecosystems

Criteria description: *An Environmental Impact Assessment (EIA) or screening has been completed in accordance with Directive 2011/92/EU. Where an EIA has been carried out, the required mitigation and compensation measures for protecting the environment are implemented.*

For sites/operations located in or near biodiversity-sensitive areas (including the Natura 2000 network of protected areas, UNESCO World Heritage sites and Key Biodiversity Areas, as well as other protected areas), an appropriate assessment, where applicable, has been conducted and based on its conclusions the necessary mitigation measures are implemented.²⁶

Similar to Annexes B and C, Annex D refers to compliance with EU directives, the implementation and verification of which is the responsibility of the licensing authorities. Furthermore, the second paragraph needs to be clarified. It is unclear what the definition of “near” is and what an appropriate assessment is. In addition, it is difficult to check whether the site or operations are located in or near the areas, as the SMEs will need to look up what areas are included in the Natura 2000 network of protected areas, the UNESCO World Heritage sites and the Key Biodiversity Areas.

4.2.4. Recommendations to the simplification of the generic DNSH criteria

For these reasons, it is recommended that the criteria for DNSH in Appendices B to D are substantially altered for SMEs as they create a large burden to even understand the criteria and work with them as mentioned in the beginning of section 4.2.3, and as compliance can be assumed. It is suggested that the appendices are left out and replaced by more activity-specific criteria with a focus on the usability of such criteria (i.e. not too extensive or complicated to understand).

Further research should be done for each specific activity what the simplified DNSH criteria could be. An example is already given in how DNSH for the transition to a circular economy is currently included. This is much more simplified and activity specific. However, these criteria are currently often seen as too vague and broad, and it is challenging to answer to these criteria with a simple “yes” or “no”. Companies are having difficulties in assessing whether its efforts on circular economy are sufficient to be compliant with the corresponding DNSH criteria. Therefore, the suggestion for the DNSH criteria for water, pollution and biodiversity is to take a similar approach as to how the DNSH for circular economy are currently developed, with a focus on the usability.

Furthermore, we have outlined the recommendations per DNSH environmental objective:

- **DNSH to climate change adaptation:** It is recommended that the national and/or regional data is made available by responsible authorities so that the climate risk and vulnerability assessment can be performed properly, and that tools, practical approaches and examples are made available to support a systematic and easy-to-use approach methodology for all companies.
- **DNSH to sustainable use and protection of water and marine resources:** It is suggested that if a company is compliant with the national implementation of the Water Framework Directive (Directive 2000/60/EC), and where applicable, has obtained a permit, it should automatically pass this DNSH criterion. The same applies to the Directive 2011/92/EU on Environmental Impact Assessment which is also reference in the appendix.
- **DNSH to pollution prevention and control:** In order to simplify the understanding of the criteria in this appendix, we suggest providing an exhaustive list of substances that should

26 Climate Delegated Act

not be manufactured, be placed on the market or used by the economic activity, based on the substances currently listed in the referenced legislation, in order to pass the criteria.

- **DNSH to protection and restoration of biodiversity and ecosystems:** Similar approach to simplification as in DNSH to water is suggested for the referenced legislation. Furthermore, it is suggested to provide a list of the areas included in the Natura 2000 network of protected areas, the UNESCO World Heritage sites and the Key Biodiversity Areas to simplify the process of screening against these lists.

4.3. Forestry

Resulting from Task 1 analysis, the process described in section 4.1.1, one activity was selected from the forestry sector for further analysis:

- Activity 1.3 – Forest management

Both the types of forests, as well as the characteristics of the sector vary across Europe. In Northern Europe a large amount of forest is privately owned, often the estates are smaller, and the forest segment is more fragmented. In Eastern Europe the majority of forest is state-owned and managed by semiprivate companies, which are mostly large-scale companies.

4.3.1. Forest management (Activity 1.3)

Activity description: Forest management is defined by national law. Where national law does not contain such a definition, forest management corresponds to any economic activity resulting from a system applicable to a forest that influences the ecological, economic or social functions of the forest. Forest management assumes no change in land use and occurs on land matching the definition of forest as set out in national law, or where not available, in accordance with the FAO definition of forest.²⁷

4.3.1.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Substantial contribution criteria

Activity 1.3 on forestry management is comprehensive and has a long list of criteria for substantial contribution, which overall touch upon five different aspects. Overall, the criteria in activity 1.3 are found to be extensive and written in overly complex language.

Criteria 1.1 to 1.6 outline requirements for a forest management plan. The criteria to the forest management plan did not raise any specific challenges, as it is already common practice in the industry. However, it is not common for SMEs to report a full management plan, thus it could be difficult for them to report on the full extent of the plan.

Criteria 2.1 to 2.4 outline requirements for a climate benefit analysis. As defined in criteria 2.4, it is only forest holdings above 13 ha which must perform a climate benefit analysis. This exempts many SMEs for the criteria in the climate benefit plan and as a result, it is not found to be a large challenge for SMEs. However, it is found that the criteria are new to the industry and even large companies will find it difficult to comply as well.

Criteria 3.1. to 3.2 outline requirements for guarantee of performance on the above criteria. No significant challenges were found directly for these criteria, when complying with the forest management plan, these criteria should be fulfilled. If there are challenges to meeting criteria 1.1-1.6 it will not be possible to meet criteria 3.1-3.2.

Criteria 4 outline the requirements for an audit. For SMEs criteria 4 adds more information requirements of the companies, and verification by a third party can be a financial strain. Thus, the alternative option to use forest certifications scheme could be preferable. There are approximately fifty certifications worldwide, however the Forest Stewardship Council (FSC)

27 Article 2(1) of Directive (EU) 2018/2001.

certification and the Programme for the Endorsement of Forest Certification (PEFC) are the most used. The FSC certificate is used in more than 80 countries and covers approx. 180 m ha, the PEFC certificate is in more than 30 countries and covers more than 275 m ha. FSC contains many similar demands to the EU Taxonomy, such as standards for a forest management plan and sustainable forestry.²⁸

The financial strain of reporting could be mitigated through the possibility of group reporting presented in criteria 5. Allowing smaller companies with homogeneous activities to be audited or certified as a group, could reduce time, costs, and bureaucratic burden for each company.

Do No Significant Harm - DNSH

The criterion on circular economy is not a major challenge, however for SMEs, that have been exempted from the climate benefit analysis, it can be a challenge to demonstrate alignment. The criterion refers to the climate benefit analysis for alignment, so it is unclear how companies with less than 13 ha of forest can demonstrate alignment to this criterion.

For the criterion on pollution prevention, it is not clear how SMEs should report on it and based on interviews with sector organisations in the industry, it is stated that it can be difficult to prove whether or not pesticides have been used.

The ability to comply with the criterion on biodiversity will vary depending on the geographical area, as forests differ across Europe. Point c could be a challenge for countries such as Spain and Portugal, which historically have many non-native species. It is also unclear if a third-party assessment is necessary to comply with the criteria, which would be a financial strain for SMEs.

4.3.1.2 Recommendations for simplification

As mentioned, the language in the criteria in activity 1.3 are found to be extensive and written in an overly complex language. Therefore, a simplified version could help SMEs. Furthermore, a focus on how companies need to act to comply with the criteria would be very beneficial. The certifications FSC and PEFC are very common in the forest industry, and it could relieve the burden of Taxonomy reporting if a certification covers aspects of alignment with the EU Taxonomy. Thus, it is recommended to analyse if FSC and PEFC certifications fully align with the Taxonomy requirements. If so, the criteria could be used as documentation for full or partial Taxonomy alignment. The certifications are data comprehensive and align on the main goal with the EU Taxonomy, so an alignment or partial alignment between certification schemes and the EU Taxonomy could be very beneficial.

The forest management plan is very common in the sector. Consideration should be given to setting a minimum land hectare requirement, with less stringent criteria for companies with forest land below this requirement. Based on various national laws a threshold of 15-20 ha is suggested, for privately owned forests.²⁹

For the DNSH criteria on circular economy it should be specified, how companies with less than 13 ha land (thus not required to do the climate benefit analysis) should report in order to align with the criteria for circular economy. This could, for example, be included in the inventory analysis which is usually done every 10 years. For the DNSH criteria on pollution prevention and biodiversity, it should also be specified what reporting requirements there are to align with the criteria.

For both criteria the forest certifications could be a possible reporting solution. The FSC certification contains standards on both long-term soil health and productivity of the forest, as well as standards to protect and promote biological diversity.

28 PEFC: <https://pefc.org/discover-pefc/facts-and-figures>, FSC: [What is FSC](#), RAFT: [FSC PEFC what is the difference](#)

29 European Commission: https://ec.europa.eu/environment/forests/pdf/fmp_table.pdf, Thünen Institute: [NFAP Germany](#), University of Copenhagen: [Danish national forest accounting plan 2019](#)

4.4. Manufacturing

Resulting from Task 1 analysis, the process described in section 4.1.1, three activities were selected from the manufacturing sector for further analysis:

- Activity 3.1 - Manufacture of renewable energy technologies
- Activity 3.5 – Manufacture of energy efficiency equipment for buildings
- Activity 3.6 - Manufacture of other low carbon technologies

In the interviews and in desk research, it was found that SMEs play a very large role in the manufacturing sector. Typically, SMEs are present throughout the supply chain, and provide components to all sectors across the economy.

4.4.1. Manufacture of renewable energy technologies (Activity 3.1)

Activity description: Manufacture of renewable energy technologies, where renewable energy is defined in Article 2(1) of Directive (EU) 2018/2001.

Under this activity, SMEs would mostly be component manufacturers.

4.4.1.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Description

For activity 3.1, the description of activities covered refers to Article 10(1) of Regulation (EU) 2020/852 to define which renewable technologies are eligible. When consulting Regulation (EU) 2020/852, Article 10(1) refers to another regulation. Companies would need to search these pieces of legislation, understand them, and then return to the Delegated Act to understand whether they are covered under Activity 3.1. This unnecessarily complicated process could create a burden for companies, and specifically SMEs.

Substantial contribution

The criterion for substantial contribution is rather simple and clear: *the economic activity manufactures renewable energy technologies*. If this definition may seem straightforward and would be easily answered by “yes/no” for the final product manufacturer, it is not clear whether component manufacturers would pass the criterion.

Do No Significant Harm

The DNSH criteria for Activity 3.1 all refer to the generic appendices, that are analysed in section 4.2.3 – Generic DNSH criteria, except for the DNSH on Circular Economy.

The criterion for DNSH on Circular Economy is the same for the three activities from the manufacturing sector covered in the present study:

The activity assesses the availability of and, where feasible, adopts techniques that support:

- a) *reuse and use of secondary raw materials and re-used components in products manufactured;*
- b) *design for high durability, recyclability, easy disassembly and adaptability of products manufactured;*
- c) *waste management that prioritises recycling over disposal, in the manufacturing process;*
- d) *information on and traceability of substances of concern throughout the lifecycle of the manufactured products.*

Generally, it has been found that the criterion either lacks precision or is not broad enough. The current “in approximative approach”, neither precise nor open could lead companies, especially SMEs, to struggle in understanding whether they pass the criteria, and if so, struggle to provide evidence. Unclear aspects of the criterion include:

- “assess”: what is expected here? A structured and documented in depth assessment? A market study? Or simply the fact of considering such techniques is enough?
- “where feasible”: does it mean economically feasible for the company? Technically feasible? How can it be proven that it is not feasible?
- What does “high durability” and “high recyclability” entail? No threshold or baseline has been defined
- “substances of concerns”: what does it include?
- “information on and traceability [...] throughout the life cycle of the manufactured product”: could be challenging when the company only provides components to the final product. Typically, such a company would not have information on further use of its product.

4.4.1.2 Recommendations for simplification

Description

A suggestion to simplify the definition and improve its understandability is to provide an exhaustive list of activities covered and include directly the technologies covered (referred to in other regulations). A rewording could read:

“Manufacture of products, key components [to be defined] and machinery for renewable energy technologies, where renewable energy technologies means (as per the definition in Article 2(1) of Directive (EU) 2018/2001) energy from renewable non-fossil fuel sources, namely:

- Wind
- Solar (solar thermal and solar photovoltaic)
- Geothermal
- Ambient energy
- Tide, wave, and other ocean energy
- Hydropower
- Biomass
- Landfill
- Gas
- Sewage treatment plant gas,
- Biogas”.

Substantial contribution

Provide an exhaustive list of components that are in scope to meet the criterion for each type of energy cited above. For example, for a solar panel, components can include an aluminium frame, tempered cover glass, encapsulation foil (EVA sheet or ethylene vinyl acetate sheet), stringed solar cells, back sheet, junction box, interconnector, silicon glue, etc³⁰. There is a need to define what the wording “key components” includes. In the example above, would silicon glue be a key component? If so, there could be a challenge for the silicon glue supplier/manufacturer to know whether its product is used for solar panels or something else.

Then, as SMEs would typically only provide parts of the final product (“key components”), develop (the Platform/industry associations) a proxy to estimate the share of the product for the final technology. For example, a proxy could be based on market shares: “x% of component A is estimated to be used for B technology, therefore one can assume that x% of the revenue linked to the manufacturing of component A is linked to B technology”.

30 [What are the Main Components of a Solar Panel \(Solar PV Panel\)? \(loomsolar.com\)](https://www.loomsolar.com)

Do No Significant Harm

Regarding the understandability of the DNSH to Circular Economy criterion, two approaches are suggested:

- Develop a guide that provides an exhaustive list of pass/no pass criteria for each type of technology, as well as concrete examples (which can be interpreted as endorsing a more precise and detailed approach), or
- Simplify the criteria and broaden its scope, by rephrasing as such: *'The activity considers and communicates on techniques that support the development of Circular Economy (including use and reuse of secondary raw materials and reused components, design for high durability, recyclability, easy disassembly and adaptability; waste management that prioritises recycling over disposal, in the manufacturing process, information on and traceability of substances of concern throughout the lifecycle of the manufactured product)'.*

A suggestion for proxy to ensure circularity could be to coordinate with widely used standards such as EMAS and assess whether their requirements could allow a “systematic” pass for the DNSH criterion. Indeed, the EU Commission has recently conducted a study on the contribution of EMAS implementation to circular economy objectives and have concluded that *“in evaluating, reporting on, and improving their environmental performance, organisations that have implemented EMAS have already taken an important first step towards achieving a circular economy”*³¹.

4.4.2. Manufacture of energy efficiency equipment for buildings (Activity 3.5)

Activity description: *Manufacture of energy efficiency equipment for buildings*.

Under this Activity, SMEs would mostly be component manufacturers or assembler of final products.

4.4.2.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Description

For activity 3.5, the description of activities covered is rather short and unprecise. In addition, the name of the activity is found to be potentially misleading on what it covers. Therefore, it could be challenging for companies (and specifically SMEs) to identify whether their activities are covered under this activity.

Substantial contribution

The substantial contribution criterion for Activity 3.5 is the one that seems to be the most challenging within the manufacturing activities in the present study. Indeed, it covers a wide range of products, and therefore a multitude of challenges have been identified.

First, the criterion mentions “products and their key components”. The concept of key component is unclear and should be defined, to help companies identify whether their product is eligible. For example, a cable could be assessed as a key component, as an appliance would not function without it, but it is also a non-specific component, so it could be complex to assess whether the activity is eligible.

Secondly, criterion applies to the end-product. As most SMEs are likely to be part of the supply chain and are component manufacturers, information on the final product would not always be available. Depending on the component and the final product, a company may not know:

The final product and where its component are used (especially for non-specific components)

Whether the product is aligned with the Taxonomy (for example, a SME active in glass

31 [EMAS – Environment - European Commission \(europa.eu\)](http://EMAS – Environment - European Commission (europa.eu))

transformation, would not know whether the final window/door meets the u-value threshold, and if so, how much of its production does).

In addition, specifically for criteria (a) to (e) (windows, doors, walls, roofs and insulating products), it has been argued that the definition of a unique threshold value is not a good practice as it would exclude southern companies “by design”, especially local SMEs that provide only local markets. Indeed, if taking the example of windows, sector professionals argue that properties of a “performant window” are typically dependant on the geographical region, and that the set threshold are highly relevant for Northern European climates, but irrelevant for Southern climate that would require different properties.

Furthermore, criteria (f) to (i) all refer to the “two highest populated classes of energy efficiency in accordance with Regulation (EU) 2017/1369”. This requires companies to consult the regulation, understand it, and figure out what are the two highest populated classes for their product. If product manufacturers are likely to know the energy efficiency class of their product, this approach requires additional steps to assess whether it complies with Taxonomy expectations.

Finally, a minor challenge can be encountered for criterion (k), where the criterion refers to another activity (“*heat pumps compliant with the technical screening criteria set out in Section 4.16 of this Annex*”). This approach adds an extra step for companies to report.

Do No Significant Harm

The DNSH criteria for Activity 3.1 all refer to the generic appendices, that are analysed in section 4.2 except for the DNSH on Circular Economy.

For the DNSH on Circular Economy please refer to section 4.4.1.

4.4.2.2 Recommendations for simplification

Description

To improve the transparency and the understandability of Activity 3.5, it is recommended to develop a more precise and inclusive title, such as *Manufacture of building elements, appliances, systems, sensors and their key components*, where key components (mentioned in the substantial contribution criteria) should be defined.

Substantial contribution

Suggestions for simplification are as follows:

Provide an exhaustive list of key components for each product listed in the substantial contribution section, or alternatively, provide a concise definition of *key components*.

Once key components are defined, develop criteria for the components

Alternatively, via a market study, sector associations or the EU Commission should develop a proxy to estimate the quantity of a component that is dedicated to aligned products (as explained in section 0).

For criteria (f) to (i), the regulation itself has been assessed as a good measuring tool. To simplify the criteria and instead of referring to classes and having SMEs research the directive and the most populated class, provide for each type of appliance the class that would allow the appliance to meet the criteria. For example, criterion (f) could be rephrased as follows: “*household appliances falling into classes X and Y of energy efficiency in accordance with the European Framework for Energy Labelling (Regulation (EU) 2017/1369 of the European Parliament and of the Council and delegated acts adopted under that Regulation)*”. In practice, if doing the exercise for a washing machine, it could be phrase as the following: “the washing machine is falling in class A or B^{EE} of energy efficiency in accordance with the European Framework for Energy Labelling [...]

For criterion (k), simply rephrase and include the technical requirements: “*electric heat pumps*

compliant with the following criteria: a) refrigerant threshold: GWP does not exceed 675; b) energy efficiency requirements from the European eco-design directive for energy-related products (Directive 2009/125/EC), or national regulation if European level not known."

4.4.3. Manufacture of other low carbon technologies (Activity 3.6)

Activity description: Manufacture of technologies aimed at substantial GHG emission reductions in other sectors of the economy, where those technologies are not covered in Sections 3.1 to 3.5 of this Annex (renewable energy technologies, equipment for the production and use of hydrogen, low carbon technologies for transport, batteries).

As for other manufacturing activities, SMEs would mostly be component manufacturers.

4.4.3.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Description

According to experts, the main challenge with this activity is the understanding of description and scope. Indeed, the description is broad and unprecise, and companies may struggle to understand whether their product falls within the scope of this activity.

Substantial contribution

The substantial contribution criteria could be challenging for SMEs on multiple aspects.

The first part mentions "substantial life-cycle GHG emission savings", which makes the criterion unprecise, in the sense that no threshold has been set to assess of the substantiality of the GHG emission savings. Therefore, a company may struggle to assess whether their activity is aligned.

Secondly, the life cycle GHG emission savings should be compared to the "best performing alternative technology/product/solution available on the market". This aspect of the criterion seems to only assess the GHG emission part of other projects, leaving other considerations aside. For example, if a company manufactures a technology that has similar GHG emissions than another one, but is cheaper and is built to last longer, it is unclear whether it can be considered as aligned. In addition, comparing to another technology may be challenging as its lifecycle GHG emission savings are not publicly known.

Finally, if the standards listed for the assessment of life cycle GHG emission savings are commonly known (Commission Recommendation 2013/179/EU(96) or, alternatively, ISO 14067:2018 or ISO 14064-1:2018), SMEs may face a lack of expertise and/or (financial and/or human) resources to conduct such calculation. This is further confirmed when reading the recommendation where it is stated that "*most SMEs lack the expertise and resources to address the requests for life cycle environmental performance information. Therefore, support to SMEs should be provided by Member States and industrial associations*"³².

Do No Significant Harm

The DNSH criteria for Activity 3.1 all refer to the generic appendices, that are analysed in section 4.2.3, except for the DNSH on Circular Economy.

For the DNSH on Circular Economy please refer to section 4.4.1.

32 [L 2013L0124EN.01000101.xml \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013L0124)

4.4.3.2 Recommendations for simplification

Description

The main recommendation for the description of Activity 3.6 is to provide an exhaustive list (or at least examples) of what “other low carbon technologies” covers.

Substantial contribution

Potential simplification mechanisms for the substantial contribution criteria

- Define substantial by defining a threshold to be met for technologies to be assessed as aligned. Such a threshold could be defined in terms of % of efficiency when compared to other available technologies, or in % of GHG savings compared to business as usual.
- Allow for companies with “similar life-cycle GHG emission savings” to be aligned provided that they bring other benefits such as a lower cost or a better use of resources.
- Broaden the standards accepted for lifecycle GHG emissions assessment under this criterion for smaller companies, for example by including simplified methodologies. For example, a simplified tool could be created in the same spirit as the one created for the European Innovation Council that aimed to simplify the GHG calculation process for member-SMEs³³
- Alternatively, provide subsidies or any other support mechanism for SMEs falling under this activity to allow for a thorough assessment

4.5. Energy

Resulting from Task 1 analysis, the process described in section 4.1.1, a list of 8 activities was selected for the energy sector. These economic activities are as follows:

- Activity 4.1 - Electricity generation using solar photovoltaic technology
- Activity 4.3 - Electricity generation from wind power
- Activity 4.5 - Electricity generation from hydropower
- Activity 4.7 - Electricity generation from renewable non-fossil gaseous and liquid fuels
- Activity 4.8 - Electricity generation from bioenergy
- Activity 4.9 - Transmission and distribution of electricity
- Activity 4.19 - Cogeneration of heat/cool and power from renewable non-fossil gaseous and liquid fuels
- Activity 4.20 - Cogeneration of heat/cool and power from bioenergy

The energy sector holds the most activities of any sector identified in this report accounting for 8 of the top 30 activities selected. SMEs play an important role in the energy sector activities. In some areas, such as solar and bioenergy, SMEs are active energy producers, but in a large part of the energy sector SMEs mostly offer services such as consulting, installation and maintenance of energy generation assets.

The Taxonomy criteria are written with electricity generators in mind which are most often large entities who have the capital and risk appetite to invest millions into generation assets. As such, the information collected as part of this study from interviews and desk research suggests that the burden of Taxonomy disclosures on SMEs in well-established energy activities such as wind and solar may be limited. At the same time however, the limited impact could also be counterproductive. Although SMEs who are engaged in developing wind and solar projects may not have the burden of disclosure, loans to their projects also may not count towards environmental objectives on financial entity’s balance sheets. This could be problematic for diversion of funds towards the smaller players in the industry, especially SME PV solar developers (small commercial and rooftop systems) who may play a significant role in meeting EU climate

33 [EIC Greenhouse Gas Programme \(europa.eu\)](http://EIC Greenhouse Gas Programme (europa.eu))

objectives. This is especially important considering the REPowerEU proposed initiative for rooftop solar³⁴.

For bioenergy, renewable non-fossil gaseous and liquid fuels and hydropower, specific criteria for significant contribution and DNSH apply, which could potentially be cumbersome for SMEs depending on their role in the value chain. Outside of energy generation activities, the transmission and distribution of electricity (4.9) has some criteria that was seen as potentially challenging, but overall SMEs are not involved in the investment and development of electric infrastructure given the scale of investment and complexity required.

4.5.1. Electricity generation using solar photovoltaic technology (Activity 4.1)

Activity description: Construction or operation of electricity generation facilities that produce electricity using solar photovoltaic (PV) technology.

SMEs engaged in electricity generation from solar PV are primarily service companies including technical and financial consultancies and installation and maintenance companies with installers being the largest group.

Unlike its wind counterpart, there are SMEs that develop and operate solar generation assets such as small cooperatives, farms and commercial entities. These actors are driven to diversify their revenue streams and lower their electricity costs. However, these SMEs are generally not specialised in electricity generation, but rather use it to complement their core business. As such, it is not likely that these solar asset owners are linked to this activity as far as the Taxonomy is concerned. Although they may encounter a need to align with the Taxonomy in the future if they seek to secure loans for their solar PV generation project from financial institutions subject to the Taxonomy.

4.5.1.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Substantial contribution

The substantial contribution criteria for electricity generation from solar PV technologies is self-evident.

Do No Significant Harm

The DNSH criteria for solar electricity generation activities is only specifically defined for the transition to the circular economy. The criteria are a suggestion, not a requirement that, where feasible, directs the stakeholder to use durable and recyclable components as much as possible. This was not seen as a challenge by interviewees or desk research.

4.5.1.2 Recommendations for simplification

Solar PV project development including small-scale commercial, cooperative and rooftop projects (those most often developed by SMEs) should be eligible for the Taxonomy activity regardless of the size of the initiating entity. The energy transition will require all actors to play a role, regardless of size, and financial entities should be allowed to direct investment to PV solar projects of all scales which directly advance climate and energy targets.

4.5.2. Electricity generation from wind power (Activity 4.3)

Activity description: *Construction or operation of electricity generation facilities that produce electricity from wind power.*

SMEs working in electricity generation from wind technologies are primarily service companies including technical and financial consultancies and installation and maintenance companies. Most

34 [Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions](#)

entities involved directly in the operation of electricity generation from wind technologies are large entities who have the capital and risk appetite to invest 10s and 100s of millions into generation assets.

According to the main wind industry organization, the wind industry is not concerned with the requirements of Taxonomy given that they are relatively straightforward. Overall, the wind industry does not lack financing or investment interests, but rather a strong pipeline of projects. Furthermore, other investment classification frameworks already view investment in the wind industry as “green”.

4.5.2.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Substantial contribution

The substantial contribution criteria for electricity generation from wind power is self-evident.

Do No Significant Harm

The DNSH criteria for electricity generation from wind power is not a concern for the wind industry.

4.5.2.2 Recommendations for simplification

Similar to the recommendations for Solar PV, small-scale wind power project development should be eligible for the Taxonomy activity regardless of the size of the initiating entity. The energy transition will require all actors to play a role, regardless of size, and financial entities should be allowed to direct investment to wind power generation projects of all scales which directly advance climate and energy targets.

4.5.3. Electricity generation from hydropower (Activity 4.5)

Activity description: *Construction or operation of electricity generation facilities that produce electricity from hydropower.*

The hydropower industry is dominated by large firms including many fully or partially state-owned actors. SMEs in this sector, as in other electricity generation activities, are mostly limited to service companies including technical and financial consultancies and installation and maintenance companies. According to the European Small Hydropower Association which represents industry actors associated with small hydropower activities (<10MW), there are 14,000 small hydropower plants overall in Europe which represent 3% of Europe’s hydropower generation capacity.³⁵ However, it is unclear based on desk research and interviews, to what extent these hydropower generating facilities are operated by smaller independent power producers (potential SMEs) vs. large hydropower operators which overwhelmingly dominate the market in Europe. The substantial contribution and DNSH criteria for hydropower are specific. SMEs attempting to meet EU Taxonomy criteria for electricity generation from hydropower are likely to be limited to smaller independent power producers.

4.5.3.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Substantial contribution

The International Hydropower Association provides their “G-res tool” free to hydropower operators to calculate the life cycle GHG emissions from the generation of electricity from hydropower. This tool is cited in the Taxonomy criteria as an option to fulfil the substantial contribution criteria.

Furthermore, the fact that those operators who can prove that their hydropower facility has a power density of 5W/m² are exempt from the GHG emissions calculation makes this criterion

35 <https://www.ern.org/en/small-and-micro-hydropower/>

36 <https://www.globalccsinstitute.com/archive/hub/publications/138218/State-art-small-hydropower-EU-25.pdf>

easier to fulfil as the energy density of a hydropower facility will be easily known by the operator in the concept or pre-feasibility phase of project development.

Do No Significant Harm

The DNSH criteria for hydropower are significant for Criteria #3: Substantial use and protection of water and marine resources. As SMEs are limited in their role as hydropower operators, the ability of SMEs to assess these criteria may be limited in relevance. Nevertheless, SMEs ability to assess their Taxonomy alignment against the DNSH criteria will likely require third-party environmental impact assessments. This will be cumbersome for small hydropower facilities, especially those <1MW where the economics are already a challenge.

As the Taxonomy does not distinguish its requirements based on capacity of the facility from larger hydropower facilities, complying with DNSH requirements could potentially be cost prohibitive for smaller operators. This is especially relevant for criterion 3.3: “All technically feasible and ecologically relevant mitigation measures are implemented to reduce adverse impacts on water as well as on protected habitats and species directly dependent on water.” However, as hydropower is very site-specific in terms of its design and impacts, the challenge for SMEs in aligning with the DNSH criteria will be on a case-by-case basis.

4.5.3.2 Recommendations for simplification

Eurelectric cites the need for further clarification concerning how power density is calculated. Specifically, what area should be considered for run-of-river plants where it is not always clear where the natural reservoir begins and ends for the purpose of the calculation.³⁷

The view from the industry is that the development and operation of hydropower facilities is very site specific. The impacts on the environment from hydropower operation and development should thus be looked at on a case-by-case basis within existing EU Regulations on waste, water, biodiversity, etc. with cost-benefit analyses being the heart of decision making on Taxonomy alignment industry groups call for the Taxonomy to ensure consistency and coherence with existing environmental regulations affecting hydropower rather than introduce new environmental requirements.

For example, The DNSH criterion #3.3 calls for “All technically feasible and ecologically relevant mitigation measures are implemented to reduce adverse impacts on water as well as on protected habitats and species directly dependent on water”. However, surface water impacts are already regulated by the Water Framework Directive (2000/60/EC), habitats by directive (92/43/EEC) and construction by the Waste Directive (2018/85). Furthermore, impacts on the environment are always studied per EU Law due to the requirements for Strategic Environmental Assessments as well as Environmental Impact Assessments.

In the end this may not affect many SMEs in this sector as the criteria are seemingly targeted at larger hydropower operators. Considering that there are many service companies that work in the sector including those who study the environmental impacts and implement mitigation solutions, there is possibly even a net benefit for SMEs given the Taxonomy criteria.

4.5.4. Electricity generation from renewable non-fossil gaseous and liquid fuels (Activity 4.7)

Activity description: *Construction or operation of electricity generation facilities that produce electricity using gaseous and liquid fuels of renewable origin. This activity does not include electricity generation from the exclusive use of biogas and bio-liquid fuels.*

Like other electricity generation activities, they are limited to mostly service companies including technical and financial consultancies and installation and maintenance companies as the development and operation of electricity generation facilities are very capital intensive.

³⁷ [Moving forward with a science-based EU Taxonomy for hydropower](#)

Overall, there is very limited electricity generation from non-fossil gaseous and liquid fuels (combustion) in Europe to date and this does not figure to be a major source of electricity generation in the short or mid-term future. The substantial contribution criteria for blending of renewable non-fossil gaseous liquids and fuels with biofuels and biogases will mostly affect the parties with bioenergy resources in terms of their feedstocks rather than the parties producing non-fossil gaseous and liquid fuels

4.5.4.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Substantial contribution

Overall, the smaller the organization, the more difficult it will be to validate the lifecycle emissions of their products in terms of both costs and resources required. However, the substantial contribution criteria are not reported to be a challenge for SMEs. Renewable non-fossil gaseous and liquid fuels will need to have their life-cycle emissions calculated for the purpose of the offtaker or fuel blender as knowing the origin of the gas or fuel is critical to its market value.

Do No Significant Harm

SMEs are more than likely not aware of best available techniques (BAT) for large combustion plants and would have to consult 3rd parties or receive clearer guidance from the Taxonomy on what are the reference technologies (BAT) they should be comparing against. As technologies in this space are in constant evolution, it will also require periodic updates and communications to keep alignment up to date.

4.5.4.2 Recommendations for simplification

Clearer guidance on what LCA methods applies is needed. One standard would be helpful to be able to compare fairly across fuels.

More guidance on what are the BAT that apply to each fuel production pathway for comparison is also needed.

4.5.5. Electricity generation from bioenergy (Activity 4.8)

Activity description: *Construction and operation of electricity generation installations that exclusively produce electricity from biomass, biogas or bioliquids, excluding electricity generation from blending of renewable fuels with biogas or bioliquids.*

Unlike other electricity generation activities, the bioenergy section has many SMEs operating small bioenergy fuelled generation facilities in addition to many service-related businesses. Biomass facilities are commonly associated with other biomass processing facilities such as pulp and paper mills, sawmills and wood pellet producers. These are often captive projects i.e., they are using the power for their own operations.

4.5.4.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Substantial contribution

The actors interviewed from the bioenergy industry do not see the value in the Taxonomy criteria for SMEs as many of them are very small companies. Furthermore, concerning the first substantial contribution criteria which refers to “Forest biomass used in the activity complies with the criteria laid down in Article 29, paragraphs 6 and 7, of that Directive” many SMEs are generating electricity for their own use as a by-product of their larger forestry operations. This could be a concern when building a new facility, but these actors will likely not change their forestry operations so they can align their investments in a new electricity generation unit with the Taxonomy as this is not part of their core business. It was reported that between the substantial contribution criteria and the DNSH, they are much more concerned with the DNSH.

Do No Significant Harm

The pollution DNSH criteria for bioenergy were cited as the biggest challenge due to the lack of comprehension by SMEs. In this sector SMEs are reportedly unaware of best available techniques, and many are not compliant. Currently, there are very few SMEs working with the Taxonomy in the sector and of those who are aware of it do not see any benefit in it.

4.5.4.2 Recommendations for simplification

More clarity is needed on how to address the DNSH criteria, in particular how to incorporate BAT into their alignment analysis. Overall, awareness building is needed for SMEs operating in the sector on BAT as many are non-compliant and the guidance is cumbersome. However, smaller facilities may not be concerned with Taxonomy criteria given that captive facilities commonly produce their own feedstock (e.g., sawmills) and there could be little incentive to borrow funds to upgrade.

4.5.6. Transmission and distribution of electricity (Activity 4.9)

Activity description: *Construction and operation of transmission systems that transport the electricity on the extra high-voltage and high-voltage interconnected system. Construction and operation of distribution systems that transport electricity on high-voltage, medium-voltage and low-voltage distribution systems.*

The transmission and distribution of electricity is mainly operated by large, and often state-owned entities. Electricity transmission is especially dominated by large entities involved in long-time horizon and costly developments. Distribution companies may in some cases be SMEs, such as in smaller or more rural regions.

SMEs linked to the transmission and distribution of electricity are mainly service companies including technical and financial consultancies and installation and maintenance companies. Therefore, many if not all of the criteria for this activity will not apply to SMEs. Electricity distribution network operators have multiple mandates to fulfil (cost efficiency, decarbonization, and reliable service). As they are positioned lower in the value chain, they ultimately do not have full control over the carbon intensity of the electricity that flows through their networks. As the build out of the transmission and distribution networks will be key to a future decarbonized grid and to maintaining security of supply regardless of electricity source, it may be an unfair burden on distribution network operators to rely on upstream partners for the renewable attributes of the electricity they transport.

4.5.6.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Substantial contribution

The substantial contribution criteria are relatively straightforward for SMEs to assess for the non-transmission related activities. However, if SMEs have to calculate their carbon intensity, especially in the case of interconnected networks or cross-border connections, where the weighted average carbon intensity is considered and electricity sources vary depending on market conditions, this may present challenges in terms of monitoring and continued compliance.

Do No Significant Harm

The DNSH criteria for transmission and distribution of electricity are not reported to pose a challenge to SMEs.

4.5.6.2 Recommendations for simplification

SMEs are unlikely to be directly affected by the more detailed Taxonomy criteria related to the carbon intensity of the electricity on networks. However, where cross-border transmission is concerned, if at all, more clarity is needed on how to appropriately calculate the weighted average of carbon intensity of electricity, how to maintain eligibility when factors outside their control change the intensity and how this affects their alignment and associated investments.

4.5.7. Cogeneration of heat/cool and power from renewable non-fossil gaseous and liquid fuels (Activity 4.19)

Activity description: *Construction and operation of combined heat/cool and power generation facilities using gaseous and liquid fuels of renewable origin. This activity does not include cogeneration of heat/cool and power from the exclusive use of biogas and bio-liquid fuels.*

The actors and SMEs involved in the co-generation of heat/cool and power from renewable non-fossil gaseous and liquid fuels are the same as those in section 4.5.4.

4.5.7.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

The substantial contribution and DNSH criteria and thus the ability to assess Taxonomy alignment are the same as in 4.5.4

4.5.7.2 Recommendations for simplification

See section 4.5.4

4.5.8. Cogeneration of heat/cool and power from bioenergy (Activity 4.20)

Activity description: *Construction and operation of installations used for cogeneration of heat/cool and power exclusively from biomass, biogas or bioliquids, and excluding cogeneration from blending of renewable fuels with biogas or bioliquids.*

The actors and SMEs involved in the co-generation of heat/cool and power from bioenergy are the same as those in Section 4.5.5. Criteria analysis and SMEs ability to assess Taxonomy alignment

The substantial contribution and DNSH criteria and thus the ability to assess Taxonomy alignment are the same as in section 4.5.5.

4.5.8.1 Recommendations for simplification

See section 4.5.5.

4.6. Water supply, sewerage and waste

Resulting from Task 1 analysis, the process described in section 4.1.1, six activities within the water supply, sewerage, waste management and remediation sector were selected for further analysis:

- Activity 5.1 – Construction, extension and operation of water collection, treatment and supply systems
- Activity 5.2 – Renewal of water collection, treatment and supply systems
- Activity 5.3 – Construction, extension and operation of wastewater collection and treatment
- Activity 5.7 – Anaerobic digestion of bio-waste
- Activity 5.8 – Composting of bio-waste
- Activity 5.9 – Material recovery from non-hazardous waste

Within the activities the role of the SMEs depends on the country and region. The water sector, from an organisational point of view, is mostly public. The assets are also mainly publicly owned, but the private sector can be involved in construction, extension and operation of facilities. SMEs are usually not large operators, but they carry out specific work, such as electrical companies, mechanical companies and as building contractors. Operation is the least relevant for SMEs, but it is not entirely excluded as some of the smaller operators may be SMEs. The waste sector consists of a mix of both public and private entities.

4.6.1. Construction, extension and operation of water collection, treatment and supply systems (Activity 5.1)

Activity description: Construction, extension and operation of water collection, treatment and supply systems.

4.6.1.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

The challenges faced in this activity are mainly related to the criteria for substantial contribution. The first criterion for a substantial contribution requires that the net average energy consumption for abstraction and treatment equals to or is lower than 0.5 kWh per cubic meter produced water supply. In meeting this criterion, SMEs are likely to face the following challenges:

- The net average energy consumption is a metric for the whole system, while SMEs are more likely to cover only specific elements of the system. Therefore, they will likely not know this number and it will be very challenging to report on the criterion as the data is not commonly known or available to the SMEs.
- Whether the threshold is feasible strongly depends on the geographical location and the water quality. The value of 0.5 is easily achieved by some operators but very challenging for others. For operators in the mountains, hardly any treatment is needed, and they will generate more energy than they need. Other companies that have the plant in the valley, have to pump the water which leads to a huge energy demand. Furthermore, if many treatment steps are required to improve the water quality, more energy will also be needed. This is the case for example if the water contains a lot of PFAS that need to be removed. In this case, it will be much easier for some to achieve the criteria than others, and public health should not be jeopardised.

The second substantial contribution criterion for this activity sets thresholds for the leakage level: *“the leakage level is either calculated using the Infrastructure Leakage Index (ILI) rating method and the threshold value equals to or is lower than 1.5, or is calculated using another appropriate method and the threshold value is established in accordance with Article 4 of Directive (EU) 2020/2184 of the European Parliament and of the Council. That calculation is to be applied across the extent of water supply (distribution) network where the works are carried out, i.e. at water supply zone level, district metered area(s) (DMAs) or pressure managed area(s) (PMAs)”.*

The inclusion of other appropriate methods and threshold values besides the ILI is supported, however still some challenges related to this criterion remain:

- In general, leakage is considered the most influential sustainability parameter for this activity. In the context of leakage, SMEs will probably only exchange part of the system and will therefore not know the leakage level or have access to this information. For these SMEs, it is challenging to work with the criterion and understand when you pass or do not pass it.
- Methodologies other than ILI can be used in accordance with Article 4 of Directive (EU) 2020/2184, but no thresholds are set for these methods. There is a reference to threshold values established in accordance with the referenced directive, however, there are no thresholds established in the directive. Therefore, it is not possible to know when you meet the criteria or not when using other appropriate methods.

4.6.1.2 Recommendations for simplification

The following solutions are recommended to simplify the criteria around the net average energy consumption:

- If the asset owner prioritizes reaching the energy efficiency threshold, SMEs can focus on it as their task to support the energy efficiency. This will not tell the SMEs that their pump will need to meet certain criteria, but they will know that they need to be very efficient. Therefore, this criterion should be removed for companies performing tasks only on parts of the system rather than the whole system. Alternatively, the threshold should be adjusted to cover only the specific tasks.

- In addition, the threshold requirement should be modified for systems with less favourable conditions in terms of quality, density, topography etc. Overall, the aim is to provide the population with clean drinking water that meets hygienic requirements. Instead of setting the net average energy consumption threshold, the criterion could be based on an energy audit indicating what the energy saving potential is, and what measures should be taken to reach it. That way the different conditions will be taken into account. A new challenge might be found in requiring an energy audit, as this is not commonly done across the SMEs and would require additional resources and therefore results in an administrative burden. However, it would still be recommended as it is a good practice with regards to sustainability and seems to be more and more required by new legislation on water and wastewater. Lastly, if the company is aligned with the second criterion for substantial contribution for this activity, it would still pass (it is either/or).

For the criteria around the leakage level, the following recommendations are made:

- An appropriate method for calculating the leakage level and setting thresholds should be made available instead of, or in addition to, the current methods and thresholds referenced. EurEau has written a paper on the evaluation of leakage measurement methodologies and thresholds³⁸ that could guide the setting of new methods and thresholds for the leakage level criteria in the Taxonomy.

4.6.2. Renewal of water collection, treatment and supply systems (Activity 5.2)

Activity description: *Renewal of water collection, treatment and supply systems including renewals to water collection, treatment and distribution infrastructures for domestic and industrial needs. It implies no material changes to the volume of flow collected, treated or supplied.*

4.6.2.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

The first criterion for substantial contribution for this activity requires decreasing the net average energy consumption of the system by at least 20% compared to own baseline performance averaged for three years measured in kWh per cubic meter produced water supply. The challenges identified for this criterion are the following:

- For some part of the system this metric will be easy to measure, and for other parts it will be more difficult. It will be a burden for SMEs to calculate the metrics, as the information is not normally available to those performing collection, treatment and distribution activities for only a certain element of the system, which is probably the case for SMEs.
- The 20% threshold is found to be an arbitrary figure. It is unclear what it is based upon. The criterion will be more challenging to report against when the basis and roots of the threshold are not known. For example, where the thresholds are based on a certain standard or benchmark, it will be easier to place the threshold in context and assess alignment.
- In the case of an old system, there is a high potential to improve the average net energy consumption and align with the criteria. For a new and optimized system, 20% is unrealistic and would not make economic sense. Operators that have been very efficient so far can only achieve these improvements with considerably cost or otherwise they will be unable to achieve them. Consequently, this may lead to the paradox that very energy efficient systems are seen as less attractive as an investment and hence will find it harder to attract sufficient capital.

Several challenges were also identified in the second criterion of the substantial contribution criteria for this activity. The second criterion is focused on the improvement in leakage level. The criterion requires *closing the gap by at least 20% either between the current leakage level averaged over three years, calculated using the Infrastructure Leakage Index (ILI) rating method and an ILI of 1.5, or between the current leakage level averaged over three years, calculated*

38 [Drinking water supply and leakage management](#)

using another appropriate method, and the threshold value established in accordance with Article 4 of Directive (EU) 2020/2184. The current leakage level averaged over three years is calculated across the extent of water supply (distribution) network where the works are carried out, i.e. for the renewed water supply (distribution) network at district metered area(s) (DMAs) or pressure managed area(s) (PMAs).

The challenges to this criterion are the following:

- Many use their own methods to calculate the leakage level improvement, because they do not have all the information available. It would not be possible to calculate this for many systems. It might be possible to measure it for the whole system but then it would be difficult to calculate what the improvement would be if a single element of the system is renewed. It is recognized as an important parameter, however more information and data are needed in order to calculate it. This is particularly challenging for SMEs, as they will often receive the assignment to perform a specific task that would lead to the overall reduction of leakage of the system, but they do not have this information.
- The challenges as listed for the leakage level criterion for the previous activity (activity 5.1) also apply to this criterion.

4.6.2.2 Recommendations for simplification

To address the challenges identified for the criterion regarding the reduction in net energy consumption, the following recommendations are made:

- Where a company is performing a smaller renewal task on the system, adjust the metric for this specific task where possible. Allow estimates for calculations based on flat rates, preferably defined by the Member State or by the EU. Where this is not applicable this criterion should be disregarded.
- Explain what the 20% threshold reduction is based on.
- Efficiency efforts that have already been made and implemented must also be considered. A suggestion for future changes would be to apply a threshold of 20% at project level, similar to Article 5.4 Renewal of Wastewater collection and treatment.

4.6.3. Construction, extension and operation of wastewater collection and treatment (Activity 5.3)

Activity description: Construction, extension and operation of centralised wastewater systems including collection (sewer network) and treatment.

4.6.3.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Substantial contribution

The first criterion for substantial contribution to this activity related to the net energy consumption of the wastewater treatment plant, measured in kWh per population equivalent (p.e.) per annum. This is not a common metric, but it is deemed reasonable to calculate for the utility operators and owners. However, similarly to the previous two activities, SMEs that are eligible under this activity might only perform certain elements of the construction, extension and operation of the wastewater system. For this reason, SMEs will probably not have the data available to calculate the required metrics. The criterion for source control, following the energy consumption criterion, is also deemed challenging with regards to data availability, as most of the source-control measures are beyond the merit of the wastewater operators and are taken by competent public authorities. Furthermore, the criterion specifically mentions may, making it a non-criterion (i.e., it does not set a requirement for the alignment).

The last criterion for this activity is the requirement to assess the direct GHG emissions performed for the construction and extension of a wastewater treatment plant which are substituting more GHG-intensive treatment systems. This is something not commonly done among SMEs in this activity, and therefore deemed challenging to do. They will need to hire an external consultant to

perform the assessment.

Do No Significant Harm

The Do No Significant Harm criteria listed specifically for this activity (i.e. not the generic DNSH in the appendices) refer to existing legislation and are already commonly adhered to by companies working with this activity. Therefore, they do not add any additional requirements.

4.6.3.2 Recommendations for simplification

Substantial contribution

Regarding the criteria on energy consumption, it is recommended to find a solution to the fact that SMEs will not have the data available to make the calculations, or to omit the criterion for these specific companies. Regarding the criteria on source control, it is recommended to delete this criterion as it merely adds complexity, and it is either way not a requirement to alignment. It seems unfair to limit the alignment percentages of the wastewater operators by imposing criteria on which they have neither control nor influence.

With regard to the criterion on the GHG emissions assessment, it is recommended to include a simplified method for SMEs to calculate this to alleviate the administrative burden that would otherwise arise. More guidance will be needed, and the method could potentially be based on estimates to allow for simplification. Furthermore, an example of the assessment could be provided to demonstrate how it would be applied.

Do No Significant Harm

For the Do No Significant Harm criteria, it is recommended to leave them out, under the assumption that the companies will comply with the criteria either way when compliant with existing legislation.

4.6.4. Anaerobic digestion of bio-waste (Activity 5.7)

Activity description: *Construction and operation of dedicated facilities for the treatment of separately collected bio-waste through anaerobic digestion with the resulting production and utilisation of biogas and digestate and/or chemicals.*

3.6.4.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Substantial contribution

For this activity there are 5 criteria for a substantial contribution. Below each criterion is listed and the challenges are assessed for each:

1. *A monitoring and contingency plan is in place to minimise methane leakage at the facility.*
In some member states, this is not a requirement for smaller plants, requiring additional effort from smaller companies and creating a disadvantage for them compared to the companies with larger plants.
2. *The produced biogas is used directly for the generation of electricity or heat or upgraded to bio-methane for injection in the natural gas grid or used as vehicle fuel or as feedstock in chemical industry.* Mentioning only specific uses of the produced biogas potentially limits innovation. The main reason to produce biogas is to use it, therefore it is unnecessary to mention and should be removed.
3. *The bio-waste that is used for anaerobic digestion is source segregated and collected separately.* Not all biowaste that is used is segregated and collected separately, though they will still have the right processes in place to correctly process it. Therefore, this criterion limits new developments and innovation.
4. *The produced digestate is used as fertiliser or soil improver, either directly or after composting or any other treatment.* It should be a requirement that it is utilised of course but should be open to other ideas, again to allow for innovation.

5. *In the dedicated bio-waste treatment plants, the share of food and feed crops used as input feedstock, measured in weight, as an annual average, is less than or equal to 10% of the input feedstock.* No challenge identified.

Do No Significant Harm

For the objective of pollution prevention and control, additional criteria are listed besides the generic DNSH criteria (i.e., the appendices).

The first criterion refers to the “emission levels associated with the best available techniques (BAT-AEL) ranges set for anaerobic treatment of waste in the latest relevant best available techniques (BAT) conclusions, including the best available techniques (BAT) conclusions for waste treatment.” The BAT are well-known documents that are commonly used in the sector, therefore forming no challenge in itself. However, the reference to the document(s) is/are vague, and it is unclear which BAT document(s) is/are being referred to and whether this is one document or two. There is no link or official name of the document, and when searching for it the Best Available Techniques (BAT) Reference Document for Waste Treatment³⁹ seem like the most relevant document. However, the ranges and conclusions referred to are not apparent from the document.

A challenge has also been identified in the criterion on cross-media effects stating: “No significant cross-media effects occur.” Many do not know what this is, regardless of whether the company is small or large. This criterion will be difficult to understand and report on, as research is needed to determine what is meant and how to comply.

The next criterion for DNSH to pollution prevention and control, is that of meeting the requirements for fertilising materials set out in Component Material Categories (CMC) 4 and 5 for digestate or CMC 3 for compost, as applicable, in Annex II to Regulation (EU) 2019/1009, or national rules on fertilisers or soil improvers for agricultural use. Many are not aware of the CMCS nor the EU Regulation, requiring additional effort to understand and report on this criterion.

Lastly, there is a criterion that requires the nitrogen content (with tolerance level ±25%) of the digestate used as fertiliser or soil improver to be communicated to the buyer or the entity in charge of taking off the digestate. No challenges were found to this criterion.

4.6.4.2 Recommendations for simplification

Substantial contribution

The following simplifications are recommended to address the challenges found in the first four substantial contribution criteria for this activity:

1. Make references to methods on developing a monitoring and contingency plan to support meeting this criterion. By doing so, the SMEs will not be at too much of a disadvantage in meeting this criterion compared to the companies with larger plants that already meet this as it is required by legislation.
2. Change the criterion so that it allows more forms of use and innovation, and becomes less limiting, e.g.: “The produced biogas is used directly, such as for the generation of electricity or heat, or upgraded to bio-methane for injection in the natural gas grid or used as vehicle fuel or as feedstock in chemical industry.”
3. Remove the criterion.

Change the criterion so that it allows more forms of use and innovation, and becomes less limiting, e.g.: “The produced digestate is used, for example as fertiliser or soil improver, either directly or after composting or any other treatment.”

39 [Best Available Techniques \(BAT\) Reference Document for Waste Treatment](#)

Do No Significant Harm

Firstly, it should be clarified what the reference BAT document(s) is/are, and what are the ranges and conclusions mentioned.

The main recommendation for the Do No Significant Harm criteria is to provide more guidance on cross-media affects. This applies to all activities where this criterion is listed in the Taxonomy. It is currently unclear to many what cross-media affects are, and how to address them.

Second, it is recommended to leave out the reference to the EU Regulation on CMC entirely, or to leave a reference in a footnote. The main focus should be on national legislation, as already included. By removing the reference to the EU regulation, the criterion become easier to work with and are more straightforward to understand what is required.

4.6.5. Composting of bio-waste (Activity 5.8)

Activity description: *Construction and operation of dedicated facilities for the treatment of separately collected bio-waste through composting (aerobic digestion) with the resulting production and utilisation of compost.*

4.6.5.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Substantial contribution

There are two criteria for substantial contribution for this activity. The first criterion refers to the requirement for the bio-waste that is composted to be source segregated and collected separately. This criterion has already been assessed in the third substantial contribution criterion of activity 5.7.

The second criterion for substantial contribution under this activity is that the compost produced is used as fertiliser or soil improver and meets the requirements for fertilising materials set out in Component Material Category (CMC) 3 in Annex II to Regulation (EU) 2019/1009 or national rules on fertilisers or soil improvers for agricultural use. This criterion lists exhaustive uses for compost, which might be limiting innovation for the use of compost in the future. Furthermore, as also identified in the previous activity, the CMC and the referenced regulation are often not known. Refer to activity 5.7 for the assessment on this criterion.

Do no significant harm

For the objective of pollution prevention and control, additional criteria are listed besides the generic DNSH criteria (i.e. the appendices). The challenges and recommendations have already been assessed in the DNSH criteria for activity 5.7 as they are similar. No further challenges are identified. It is assessed that the last of the DNSH criteria to pollution prevention and control is identical to the second criterion of substantial contribution for this activity. This might confuse people working with the criterion.

4.6.5.1 Recommendations for simplification

Substantial contribution

It is recommended that the criteria for the use of the compost produced is non-exhaustive to allow for innovation. A suggestion for the criterion is the following: “The compost produced is used, for example as fertiliser or soil improver. Where it is used as fertiliser or soil improver, it meets the requirements for fertilising materials set out in Component Material...”. Furthermore, as also assessed in activity 5.7, it is recommended to leave out the reference to the EU Regulation and the CMC.

Do No Significant Harm

For the Do No Significant Harm criteria, it is recommended to delete the last repeated paragraph. Further recommendations are addressed in the DNSH criteria for activity 5.7, as they are similar,

and the recommendations listed there also apply to this activity.

4.6.6. Material recovery from non-hazardous waste (Activity 5.9)

Activity description: Construction and operation of facilities for the sorting and processing of separately collected non-hazardous waste streams into secondary raw materials involving mechanical reprocessing, except for backfilling purposes.

4.6.6.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

In general, the description and substantial contribution criteria for this activity are found to be very vague. Complete review is suggested; however, we would like to highlight the following elements:

- The usage of the word *involve* in the description creates some confusion with regards to this. It is unclear whether processes that include chemical reprocessing is seen as eligible under this activity, and, if so, to what extent the process may involve chemical reprocessing.
- In the substantial contribution criteria, it should be specified whether the 50% is dry weight.
- In the substantial contribution criteria, it should be clarified what is understood with the *secondary raw materials that are suitable for the substitution of virgin materials in production processes*. This is a terminology that not everyone will understand, and it should be more comprehensive.

4.6.6.2 Recommendations for simplification

It is suggested to include chemical reprocessing in the description as well, where a material can technically not be mechanically reprocessed (e.g., black plastic) or where there is no need of the mechanically reprocessed product as opposed to when you would chemically reprocess the product. Where chemical reprocessing is included, it is recommended to add to the DNSH criteria for pollution prevention and control the BAT-AEL criterion from activity 3.14 Manufacture of organic basic chemicals. It is recommended to check whether any other DNSH criteria of that activity could be applicable in this case.

Furthermore, it is recommended to reformulate the substantial contribution criteria. The 50% weight should be altered to 50% *dry weight*, assuming that this is what is meant. The section on secondary raw materials and substitution of virgin material should be reformulated or otherwise further explained through examples (i.e., what are examples of substitution of virgin materials).

4.7. Transport

Resulting from Task 1 analysis, the process described in section 4.1.1, six activities were selected for further analysis within the transport sector, as listed below:

- Activity 6.3 – Urban and suburban transport, road passenger transport
- Activity 6.5 - Transport by motorbikes, passenger cars and light commercial vehicles
- Activity 6.6 - Freight transport services by road
- Activity 6.13 - Infrastructure for personal mobility, cycle logistics
- Activity 6.14 – Infrastructure for rail transport
- Activity 6.15 - Infrastructure enabling low-carbon road transport and public transport

The transportation sector is broad, and SMEs can be found in numerous activities. Regarding the activities listed above, a distinction must be made between the service activities (6.3, 6.5 and 6.6) and the infrastructure activities (6.13, 6.14, and 6.16). Indeed, for the first three activities, SMEs can be found across activities listed in the activity description (purchasing, leasing rental and operation). However, when addressing infrastructure activities, infrastructure managers would typically be larger corporations, when SMEs would be active mostly in maintenance activities and specific parts of the construction ones.

4.7.1. Urban and suburban transport, road passenger transport (Activity 6.3)

Activity description: *Purchase, financing, leasing, rental and operation of urban and suburban transport vehicles for passengers and road passenger transport.*

For motor vehicles, operation of vehicles designated as category M2 or M3, in accordance with Article 4(1) of Regulation (EU) 2018/858 of the European Parliament and of the Council, for the provision of passenger transport.

The economic activities in this category may include operation of different modes of land transport, such as by motor bus, tram, streetcar, trolley bus, underground and elevated railways. This also includes town-to-airport or town-to-station lines, and operation of funicular railways and aerial cableways were part of urban or suburban transit systems. The economic activities in this category also include scheduled long-distance bus services, charters, excursions and other occasional coach services, airport shuttles (including within airports), operation of school buses and buses for the transport.

4.7.1.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Description

The description of the activity is exhaustive, and no challenge has been identified.

Substantial contribution

In general, the understanding and access to information in relation to the substantial contribution criteria has been assessed as good for activity 6.3. However, the main challenge seems to be whether the criteria are objectively realistic to meet. Indeed, despite being out of scope for the present study, it seems important to mention that the current crisis for materials is having a major impact on supply chains for vehicle manufacturing, and it has been argued that purchasing vehicles compliant with the criteria may be a challenging aspect in order to be aligned and on track in the coming years.

Do No Significant Harm

Specific DNSH have been defined only for circular economy and pollution prevention for activity 6.3.

First, for the criterion around circular economy, companies may struggle to have access to the data on how their waste is handled. Even if information in relation to the maintenance work would be known, waste management is not always their responsibility and would often be in the hands of a waste management company. In addition, for some activities, such as leasing and renting vehicles, it is common practice to sell the vehicles abroad after a few years of use. In this case, companies would not have information on the end-of-life cycle of their vehicle.

Regarding the criteria around pollution prevention, companies would likely be able to get information on the external rolling noise requirements and the Rolling Resistance Coefficient from the tyre suppliers. However, the criteria refer to the highest populated class and the two highest populated classes (respectively). Similar to other activities detailed above, this creates an extra burden for companies as they are required to consult the regulation and identify the classes that are eligible.

Finally, leasing and renting companies may, in certain cases, not have access to tyre information as under certain contracts the lessee has the possibility to change tyres according to the need of its activity. In this case, the company would not have access to tyre information and therefore would not be able to assess this criterion.

4.7.1.2 Recommendations for simplification

Substantial contribution

Regarding the substantial contribution criteria, it is recommended to reassess the feasibility with regards to the supply chain context and issues.

Do No Significant Harm

First, for both criteria on circular economy and pollution prevention, it could be recommended to explicitly exclude SMEs in cases where companies would not be in charge of handling the dismantlement of their vehicle, or where they are not in charge of providing tyres.

Secondly, for the two criteria on tyres for pollution prevention, providing the classes for which tyres are passing the DNSH criteria could greatly simplify the work for SMEs reporting on activity 6.3. Regarding the compliance with external rolling noise requirements, the highest populated class is currently Class A, as per the EPREL database⁴⁰. For the Rolling Resistance Coefficient, that defines the Fuel Efficiency Class as detailed in Regulation (EU) 2020/740 of the European Parliament and Council, Annex I Part A⁴¹, the two highest populated classes are currently Fuel Efficiency class A and B as per the EPREL database⁴².

4.7.2. Transport by motorbikes, passenger cars and light commercial vehicles (Activity 6.5)

Activity description: Purchase, financing, renting, leasing and operation of vehicles designated as category M1233, N1234, both falling under the scope of Regulation (EC) No 715/2007 of the European Parliament and of the Council, or L (2- and 3-wheel vehicles and quadricycles).

4.7.2.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Description

The description of the activity is exhaustive, and no challenge has been identified.

Substantial contribution

In general, similarly to activity 6.3, the understanding and access to information in relation to the substantial contribution criteria have been assessed as good for activity 6.5. Indeed, such information should be possible to retrieve from the manufacturer of the vehicle through the Certificate of Conformity of the vehicle. However, the main challenge seems to be whether the criteria are objectively realistic to meet. Indeed, despite being out of scope for the present study, it seems important to mention that the current crisis for materials is having a major impact on supply chains for vehicle manufacturing, and it has been argued that purchasing vehicles compliant with the criteria may be a challenging aspect in order to be aligned in the coming years.

Do No Significant Harm

The first criterion in relation to DNSH around circular economy refers to reusability, recyclability and recoverability of the vehicle as defined in Directive 2005/64/EC. This criterion is targeted for vehicle manufacturers rather than transport service providers, and therefore it seems unlikely that SMEs active in the sector are aware of these characteristics. Eventually, vehicle manufacturers may be able to provide such information. However, tracing such information may be challenging and represent an extra burden for SMEs active in the sector.

The second criterion in relation to the circular economy aspects is the same as for activity 6.3 above, and the same challenges apply.

40 [EPREL Public website \(europa.eu\)](#), consulted on 18/09/2022

41 [EUR-Lex - 32020R0740 - EN - EUR-Lex \(europa.eu\)](#), consulted on 18/09/2022

42 [EPREL Public website \(europa.eu\)](#), consulted on 18/09/2022

Regarding the criteria on pollution prevention, the first two refer to information that should be available with the vehicle manufacturer. Therefore, it should be straightforward for SMEs to obtain them.

Finally, the third criterion on pollution prevention is the same as for activity 6.3, therefore, it has been addressed in section 4.7.2.

4.7.2.2 Recommendations for simplification

Substantial contribution

Regarding the substantial contribution criteria, it was recommended to reassess the feasibility with regards to the supply chain context and issues.

Do No Significant Harm

As for activity 6.3, it is recommended to make the criteria more accessible by excluding SMEs from the scope in cases where companies would not have access to the information. This could be the case for both circular economy criteria, and the pollution prevention.

Secondly, as for activity 6.3, for the two criteria on tyres for pollution prevention, providing the classes for which tyres are passing the DNSH criteria could considerably simplify the work for SMEs reporting on activity 6.5.

4.7.3. Freight transport services by road (Activity 6.6)

Activity description: *Purchase, financing, leasing, rental and operation of vehicles designated as category N1, N2 or N3 falling under the scope of EURO VI, step E or its successor, for freight transport services by road.*

4.7.3.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Description

The description of the activity is straightforward, and no challenge has been identified.

Substantial contribution

For the first criterion, information should be available to companies falling under activity 6.6. It is indeed information that should be easy to obtain from the manufacturer.

Regarding the second criterion, it has been argued that in most cases, companies falling in the scope of this activity should be aware of whether their vehicle is dedicated to the transport of fossil fuels. However, it has been raised by the leasing and rental industry, that in some cases, the information may not be known by the company.

Do No Significant Harm

The DNSH criteria in relation to circular economy are the same as for activity 6.5 – Transport by motorbikes, passenger cars and light commercial vehicles, and have therefore been addressed in section 4.7.2.

The DNSH criteria in relation to pollution prevention are the same as for activity 6.3 – Urban and suburban transport, road passenger transport, and have therefore been addressed in section 4.7.1.

4.7.3.1 Recommendations for simplification

No recommendations for simplification are necessary.

4.7.4. Infrastructure for personal mobility, cycle logistics (Activity 6.13)

Activity description: Construction, modernisation, maintenance and operation of infrastructure for

personal mobility, including the construction of roads, motorways bridges and tunnels and other infrastructure that are dedicated to pedestrians and bicycles, with or without electric assist.

4.7.4.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Description

The description of the activity is straightforward, and no challenge has been identified.

Substantial contribution

The substantial contribution criterion specifies that the infrastructure should be “*dedicated*” to personal mobility or cycle logistics. This could pose a challenge to companies to understand whether only infrastructure is exclusively dedicated to cycles and pedestrians are eligible. For example, if a company participates on the construction of a bridge, that will later welcome cars, a sidewalk and a cycling lane, it is unclear whether this activity is eligible for the share of the road dedicated to such activity.

In addition, the SME providing only parts of the construction may not have the information on the future use of the bridge/road/tunnel. This might pose a challenge for SMEs wishing to report on the criterion as they would not have the information to assess of the alignment.

Do No Significant Harm

For circular economy, requirement to prepare 70% (by weight) of the construction and demolition waste (excluding naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC) for reuse, recycling and other material recovery in accordance with the waste hierarchy and the EU Construction and Demolition Waste Management Protocol will likely form a challenge. This is due to the following reasons:

It is not always the construction company, maintenance operator, or operator of the infrastructure that oversees the waste collection and preparation. This could for example be the municipalities or other collection services. Therefore, the underlying data on construction and demolition waste and the % in weight are very often not available in a form that allows assessment according to the criterion, which makes it complex to prove this criterion.

The EU Construction and Demolition Waste Management Protocol is not commonly known, though it is often implemented in national protocols around waste management. Therefore, companies will often be in line with the protocol, but will not be aware of this and will have to go through all the elements to check whether they meet the criteria.

It will take extra effort to search for the naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC that should be excluded, even though the category, once found, is quite simple.

4.7.4.2 Recommendations for simplification

Substantial contribution

Regarding the first potential challenge mentioned above, it must be carefully examined whether non-exclusively dedicated infrastructure is covered under this activity.

Do No Significant Harm

The challenges found in the criteria for DNSH to the transition to a circular economy could potentially be addressed and simplified through the following measures:

It is recommended to allow for more flexibility by offering an alternative criterion besides the current 70% where this data is not available. For example, by referring to enforcement of country specific laws around waste management, or to define a way how the common practice can be overachieved, without referring to a specific recycling rate.

Require that the infrastructure construction or development company manages its waste in line

with national guidelines, so that it is not required to go through the EU Waste Management Protocol for Construction and Demolition Waste.

List the naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC that should be excluded in addition to or instead of referencing the European List of Waste.

4.7.5. Infrastructure for rail transport (Activity 6.14)

Activity description: *Construction, modernisation, operation and maintenance of railways and subways as well as bridges and tunnels, stations, terminals, rail service facilities, safety and traffic management systems 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.*

4.7.5.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Description

The description of the activity is straightforward, and no challenge has been identified.

Substantial contribution

Rail systems are highly complex, and SMEs would typically only be doing specific parts on the infrastructure side. For the first substantial contribution criterion, point (a) was assessed as not relevant for SMEs as infrastructure managers are usually large corporations or state-owned companies. For point (b) and (c), no challenge has been identified.

Regarding the second screening criterion, SMEs would not know the final use of tracks (exceptions may be possible if very specific work is carried out). Therefore, it could be a challenge for a company to assess its alignment to this criterion.

Finally, the second substantial contribution criterion states that the infrastructure should “*not [be] dedicated to the transport or storage of fossil fuels*”. The word dedicated may lead to confusion on whether it refers to infrastructure exclusively dedicated to the transport and storage of fossil fuel, or if the definition is broader and includes infrastructure used for such activity among others.

Do No Significant Harm

The DNSH criteria for circular economy for this activity are also mentioned in activity 6.13 – Infrastructure for personal mobility, cycle logistics (section 4.7.4) and are therefore addressed in the previous section.

Regarding the DNSH criteria on pollution prevention, the first criterion states “*where appropriate, given the sensitivity of the area affected, in particular in terms of the size of population affected, noise and vibrations from use of infrastructure are mitigated by introducing open trenches, wall barriers, or other measures and comply with Directive 2002/49/EC of the European Parliament and of the Council*”’. Such criterion applies to the infrastructure manager and/or the project coordinator/owner, that would typically be large undertakings. Therefore, this criterion is not applicable in the case of most SMEs in the scope of this activity.

The second criterion refers to measures being undertaken to reduce noise, dust and pollutants emissions during construction or maintenance work. This criterion was not assessed as posing any potential challenge.

4.7.5.2 Recommendations for simplification

Substantial contribution

In order to simplify the understanding of the substantial contribution criterion, it was recommended to specify the meaning of “dedicated” for the second criterion. Indeed, defining whether it is

exclusively dedicated, and if not, setting utilisation threshold (x% used for the transport of fossil fuels) would improve the general understanding for SMEs and increase their ability to report on the activity.

However, for the other challenges related to the applicability and access to information, it could be recommended to increase information disclosure requirements for rail operators. However, in practice, such a disclosure could pose confidentiality and security challenges.

Do No Significant Harm

Regarding the first DNSH criterion related to pollution prevention, it was recommended to leave this criterion aside as it hardly applies to SMEs.

4.7.6. Infrastructure enabling low-carbon road transport and public transport (Activity 6.15)

Activity description: *Construction, modernisation, maintenance and operation of infrastructure that is required for zero tailpipe CO₂ operation of zero-emissions road transport, as well as infrastructure dedicated to transhipment, and infrastructure required for operating urban transport.*

4.7.6.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Description

The description of the activity is straightforward, and no challenge has been identified.

Substantial contribution

Similar to other infrastructure activities, the word “dedicated” is used throughout the substantial contribution criteria. The lack of precision (as explained above, it is unclear whether it entails exclusively dedicated infrastructure or infrastructure dedicated to a certain extent, and if so, a threshold should be defined) could be a challenge for a company to assess whether their activities are aligned with the criteria.

Do No Significant Harm

DNSH criteria for circular economy for this activity are also mentioned in activity 6.13 – Infrastructure for personal mobility, cycle logistics and therefore are addressed in section 4.7.4.

Regarding DNSH on pollution prevention, the first criterion states that “Where relevant, noise and vibrations from use of infrastructure are mitigated by introducing open trenches, wall barriers or other measures and comply with Directive 2002/49/EC”. Such criterion applies to the infrastructure manager and/or the project coordinator/owner, that would typically be large undertakings. Therefore, this criterion is not applicable in the case of most SMEs in the scope of this activity.

Finally, a similar potential challenge was observed in relation to the DNSH on biodiversity. The criterion refers to the maintenance of vegetation along road transport infrastructure to ensure that invasive species do not spread, and mitigation measures are taken to avoid collisions with wildlife. Such concerns are usually the responsibility of the infrastructure manager and/or the project coordinator/owner and would typically be large undertakings.

4.7.6.2 Recommendations for simplification

Substantial contribution

In order to simplify the understanding of the substantial contribution criteria, it was recommended to specify the meaning of “dedicated” across the criteria. Indeed, defining whether it is exclusively dedicated, and if not, setting a utilisation threshold to improve the understanding for SMEs and increase their ability to report on the activity.

Do No Significant Harm

Regarding the DNSH criteria related to pollution prevention and biodiversity deemed as challenging above, it was recommended to leave these criteria aside as they hardly apply to SMEs.

4.8. Construction and real estate

Resulting from Task 1 analysis, the process described in section 4.1.1, six activities within the construction and real estate sector were selected to be further analysed in this assignment. The six activities are the following:

- Activity 7.1 - Construction of new buildings
- Activity 7.2 - Renovation of existing buildings
- Activity 7.3 - Installation, maintenance and repair of energy efficiency equipment
- Activity 7.4 - Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)
- Activity 7.5 - Installation, maintenance and repair of instruments and devices for measuring regulation and controlling energy performance of buildings
- Activity 7.6 - Installation maintenance and repair of renewable energy technologies

In the interviews and desk research, it was found that SMEs play a very large role in the construction sector, as they represent 99% of the companies in the sector in Europe. These SMEs are placed across the supply chain, and among others perform the following activities:

- Development and construction of complete residential buildings
- Subcontractors
- Component manufacturers and installers
- System (HVAC) installers
- Service providers

4.8.1. Construction of new buildings (Activity 7.1)

Activity description: *Development of building projects for residential and non-residential buildings by bringing together financial, technical and physical means to realise the building projects for later sale as well as the construction of complete residential or non-residential buildings, on own account for sale or on a fee or contract basis.*

The development of building projects and the construction of complete residential or non-residential buildings are often performed by larger companies. However, there are many SMEs that develop and construct complete residential buildings. These SMEs would report under this activity.

A challenge in the definition is the lack of clarity about what is meant by technical and physical means and which parts of the construction process are included in this activity. E.g., if a supplier is responsible for site development or the shell construction, are these included under this activity and how are the criteria then applied?

4.8.1.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Substantial contribution

The first criterion for substantial contribution is one of the most criticised criteria in the construction activities. It requires that the Primary Energy Demand (PED), defining the energy performance of the building resulting from the construction, is at least 10 % lower than the threshold set for the nearly zero-energy building (NZEB) requirements in national measures implementing Directive 2010/31/EU of the European Parliament and of the Council. This criterion is likely to be a challenge for SMEs mainly due to the transposition of the Directive to the Member States:

- The implementation of Directive 2010/31/EU varies widely among the member states. There are 35 different national/regional calculation methods for the energy performance of buildings and half of the member states have a different calculation method for setting and ensuring minimum energy requirements, and for certifying buildings. This creates complexity when interpreting and working with the criterion and does not allow for fair comparison between member states. Where a member state has more ambitious thresholds set for the NZEB requirements than in other member states, it will be much more challenging to meet the criteria than for SMEs working in other countries.
- When starting to work with the criterion, it is challenging to understand how it should be interpreted in the context of national legislation. E.g., in the Netherlands, the Directive is implemented in three legislations. So, the company would have to know where to find the threshold mentioned in the criterion.

The second criterion for substantial contribution to activity 7.1, is the requirement to do airtightness and thermal integrity testing for buildings larger than 5,000 m². This criterion is not likely to form an issue for SMEs, as it is not common that SMEs develop or construct complete buildings larger than 5,000 m². Furthermore, the requirement to perform an air-tightness test is often covered in national legislation in the Northern EU countries, while this is not the case in the Southern EU countries. Thermal integrity is often not required by national legislation, however, alternatively to this requirement, robust and traceable quality control processes must be in place, which is usually the case. Lastly, it should be considered if a building is larger than 5,000 m² there are usually more funds available to conduct the required testing, which implies that the second criterion will not present a large challenge.

The third criterion for substantial contribution to activity 7.1, is for buildings larger than 5,000 m², the life-cycle Global Warming Potential (GWP) of the building resulting from the construction has been calculated for each stage in the life cycle and is disclosed to investors and clients on demand. This would not be a challenge encountered by SMEs, as the buildings they develop, or construct are often smaller than 5,000 m². However, when the building is larger than 5,000 m², the requirement will be quite burdensome, as it is complex and costly to perform such calculations, and the required data is often not available. Nevertheless, in these cases, there is usually a higher budget available because of the size of the building. Furthermore, it should be considered that it is becoming a more widely spread practice to conduct an LCA for buildings and sooner or later this will be mandatory for larger buildings through EPBD revision. Therefore, it makes sense to include this criterion.

Do No Significant Harm

The DNSH criteria were found challenging across all 4 assessed objectives.

Firstly, the criteria for water appliances are quite extensive and require multiple data points. The criteria contains specific measurements for each type of water appliance in a building and are elaborated even further in Appendix E of the Climate Delegated Act Annex 1. In order to fulfil the criteria, the construction company or developer is likely to request this information from its supplier of the water appliances, which in many cases is likely to be a SME.

For circular economy, there were several elements which SMEs are likely to deem as challenging. Firstly, the requirement is to prepare 70% (by weight) of the construction and demolition waste (excluding naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC) for reuse, recycling and other material recovery in accordance with the waste hierarchy and the EU Construction and Demolition Waste Management Protocol. Furthermore, it continues “Operators shall limit the generation of waste in processes related to construction and demolition, in accordance with the EU Construction and Demolition Waste Management Protocol, 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 offered sorting systems for construction and demolition waste.” These criteria are likely to be a challenge due to the following reasons:

- It is not always the construction company or developer that oversees the waste collection and preparation. This is more commonly the municipalities or other collection services. Therefore, the underlying data on construction and demolition waste and the % in weight is often not available in a form that allows assessment according to the criterion, which will make it complex to evidence this criterion.
- The EU Construction and Demolition Waste Management Protocol is not commonly known, though it is often implemented in national protocols around waste management. Therefore, companies will often be in line with the protocol, but will not be aware of this and will have to go through all the elements in the protocol to check whether they meet the criteria.
- It is also unclear which of the aspects of the EU Construction and Demolition Waste Management Protocol the construction companies need to comply with. Many of the “actions” in the protocol relate to other actors than construction companies such as waste management companies, municipalities etc. and something that is not under the influence of construction companies – which makes it complicated to understand what is actually required by the criterion.
- It will take extra effort to search for the naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC that should be excluded, even though the category, once found, is quite simple.

Also, within the DNSH circular economy criteria, there is the criterion that states building designs and construction techniques should support circularity with reference to ISO 20887 or other standards. This criterion lacks guidance and is a bit too vague, making it complicated for SMEs to answer with either yes or no. Many companies are not aware of the referenced ISO standard.

The DNSH for pollution prevention and control will form a challenge to SMEs in the threshold set for formaldehyde. The requirement for formaldehyde is formulated very unclearly as there is no test method, and reference is made to appendix XVII in REACH, where there are also no test methods for testing emissions of formaldehyde. Emissions can be measured with different methods and different results are obtained. This lack of information makes the claim very difficult to work with. In addition, it is also unclear what the requirement applies to. It says that the requirement is "less than 0.06 mg of formaldehyde per m³ of material or component", but normally in construction one sets requirements for the content of formaldehyde in the air and not for a material. One can also measure the emissions from materials, but in that case the unit for formaldehyde would not be mg/m³, but instead mg/m²/h, which is also used by the Nordic Ecolabel. The unclarity makes it challenging to work with the criteria.

For the DNSH criteria for the protection and restoration of biodiversity and ecosystems, the challenge lies mainly in the fact that the criteria are not the responsibility of the construction company or developer, but often something that has already been considered during the approving stage and has hence been assessed by the permitting authority, e.g., a building may not be constructed on land with a high biodiversity value or land matching the definition of forest. Due to this, it is challenging to find the data required, and in some cases the company would automatically comply as the criteria includes elements that have already been considered before the developing or construction started. Furthermore, the most challenging element is the criterion that refers to the LUCAS survey. It is extremely challenging to work with the LUCAS survey even for experts working within biodiversity, let alone for SMEs in construction or development of buildings.

4.8.1.2 Recommendations for simplification

Definition

It should be clarified in the definition who falls under this activity and therefore has to assess their activity against the criteria under 7.1. It is just the developer, or also the sub-contractors?

Substantial contribution

Potential solutions to the challenges found for the first criteria for substantial contribution are the following:

- Leave out the threshold of 10% lower than the national set threshold for NZEB and change the criterion to: the net primary energy demand of the new construction must be compliant with the primary energy demand resulting from the relevant NZEB requirements. This will remove the disadvantage to some extent for member states where the NZEB requirements have been implemented stricter than in other member states. Another recommendation is to include a carbon-based benchmark as an alternative requirement to the NZEB benchmark.
- It would be helpful for SMEs to have an overview of what the NZEB threshold is in their respective country. It is recommended to create a document in which the thresholds are listed for each of the member states.

To alleviate the burden in reporting on the GWP, a solution would be to offer guidance and examples on how to do the calculations.

Do No Significant Harm

To make reporting on the criteria for DNSH for water easier for all parties involved, it would be beneficial to indicate what is the basis of the thresholds. In the case where these are based on existing standards or certificates, it will be easier to check whether the appliances are in line with any of the compliant standards, rather than collecting all the technical specifications and comparing them to the thresholds set in the criteria. An example of a standard could be the Unified Water Label⁴³.

The challenges found in the criteria for DNSH to the transition to a circular economy could potentially be addressed and simplified through the following measures:

- It is recommended to allow for more flexibility by offering an alternative criterion besides the current 70% where this data is not available. For example, by referring to enforcement of country specific laws around waste management, or to define a way how the common practice can be overachieved, without referring to a specific recycling rate.
- Require that the construction or development company manages its waste in line with national guidelines, so that it is not required to go through the EU Waste Management Protocol for Construction and Demolition Waste.
- List the naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC that should be excluded in addition to or instead of referencing the European List of Waste.
- Though it is recognized that the reference ISO standard for circularity in building designs is relevant, more guidance is required as many companies are not familiar with this standard. The key elements in the standard around the disassemblability or adaptability of buildings, how they are designed to be resource efficient, adaptable, flexible and dismantlable to enable reuse and recycling, can be listed more clearly in the criterion, so that the SME does not have to go through the ISO standard to report on this criterion. It should be considered that the criteria should be commonly updated for this to work.

For the DNSH criteria to pollution prevention and control, more clarity is required on the scope, calculation methods and metrics of the formaldehyde threshold. Formaldehyde comes mainly from glue and building boards, and the building regulations say the following, which could be used to clarify the requirements: Specifically for wood-based boards that are covered by DS/EN 13986 Wood-based boards for construction use – Characteristics, conformity assessment and labelling and are in contact with the indoor climate, there is a requirement to comply with formaldehyde class E1. When using such wooden boards, which are held together by a formaldehyde-releasing glue for floor, wall and ceiling, e.g., MDF and chipboards, it is recommended to cover the boards with a non-formaldehyde-releasing material to minimize the amount of formaldehyde in the indoor air. The covering could be e.g., plasterboard, track products, wooden floors or other floor coverings. The WHO recommends that the total formaldehyde content in indoor air should not exceed 0.1 mg/m³. It should be noted that there may be sources other than building materials that cause formaldehyde emissions into the indoor climate – such as furniture and other furnishings,

43 <https://uwla.eu/>

it is therefore recommended to aim to keep the formaldehyde content below 0.1 mg/m³.

For the DNSH criteria to the protection and restoration of biodiversity and ecosystems, the challenges can be addressed by removing the criteria that have been considered in the permitting stage. Permitting authorities or municipalities should be made aware that they should provide information on whether the building is built on forest or arable land. Furthermore, alternatives to the LUCAS survey⁴⁴ should be identified, or the criteria should be simplified, for example referring to national legislation covering construction and soil fertility where available.

A general comment to the solutions, is that other existing standards and certificates have been considered when identifying the challenges and their solutions. Especially within the construction sector, there are many different existing standards and certificates that are commonly used, depending on the geography and purpose of using a certification. Furthermore, new standards and certificates are constantly being created. For SMEs already working with standards or certification, it would be a great help to have a list for each criterion which covers existing standards or certifications. The challenge to this is that the list will constantly have to be updated, and all certification schemes and standards used in the EU will need to be analysed and mapped to the Taxonomy criteria in order to know which ones would align. Many of the most commonly used certification schemes and standards are currently doing this exercise already, such as LEED⁴⁵, DGNB⁴⁶, BREEAM⁴⁷ and the Nordic Swan Ecolabel⁴⁸. It could be expected that their criteria will transition to or include more elements from the Taxonomy going forward. In this way, it is expected that in the future, these proxies and the EU Taxonomy will be more aligned.

4.8.2. Renovation of existing buildings (Activity 7.2)

Activity description: Construction and civil engineering works or preparation thereof.

4.8.2.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

The activity description of activity 7.2 – Renovation of existing buildings is very vague. It can include any type of construction and civil engineering works, not necessarily only renovation. Furthermore, by including civil engineering works, it will be confusing whether an activity would fall within another sector which includes civil engineering, for example transport, or whether it should be included under this activity. By having such a broad activity description, many activities will be eligible under this activity for which the criteria specifically on renovation will not be applicable, which means it will not be aligned.

Furthermore, the Substantial Contribution criteria refer to complying with the applicable requirements for major renovations. These criteria depends on how this is set in the applicable national and regional building regulations for ‘major renovation’ implementing Directive 2010/31/EU. As mentioned in activity 7.1, this regulation is transposed very differently in national legislation across member states, including the definition of ‘major renovations’. We have seen cases for example in the Baltics, where the national definition of major renovation had nothing to do with improvements in energy efficiency but rather the share of the building that underwent renovation.

Another challenge identified lies in the link between this activity and activity 7.7 Acquisition and ownership of buildings (not included in scope of this project). When a building is renovated and it aligns with all the criteria for renovation, it will still not be aligned under the activity of ownership. Therefore, only the CAPEX related to the renovation of the building owner will count for eligibility, which lowers the incentive for renovation.

All DNSH criteria for this activity are also mentioned in activity 7.1 Construction of new buildings

44 <https://ec.europa.eu/eurostat/web/lucas>

45 <https://www.usgbc.org/resources/leed-and-eu-taxonomy>

46 <https://www.dgnb-system.de/en/services/esg-verification-taxonomy/index.php> and [Taxonomy study CE](#)

47 <https://www.bre.group/a-guide-to-the-eu-taxonomy-and-breeam/>

48 <https://svanurinn.is/wp-content/uploads/2022/01/089eo-4-0-bd.pdf>

and are therefore addressed in the previous section.

4.8.2.2 Recommendations for simplification

It is recommended that the activity description is specified more towards renovation works.

Secondly, in order to clarify the issue of the different definitions of major renovation, it is recommended that an overview of the definition in the individual Member States is drawn up and that it is clarified in which countries there are no energy efficiency requirements for major renovation and where instead the alternative criterion of a 30% reduction in primary energy demand should be observed.

Furthermore, it is recommended that the link between this activity and activity 7.7 is created so that a renovated building should be considered in the acquisition and ownership of buildings. This can either be done by altering the substantial contribution criteria in this activity to match the criteria in 7.7, and thereby becoming more ambitious, or by including an extra section in the substantial contribution criteria for activity 7.7 on renovation works, in line with the criteria set in this activity.

4.8.3. Installation, maintenance and repair of energy efficiency equipment (Activity 7.3)

Activity description: *Individual renovation measures consisting in installation, maintenance or repair of energy efficiency equipment.*

4.8.3.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

The first challenge that will likely be encountered is with regards to the description. The description specifically only includes individual renovation measures. It is unclear what individual renovation is, and it is unclear why the installation, maintenance or repair works are only eligible when they are renovation works. Because of the latter, installers of the energy efficiency equipment, who would also install the equipment in large new construction projects or larger renovation projects, would not be covered by 7.3. However, they would also not fall under 7.1 or 7.2, as they do not construct the complete building or do major renovations as a whole. This makes it complicated for an SME to assess whether a specific assignment is eligible or not.

Second, it is unclear in the description of the activity what is defined as energy efficiency equipment for buildings. There might be SMEs that do installation works but would not easily know that this is the activity they should screen for, or that their installation works is categorized as energy efficient equipment. Also, companies may do installation work for something that would fall under the description, but that is not included in the substantial contribution criteria, the activity will be eligible but could not be aligned, which would be unfair.

Furthermore, the list of energy efficient equipment is specific and non-exhaustive. Companies that think they might be covered by this activity because they install energy efficient equipment will be confused not to see their equipment included. The list does also not align with the list of energy efficiency equipment in activity 3.5 Manufacture of energy efficiency equipment. Not only is there a misalignment in the listed equipment, but also the criteria and thresholds differ. This creates inconsistencies in the value chain, especially in terms of data flow. For example, if a supplier manufactures energy efficient equipment that is aligned with the criteria for activity 3.5, it would be consistent if the installation of this equipment would also be aligned. With the current activities and their criteria this is not the case.

Another inconsistency is found in paragraph f) of the substantial contribution criteria of this activity. The requirements for the installation of water fittings do not match the criteria set for water fittings in activity 7.1 under the DNSH criteria for water. For similar reasons as mentioned in the paragraph above, opportunities to allow for an easier flow of data across the supply chain are missing.

Finally, there are some challenges identified in understanding the first criterion of the substantial contribution criteria. It is unclear what the applicable national measures implementing Directive 2010/31/EU are, and even more so, what the highest two populated classes of energy efficiency

in accordance with Regulation (EU) 2017/1369 are. It is also unclear to many what the highest two populated classes are referring to. This makes it challenging for SMEs to check whether they comply.

4.8.3.2 Recommendations for simplification

To address the first two challenges in the section above, it is recommended that the description of the criteria is changed to “Installation, maintenance and repair of [list the equipment from the substantial contribution criteria]”. This will make it easier for the companies to identify their eligibility.

Furthermore, it is recommended that the list of equipment is reviewed. Based on our analysis, at least the following should be included in the list:

- Installation, replacement, maintenance and repair of sunscreens
- Installation, replacement, maintenance and repair of cooling production units

It is also recommended that the listed equipment and their criteria are aligned with the equipment and criteria in activity 3.5 Manufacture of energy efficiency equipment, to allow for consistency between the two activities which in turn will simplify reporting on the criteria if the information is passed on in the supply chain. This applies to the specific criteria for water fittings as well (paragraph f), which are recommended to be in line with the criteria for water fittings in the DNSH criteria for water in activity 7.1 Construction of new buildings.

With regards to the referenced directives, it is recommended to provide more information as to what are the minimum requirements set for individual components and systems in the applicable national measures implementing Directive 2010/31/EU. Perhaps, this reference could even be left out assuming that the components meet the requirements set in the national legislation. For the reference to the highest two populated classes of energy efficiency in accordance with Regulation (EU) 2017/1369, it should be specified what these are by providing examples. Ideally these criteria would also be in line with the thresholds set for the equipment in activity 3.5.

4.8.4. Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings) (Activity 7.4)

Activity description: *Installation, maintenance and repair of charging stations for electric vehicles in buildings and parking spaces attached to buildings.*

4.8.4.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

In the activity description and in the substantial contribution criteria to this activity, specifically electric vehicles are mentioned. This would suggest that hybrid vehicles are excluded. Companies might not have data on whether their charging stations are used by hybrid or by electric vehicles. In the cases which they do, it is unclear whether one should then split the financial KPIs by the % of usage. This would be unfair as one would have to say no to whether the station is used by an electric or hybrid car.

4.8.4.2 Recommendations for simplification

It is recommended to clarify whether hybrid vehicles are included. We would suggest including hybrid and electric. The charging station is meant for electric vehicles mainly, and thus enabling this use of transport. However, the usage of charging stations by hybrid cars, which the company does not control, should not impact the company's alignment score.

4.8.5. Installation, maintenance and repair of instruments and devices for measuring regulation and controlling energy performance of buildings (Activity 7.5)

Activity description: Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings.

4.8.5.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

There were two challenges found for this activity:

- Under a) of the substantial contribution criteria for this activity, sensors should be included as not only thermostats can control the energy performance of buildings. Pressure sensors are missing for example. If companies install equipment that control the energy performance but it is not a thermostat, it will be tricky to assess whether they fit into this activity.
- Besides the instruments and devices listed, it seems one bullet is missing, namely the installation, maintenance and repair of valves, tempers, fans and pumps. This controlling equipment seems to be covered in the activity description, but not in the substantial contribution criteria which is inconsistent and could create confusion.

4.8.5.2 Recommendations for simplification

It is recommended to include sensors instead of thermostats, so that the criterion is more flexible, and you avoid the risk of excluding any sensors as is currently the case.

Furthermore, it is recommended to include the installation of controlling equipment. This can be included by adding a criterion (e) to the substantial contribution criteria. This could be formulated as the following: "Installation, maintenance and repair of controlling equipment such as valves, tempers, fans and pumps."

4.8.6. Installation, maintenance and repair of renewable energy technologies (Activity 7.6)

Activity description: Installation, maintenance and repair of renewable energy technologies, on-site.

4.8.6.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

The criteria for this activity for substantial contribution with regards to the installation of heat pumps, refer to Directive (EU) 2018/2001. Those working with these criteria are often not aware of what this directive is and would have to look up the directive and the specific measures referred to.

4.8.6.3 Recommendations for simplification

A recommendation to simplify and enhance the usability of the criteria, would be to change the criteria for heat pumps to "installation, maintenance, repair and upgrade of heat pumps contributing to the targets for renewable energy in heat and cool in accordance with applicable national legislation on the promotion of the use of energy from renewable sources" with a footnote to the directive.

4.9. Information and communication

Resulting from Task 1 analysis, the process described in section 4.1.1, one activity from the information and communication sector was added to the selection for further analysis:

- Activity 8.2 – Data-driven solutions for GHG emissions reductions

The ICT sector have a large number of SMEs, making it highly relevant to see how SMEs can report on activity 8.2.

4.9.1. Data-driven solutions for GHG emissions reductions (Activity 8.2)

Activity description: *Development or use of ICT solutions that are aimed at collecting, transmitting, storing data and at its modelling and use where those activities are predominantly aimed at the provision of data and analytics enabling GHG emission reductions. Such ICT solutions may include, inter alia, the use of decentralized technologies (i.e., distributed ledger technologies),*

Internet of Things (IoT), 5G and Artificial Intelligence. The economic activities in this category could be associated with several NACE codes, in particular J61, J62 and J63.11 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

4.9.1.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Description

The description of activity 8.2 includes *distribution ledger technologies*, which both experts and SMEs have questioned. This technology is described as very emission heavy, thus it is questionable how it can contribute to GHG emission reduction. It can be an issue for the clarity of the activity. The description also contains the phrase *development or use of ICT solutions*, this could suggest companies simply using a technology to calculate, for example, their carbon footprint should comply with activity 8.2.

Substantial contribution

It is the second criterion that could cause some challenges for SMEs. It will be a struggle for SMEs to perform a full life-cycle GHG assessment. The life-cycle assessment is hard for smaller companies with few resources, as the calculations are complex. The criterion also states that the ICT solutions should *demonstrate substantial life cycle GHG emission savings compared to the best performing alternative solution/technology*. It is not clear from the Taxonomy what the benchmark for the best performing alternative is.

Do No Significant Harm

There are no significant challenges to the DNSH criteria. The only comment is for the DNSH criteria on circular economy. It could be a challenge for companies that lease equipment or go to a cloud provider, to understand their responsibility of waste management.

4.9.1.2 Recommendations for simplification

In the description of the activity, it should be considered to clarify how decentralized technologies, and specifically distribution ledger technology, is to be used in a way that contributes to GHG emission reduction. This could be certain criteria the technology has to uphold, a limit for GHG emission from the technology or specific circumstances it can be used under. If it is not found that there are any circumstances, in which the technology reduces GHG emissions in a sensible way, then it is recommended that it is removed altogether.

To improve the clarity of the activity we also suggest removing *use of ICT solutions* and only include *development of ICT solutions*. Furthermore, it is not clarified whether sub-solutions can be included in this activity, despite not directly reducing GHG emissions, but contribution to the final ICT solution. This was not raised as an issue by interviewed experts or SMEs, thus it is not considered a critical point. However, it could be considered to clarify if only the overall ICT solution qualify for the activity, or if sub-solutions qualify as well.

For the substantial contribution criteria, it should be considered if SMEs should be required to make a full life-cycle assessment, or if a simpler framework could be offered to them. For example this could be a permit or certification obtained from competent authorities, documenting GHG emissions from the technology, similar to the suggestion for innovations on TRL 6-7 in activity 9.1. For a solution like this a third-party validation will not be necessary, which will also lighten the economic burden for SMEs. It should also be clarified how the benchmark for the best performing existing ICT technology is defined.

For the DNSH criterion on circular economy it should be specified how companies using a cloud service or leased equipment are required to comply with the criterion.

4.10. Professional, scientific and technical activities

Following the selection process described in section 4.1.1, one activity from the professional, scientific and technical activities sector:

- Activity 9.1 – Close to market research, development, and innovation

RD&I goes across all sectors and is normally only an activity running alongside the company's other activities or services. There are many SMEs within RD&I, trying to enter the market with new innovations.

4.10.1. Close to market research, development and innovation (Activity 9.1)

Activity description: *Research, applied research and experimental development of solutions, processes, technologies, business models and other products dedicated to the reduction, avoidance or removal of GHG emissions (RD&I) for which the ability to reduce, remove or avoid GHG emissions in the target economic activities has at least been demonstrated in a relevant environment, corresponding to at least Technology Readiness Level (TRL) 6.*

4.10.1.1 Criteria analysis and SMEs ability to assess Taxonomy alignment

Description

The description states that RD&I products must be *dedicated* to reduction, avoidance, or removal of GHG emission and that this must at least be demonstrated at Technology Readiness Level (TRL) 6, with a footnote linking to a description of the levels. Based on interviews with experts and SMEs the TRL levels are not commonly known by all companies, but the process of defining the current phase or level of the RD&I products is common, for example in relation to seeking funding. Therefore it is not expected that complying with the TRL levels will be a large challenge for SMEs.

Substantial contribution

The first criterion limits the areas and sectors the RD&I products can be within, to other activities in the Taxonomy. This could create an issue of companies that are eligible for the activity, but then have zero alignment, due to this criterion.

The language of the second criterion criteria two is vague. How should it be determined which DNSH of the economic activity that are *relevant* and how should *respecting* be understood. It will be a challenge to comply with substantial contribution criteria and DNSH criteria of another economic activity in the Taxonomy. This also creates a double reporting demand, where the company must align with the criteria of the economic activity it is dedicated to, and the criteria in this activity.

In the third and fourth criteria it is not clear how to determine when an RD&I product is *in the market*, is it when something is commercially available? The wording of the criteria can be complex for SMEs to understand. The wording is also very complex in criteria five and six, with many references to EU regulations, it will be difficult for SMEs to understand. In criteria five it is also unclear how *substantially reduce* should be defined. The two criteria can be understood in theory, but it will be hard for SMEs to understand how to specifically align with them. Furthermore, the reference to enabling or transitional activities is made overly complex with the reference to Article 10(2) of Regulation EU 2020/852, it should be made clear that SMEs can simply look at the activity description in the Taxonomy.

Criteria seven is generally positive for SMEs, as it allows them to meet a requirement that is lessor than a full LCA if the product is not fully developed. The 10-year limit for patents could be an issue as some old patents can have renewed potential when combined with new technology, and thus still be relevant in innovation. For products at TRL 8 or higher, a full life-cycle assessment with third-party validation is required. This will be hard for SMEs, as a full LCA is a larger assessment and expensive if external help is required. The third-party validation is an economic strain.

Do no significant harm

Overall experts and SMEs have found the DNSH criteria for activity 9.1 to be reasonable and relevant. However, it is unclear how companies are to perform the risk assessments on each topic, what they should exactly contain and how to calculate the metrics.

4.10.1.2 Recommendations for simplification

It is recommended that the first criterion to substantial contribution is moved up into the description of the activity. This way it is avoided that companies with RD&I dedicated to economic activities outside the taxonomy are eligible for the activity 9.1 but have an alignment of zero.

The second substantial contribution criterion needs clarification in the language used. It should be clear to SMEs which criteria they must comply with, for the economic activity their RD&I product is dedicated to. The sentence: (...) while respecting the relevant criteria for doing no significant harm leaves a large room for interpretation and confusion for SMEs, this should be specified or rewritten. Similarly, it should be clarified how to determine when a RD&I product is in the market, in the third criterion.

It is recommended to re-evaluate if it is too complex to have companies align with both the criteria of activity 9.1, as well as the criteria of the economic activity the RD&I is dedicated to. We suggest choosing one activity that the RD&I process should align with. Alternatively, it should be exactly clarified which criteria in the dedicated economic activity to comply with and the criteria in activity 9.1 should be simplified as well.

For the seventh substantial criterion it is recommended to consider if SMEs are required to complete a full life-cycle assessment if products are at TRL 8 or above. An alternative could be to provide a framework for a light version of a life-cycle assessment, so SMEs can that comply. Another suggestion could be to do as in other countries and have environmental declarations for selected products, something similar could be considered on a European level, where SMEs can obtain a certificate or declaration for their product in replacement of the life-cycle assessment.

Overall, the substantial contribution criteria are overly complex in the language, it should be considered if the criteria should all be re-written in a more common and easily understandable language. Alternatively, an explanatory sheet should be provided in addition to the Taxonomy.

For the criteria to DNSH it should be clarified what demands there are to the risk assessments, so SMEs know what they must contain.

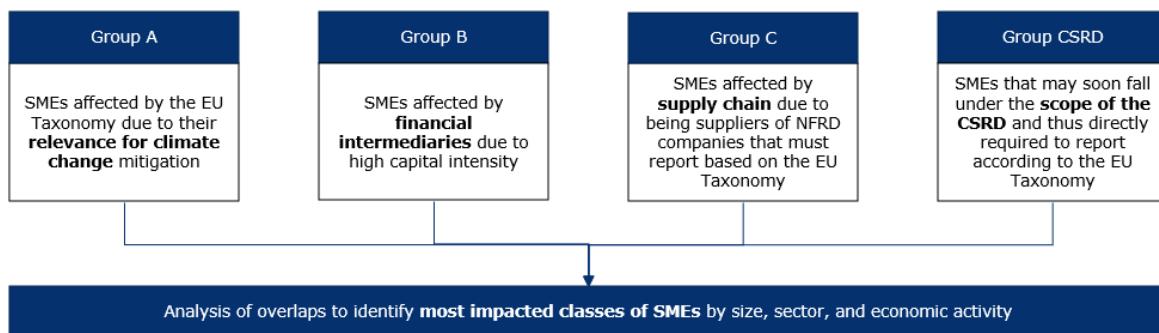
Appendices

Annex 1

Methodology

This methodological annex explains in detail the steps for the analysis under Task 1. Figure 22 shows the methodical framework for Task 1, this includes the four relevant groups of SMEs, which are described in more depth below.

Figure 22 Methodical Framework for Task 1



Group A: SMEs relevant for climate change mitigation

SMEs falling in this group are part of GHG emission- or energy-intensive sectors and thus have to transform to achieve the objectives of the European Green Deal. To identify these SMEs, the data set will be filtered based on NACE Codes that are eligible as defined by Annex 1 of the Climate Delegated Act. This ensures a clear focus on climate change relevant sectors and economic activities, as the EU Taxonomy covers the vast majority of GHG emission intensive sectors. This captures SMEs whose economic activities are highly relevant for climate change mitigation.

Group B: SMEs likely affected by financial intermediaries

This group focuses on identifying SMEs that are most likely affected by the EU Taxonomy due to their connection to financial market participants such as banks. A useful proxy is capital intensity, as highly capital-intensive companies are more likely to require financing from credit institutions.⁴⁹ Hence, the data set will be analysed based on capital intensity ratio, meaning total assets divided by annual turnover. Capital intensive sectors can then be identified and within these sectors, companies that have an above median capital intensity ratio compared to median capital intensity ratio of large companies can be further filtered. As banks will have to report their GAR and BTAR, they rely on data from SMEs for calculating these ratios in particular for general purpose loans.

Group C: SMEs affected by supply chain

This group focuses on SMEs that are impacted through their supply chain due to being suppliers of so called NFRD companies, which must report according to the EU Taxonomy. It is therefore important to understand the structure of the supply chains of each sector covered under climate change mitigation in the EU Taxonomy. This allows classes of SMEs that play a particularly central role to be identified. The identification of SMEs affected by supply chain linkages consists of three steps: First, qualitative research in the form of desk research of industry reports, market outlooks, regulations, and sectoral sustainability commitments aim to identify relevant supply

⁴⁹ SMEs use external financing in addition to retained earnings for financing primarily fixed investments (ca. 40%), and inventories and working capital (ca. 37.5%). ECB, June 1st, 2022: [Survey on the access to finance of enterprises \(SAFE\)](#), page 19, chart 6.

In addition, it is suggested by EBA in its Final Report of the [Final draft implementing technical standards on prudential disclosures on ESG risks in accordance with Article 449a CRR](#) that „institutions [to] replicate the GAR as defined in the COM DA and to disclose extended information on the level of Taxonomy alignment of exposures towards non-financial corporates not subject to NFRD disclosure obligations, for the calculation of an ‘BTAR’., page 9, number 8.c.

chains. The sectors and economic activities covered in Annex I of the Climate Delegated Act are clustered based on supply chain similarities and then assessed whether to be included in more in-depth supply chain analyses (see results in the **Error! Reference source not found.**). The assessment identifies three sectors where SMEs play a particularly important role in the supply chain: (1) the sub-sector manufacturing of low carbon technologies, (2) water supply and sewage, and (3) construction and real estate. Second, an in-depth qualitative analysis of each of these three sectors is conducted. Based on the firm size, the largest companies in each supply chain relevant sector are identified in the company data set. The annual reports of these large companies per sector then provide insights on the relevant suppliers and connected upstream sectors / sub-sectors / economic activities. Additional literature review on identified sectors and sub-sectors will help to obtain an in-depth understanding of SMEs relevant to the supply chain. Table 38 should elucidate in a simplified manner what findings are obtained through the qualitative assessment. For each relevant sector or sub-sector, a similar matrix guided the assessment to obtain structured information. The results of this qualitative research can be found in **Error! Reference source not found.** As a third and final step, the filter criteria (i.e., NACE Code) identified in this qualitative desk research will be applied to the data set to then understand size characteristics of SMEs affected by supply chain connections to large companies.

Table 38 Supply Chain Analysis Results per Sector

Sector	Construction and real estate
Economic Activities in the EU Taxonomy	Construction of new buildings Renovation of existing buildings Installation, maintenance and repair of energy efficiency equipment Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings) Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings Installation, maintenance and repair of renewable energy technologies Acquisition and ownership of buildings
Primary input factors for production	The construction and real estate sector require a wide range of input factors. New buildings require not only construction material such as cement, concrete, steel, bricks, and insulation material but also components such as windows, doors, sanitary facilities, and heating systems. As suggested in the EU Taxonomy, additional metering and energy efficiency equipment is needed. The construction industry therefore primarily depends on input factors from manufacturing, especially construction materials and building components such as windows, doors, faucets, etc. Hence, this sector is highly relevant for upstream SMEs from manufacturing that supply this sector.
Is the supply chain relevant for SMEs?	Yes
Identified large undertakings in the EU	<i>Filtering the quantitative SME company data set for the largest companies in the sector.</i>

Sector	Construction and real estate
Information from annual reports of large undertakings	<i>Insights on the relevant suppliers and connected upstream sectors/ sub-sectors/ economic activities.</i>
Supply Chain Characteristics	<i>Additional information obtained in the literature on the supply chain of the sector.</i>
Identified parameters for quantitative analysis	<i>Certain NACE codes that can be applied as filter criteria to the quantitative SME company data set</i>

Group CSRD: Listed SMEs that fall under the scope of the CSRD

This group covers SMEs that might be directly affected by the EU Taxonomy regulation through the CSRD⁵⁰. This group identifies listed SMEs that do not have to report under the current scope of the NFRD but may soon fall under the scope of the CSRD. The data set is filtered on listing status and according to the proposed scope of the CSRD with respect to the thresholds set for undertakings specified in the proposed revision of Article 19a) (1) referring to Directive 2013/34/EU Article 3.

Following discussions with SG5, it is important to highlight that the CSRD and a possible inclusion of SMEs is still under discussion. The European Parliament and Council have recently published their positions leaning towards the exclusion of SMEs regardless of their listing status⁵¹ and offering simplified disclosure requirements with sufficient time to prepare for listed SMEs⁵², respectively. For this project, the CSRD as initially proposed by the European Commission, is used for the analysis (i.e., inclusion of listed SMEs).

Preparation of SME Company Data Set

First, the company data sets are obtained from various sources such as Amadeus from Bureau van Dijk and Orbis for the 26 EU Member States. Unfortunately, no data could be found for Slovenia, which is subsequently excluded. The amount of data points (i.e., companies) totalled **9,438,088**. For each company the following data points have been used:

- Company name
- Legal status
- Publicly quoted
- Country
- Main NACE code
- Turnover
- Total assets
- Tangible fixed assets
- Number of employees
- Account currency

Secondly, the company data set is cleaned and further prepared. Companies are excluded whose account currency is not the national currency in one of the 26 EU Member States. It is also necessary to apply exchange rates to convert all monetary values into EUROS. For this purpose, the ECB exchange rates on the closing accounting date were used (i.e., 31/12/2020)⁵³. Furthermore, companies which show *dissolved* as their legal status are excluded.

50 CSRD Proposal COM/2021/189 final <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0189>

51 https://www.europarl.europa.eu/doceo/document/A-9-2022-0059_DE.html#title1

52 <https://data.consilium.europa.eu/doc/document/ST-6292-2022-INIT/en/pdf>

53 https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates/html/index.en.html

Thirdly, a quality assessment was conducted to understand what data points are missing for the analysis. However, the Accounting Directive 2013/34/EU only requires two out of three criteria (net turnover, balance sheet total, and number of employees) for categorising the size of a company into large, medium, small, and micro undertakings. Applying the definitions of Article 3 of the Accounting Directive allows to categorise **5,938,355** companies. This implies that **3,499,733** companies cannot be categorised according to the Accounting Directive.

After performing the relevant cleaning and categorisation of companies, it is important to perform a quality check with a verified source. For this the **SME Performance Review** from the European Commission⁵⁴ is used. Considering the following statement published in the **SME fact sheet**⁵⁵

"These are estimates for 2020 produced by DIW Econ, based on 2008-18 figures from the Structural Business Statistics Database as well as provisional data for 2019-2020 from the National Accounts database and the Short-Term Business Statistics Database (all Eurostat). The data cover the 'non-financial business economy', which includes industry, construction, trade, and services (NACE Rev. 2 sections B to J, L, M and N), but not enterprises in agriculture, forestry and fisheries and the largely non-market service sectors such as education and health. The following size-class definitions are applied: micro firms (0-9 persons employed), small firms (10-49 persons employed), medium-sized firms (50-249 persons employed), and large firms (250+ persons employed). The advantage of using Eurostat data is that the statistics are harmonised and comparable across countries. The disadvantage is that for some countries the data may be different from those published by national authorities." Table 39 compares our SME company data set with the data from the SME Performance Review (marked in green). This should show if the distribution of our data is representative and whether our data set is complete.

54 https://ec.europa.eu/growth/smes/sme-strategy/sme-performance-review_en

55 https://ec.europa.eu/growth/smes/sme-strategy/sme-performance-review_en#sba-fact-sheets

Table 39 Quality check of data set

Country	Source	Large	Medium	Small	Micro	Characterised Companies	No Category	Total Companies
AUSTRIA	Dataset	651	793	4.303	2.528	8.275	29.564	37.839
		8%	10%	52%	31%			
BELGIUM	SME Review	0,4%	1,7%	11,1%	86,9%			313.209
		2.264	5.177	14.261	34.435	56.137	260.840	316.977
BULGARIA	Dataset	548	2.440	22.226	337.176	362.390	32.212	394.602
		0%	1%	6%	93%			
CROATIA	SME Review	0,2%	1,2%	6,6%	92,0%			331.704
		357	1.360	11.339	103.272	116.328	5.131	121.459
CYPRUS	Dataset	0%	1%	10%	89%			
		0,3%	1,2%	7,6%	90,9%			153.934
CZECH REPUBLIC	SME Review	5	6	7	4	22	12	34
		23%	27%	32%	18%			
	Dataset	0,1%	1,0%	6,5%	92,4%			57.093
		790	1.577	7.671	46.223	56.261	30.573	86.834
	SME Review	1%	3%	14%	82%			
		0,1%	0,6%	3,0%	96,2%			1.027.495

Country	Source	Large	Medium	Small	Micro	Characterised Companies	No Category	Total Companies
DENMARK	Dataset	2.203	2.530	8.717	82.356	95.806	150.308	246.114
		2%	3%	9%	86%			
ESTONIA	SME Review	0,3%	1,8%	9,5%	88,5%			226.652
		152	644	5.860	95.156	101.812	20.722	122.534
ESTONIA	Dataset	0%	1%	6%	93%			
		0,2%	1,3%	7,0%	91,5%			76.926
FINLAND	Dataset	1.549	3.157	17.453	98.607	120.766	27.635	148.401
		1%	3%	14%	82%			
FINLAND	SME Review	0,3%	1,4%	7,5%	90,9%			229.393
		0,3%	1,4%	7,5%	90,9%			229.393
FRANCE	Dataset	11.591	30.468	164.873	878.975	1.085.907	196.061	1.281.968
		1%	3%	14%	82%			
FRANCE	SME Review	0,1%	0,6%	3,6%	95,8%			2.842.389
		0,1%	0,6%	3,6%	95,8%			2.842.389
GERMANY	Dataset	16.543	37.629	230.567	308.022	592.761	2.071.167	2.663.928
		6%	8%	59%	26%			
GERMANY	SME Review	0,4%	2,1%	13,7%	83,8%			2.585.518
		0,4%	2,1%	13,7%	83,8%			2.585.518
GREECE	Dataset	146	110	165	130	551	147	698
		26%	20%	30%	24%			
GREECE	SME Review	0,1%	0,5%	4,8%	94,6%			719.080
		0,1%	0,5%	4,8%	94,6%			719.080

Country	Source	Large	Medium	Small	Micro	Characterised Companies	No Category	Total Companies
HUNGARY	Dataset	935	3.318	29.101	284.869	318.223	67.389	385.612
		0%	1%	9%	90%			
IRELAND	SME Review	0,1%	0,7%	4,6%	94,5%			603.778
		249	346	2.689	13.181	16.465	37.140	53.605
ITALY	Dataset	2%	2%	16%	80%			
		0,2%	1,2%	6,8%	91,8%			264.829
LATVIA	Dataset	5.939	16.218	117.152	289.181	428.490	87.911	516.401
		1%	4%	27%	67%			
LITHUANIA	SME Review	0,1%	0,6%	4,7%	94,7%			3.614.358
		187	724	6.818	84.102	91.831	12.235	104.066
LUXEMBOURG	Dataset	0%	1%	7%	92%			
		0,2%	1,3%	7,4%	91,1%			108.729
LITHUANIA	Dataset	436	1.491	9.636	64.994	76.557	38.509	115.066
		1%	2%	13%	85%			
LUXEMBOURG	SME Review	0,2%	1,0%	5,4%	93,3%			205.065
		284	172	511	4.719	5.686	43.799	49.485
LUXEMBOURG	Dataset	5%	3%	9%	83%			
		0,5%	2,0%	9,9%	87,6%			36.489

Country	Source	Large	Medium	Small	Micro	Characterised Companies	No Category	Total Companies
MALTA	Dataset	3	6	10	314	333	218	551
		1%	2%	3%	94%			
	SME Review	0,2%	1,1%	6,0%	92,7%			36.594
NETHERLANDS	Dataset	2.739	2.902	12.827	21.682	40.150	247.599	287.749
		7%	7%	32%	54%			
	SME Review	0,1%	0,7%	3,4%	95,8%			1.243.427
POLAND	Dataset	2.576	6.029	25.122	66.114	99.841	256.247	356.088
		3%	6%	25%	66%			
	SME Review	0,2%	0,7%	4,0%	95,1%			1.979.307
PORTUGAL	Dataset	1.149	4.322	39.508	283.497	328.476	48.703	377.179
		0%	1%	12%	86%			
	SME Review	0,1%	0,6%	4,1%	95,1%			874.166
ROMANIA	Dataset	1.052	4.356	39.036	698.850	743.294	2.317	745.611
		0%	1%	5%	94%			
	SME Review	0,3%	1,5%	8,6%	89,6%			520.728
SLOVAKIA	Dataset	592	1.823	15.707	159.137	177.259	41.546	218.805
		0%	1%	9%	90%			
	SME Review	0,1%	0,5%	2,2%	97,1%			490.203

Country	Source	Large	Medium	Small	Micro	Characterised Companies	No Category	Total Companies
SLOVENIA	Dataset	320	1.288	9.940	116.792	128.340	131.513	259.853
		0%	1%	8%	91%			
SPAIN	Dataset	2.526	5.213	51.553	173.268	232.560	51.164	283.724
		1%	2%	22%	75%			
SWEDEN	Dataset	1.982	4.806	29.705	224.417	260.910	83.878	344.788
		1%	2%	11%	86%			
Total	Dataset	36.659	83.088	528.933	3.253.040	3.901.720	1.707.553	5.609.273
		1%	2%	14%	83%			
	SME Review	0,2%	1,1%	6,2%	92,5%			22.420.407

Although some differences can be identified in the distribution of companies by category (i.e., large, medium, small, micro undertaking), we accept the data set given that:

SME Performance Review by the European Commission only categorises companies by number of employees, while our dataset categorises according to the Accounting Directive. This could be an explanation for minor deviations.

SME Performance Review does not take into consideration sectors such as *agriculture, forestry and fisheries* and *financial and insurance activities*. As some countries are heavily engaged in these sectors, this could explain our higher numbers for Bulgaria and Romania (due to a large share in the agriculture sector) or Luxembourg (due to a large share in the financial industry).

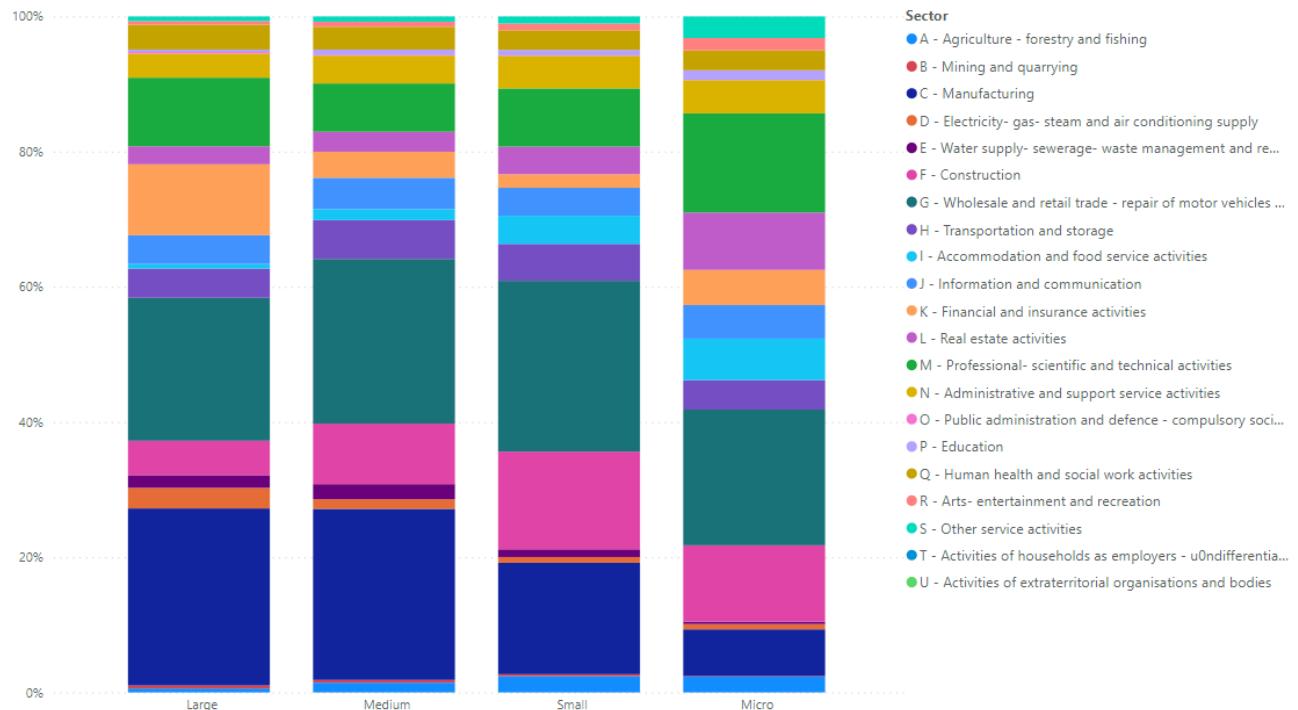
Figure 23 Size distribution of companies by country in data set

COUNTRY	Large	Medium	Small	Micro	Total
AUSTRIA	23.711	651	1.007	5.601	6.859 37.829
BELGIUM	209.559	2.264	6.137	19.058	77.325 314.343
BULGARIA	21.423	548	2.755	23.662	341.187 389.575
CROATIA		351	1.507	11.919	107.676 121.453
CYPRUS	1	5	9	12	7 34
CZECH REPUBLIC	21.716	790	1.970	8.513	51.655 84.644
DENMARK	90.238	2.203	3.633	13.030	136.765 245.869
ESTONIA	15.870	152	775	6.489	99.239 122.525
FINLAND	15.287	1.548	3.767	19.774	107.809 148.185
FRANCE	196.061	11.591	30.468	164.873	878.975 1.281.968
GERMANY	2.071.167	16.543	37.629	230.567	308.022 2.663.928
GREECE		146	177	221	151 695
HUNGARY	53.642	935	3.623	30.702	293.739 382.641
IRELAND	16.989	242	611	3.239	13.256 34.337
ITALY	3	5.938	18.555	127.697	363.756 515.949
LATVIA	10.424	187	809	7.374	85.058 103.852
LITHUANIA	33.039	436	1.716	10.269	60.073 105.533
LUXEMBOURG	33.483	281	453	2.080	12.897 49.194
MALTA		2	6	14	100 122
NETHERLANDS	203.082	2.739	3.888	17.485	60.547 287.741
POLAND	242.233	2.576	6.947	27.775	76.455 355.986
PORTUGAL	30.760	1.149	4.977	42.781	297.512 377.179
ROMANIA		1.052	4.753	40.954	697.035 743.794
SLOVAKIA	28.659	592	2.102	17.228	170.222 218.803
SLOVENIA	131.513	320	1.288	9.940	116.792 259.853
SPAIN	21.671	2.526	6.162	56.047	197.318 283.724
SWEDEN	29.202	1.898	5.475	34.313	237.444 308.332
Total	3.499.733	57.665	151.199	931.617	4.797.874 9.438.088

Table 40 Sectorial classification by company size in data set

Sector	Large	Medium	Small	Micro	Total	
A - Agriculture - forestry and fishing	38.394	338	2.185	22.412	111.580 174.909	
B - Mining and quarrying	3.547	259	623	2.782	5.070 12.281	
C - Manufacturing	209.464	15.100	38.249	153.463	331.280 747.556	
D - Electricity- gas- steam and air conditioning supply	34.372	1.759	2.158	7.984	37.874 84.147	
E - Water supply- sewerage- waste management and remediation activities	19.289	1.077	3.377	10.644	16.414 50.801	
F - Construction	297.311	2.940	13.540	134.665	542.358 990.814	
G - Wholesale and retail trade - repair of motor vehicles and motorcycles	553.557	12.190	36.819	235.285	963.068 1.800.919	
H - Transportation and storage	92.588	2.498	8.690	50.934	209.178 363.888	
I - Accommodation and food service activities	108.816	391	2.431	38.729	294.076 444.443	
J - Information and communication	159.046	2.446	7.036	38.503	238.189 445.220	
K - Financial and insurance activities	360.572	6.051	5.824	18.717	249.910 641.074	
L - Real estate activities	257.074	1.538	4.472	38.122	406.971 708.177	
M - Professional- scientific and technical activities	610.079	5.853	10.805	80.180	703.852 1.410.769	
N - Administrative and support service activities	222.610	2.061	6.206	44.944	235.912 511.733	
O - Public administration and defence - compulsory social security	9.874	127	254	592	1.129 11.976	
P - Education	57.814	212	1.116	7.567	68.833 135.542	
Q - Human health and social work activities	127.789	2.120	5.098	27.025	141.136 303.168	
R - Arts- entertainment and recreation	97.957	312	1.142	9.306	88.051 196.768	
S - Other service activities	239.176	392	1.170	9.733	152.815 403.286	
T - Activities of households as employers - undifferentiated goods- and services-producing activities of households for own use	265		4	26	131 426	
U - Activities of extraterritorial organisations and bodies	139	1		4	47 191	
Total	3.499.733	57.665	151.199	931.617	4.797.874	9.438.088

Figure 24 Sector classification by company size in data set



Annex 2

Supply Chain Analysis Results per Sector

Group C focuses on SMEs that are impacted through their supply chain due to being suppliers of so called NFRD companies, which must report according to the EU Taxonomy. It is therefore important to understand the structure of the supply chains of each sector covered under climate change mitigation. This will allow us to identify classes of SMEs that play a particularly central role. Identifying SMEs impacted by supply chain linkages consists of three steps:

First, qualitative desk research of industry reports, market outlooks, regulations, and sectoral sustainability commitments aim to identify relevant supply chains. The sectors and economic activities covered in Annex I of the Climate Delegated Act are clustered based on supply chain similarities and then assessed whether to be included in more in-depth supply chain analyses. The assessment identifies three economic activities. Hence, this project focuses on:

1. manufacturing of low carbon technologies,
2. water supply and sewage, and
3. construction and real estate

because of the importance of supply chains in these sectors.

Second, several large companies in each supply chain relevant sector will be identified in the data set based on their firm size. The annual reports of these large companies per sector then provide insights on the relevant suppliers and connected upstream sectors / sub-sectors / economic activities.

Third, additional literature review on identified sectors and sub-sectors will help to obtain an in-depth understanding of SMEs relevant to the supply chain. Finally, the filter criteria (i.e., NACE Code) identified in this qualitative desk research will be applied to the data set to then understand size and location characteristics of these SMEs.

The three relevant sectors are mapped out below. The sectors classified as not relevant are attached as a table (cf. further below).

Starting with the **sub-sector Manufacturing of low carbon technologies** the economic activity in the EU Taxonomy is the manufacturing of renewable energy technologies and the manufacturing of equipment for the production and use of hydrogen. The manufacturing of renewable energy technologies is a diverse sector that ranges from the construction of wind turbines and solar panels over hydroelectric, geothermal and hydrogen technologies to biomass and landfill gas plants. This sector therefore requires a wide variety of input factors for production.

Starting on basic materials such as steel, copper, aluminium, and lithium, etc., this sector relies heavily on natural resources. Further upstream electronic and processed metal components, plastics, rubber materials, and different composites are required in the production processes of renewable energy technologies incl. hydrogen technologies.

Due to the variety of this manufacturing industry, it also relies on a broad spectrum of suppliers. From large mining and steel producing enterprises to smaller metal, electronics or composite processing companies a diverse portfolio of suppliers supplies this sector. Hence, this sector is highly relevant for upstream SMEs, especially from the manufacturing sector. The identified large undertakings in the EU are Vestas A/S, Siemens Gamesa Renewable Energy SA, Hanwha Qcells, REC Group, Voith Group, Viessmann Group, Bosch Group and Nel ASA.

By looking into the annual reports of the large undertakings the main information is that the wind energy industry is under pressure with partly disappointing financial performances due to Covid-19-related supply chain issues and following disruptions in the production. Supply chain and inflation risks remain the biggest threats for companies. Hence, the aim to improve procurement and diversify supplier portfolios to address supply chain volatility and increasing

investments and efforts in relevant areas of hydrogen supply chains.

The supply chains of this sector can be long and broad, and, in some cases, they are highly specialized. As for many other sectors, supply chains are therefore exposed to the dangers of global crisis risks and bottlenecks of material supply and transportation. The tense situation on the commodity market harbours the risk of rising prices along the supply chain, which coupled with increasing inflation risks could turn into a major concern for all participants along the supply chain.

The identified parameters for quantitative analysis are 0710, 0729, 2060, 2219, 2221, 2312, 2420, 2442, 2444, 2452, 2529, 2562, 2593, 2611, 2651, 2711, 2712, 2720, 2731, 2732, 2790, 2811.

Secondly, the **sector water supply and sewage**, where the economic activity in the EU Taxonomy is associated with construction, extension and operation of water collection, treatment and supply systems; in renewal of water collection, treatment and supply systems; in construction, extension and operation of wastewater collection and treatment, and in renewal of wastewater collection and treatment. The water supply and sewage sector require a wide range of materials and equipment. The supply chain of respective companies can be divided into civil / pipe service construction (including wastewater remediation tanks and wells), plant / building construction (including plant construction, mechanical and electrical engineering, treatment and process engineering, water vehicles and equipment, large pumps / network pumps and turbines) and materials (including pipes, moulded parts, and measuring equipment). The water supply and sewage sector therefore primarily depend on input factors from manufacturing and engineering. Many SMEs that supply the sector with the needed equipment and materials are located in the EU. Hence, this sector is highly relevant for upstream SMEs from manufacturing that supply this sector.

The identified large undertakings in the EU for *civil/pipe service construction* are LIPP GmbH, Pieck & Partner GmbH. For *plant/building construction* they are Ullrich Anlagenbau GmbH & Co. KG, Schnell Hochbau GmbH, RMT Rohr- und Maschinenanlagentechnik GmbH, EAB Elektroanlagenbau GmbH, Meidericher Schiffswerft GmbH & Co. KG, NETZSCH Pumpen & Systeme GmbH, M+M Turbinen-Technik GmbH. For the last subarea *materials* the companies TPS-Technitube Röhrenwerke GmbH, STAR Piping Systems GmbH, Schweitzer-Chemie GmbH and Chauvin Arnoux GmbH are most relevant.

Since all annual reports are behind a paywall, only current general trends in the industry could be analysed.

Supply chain characteristics can vary widely in this sector. “M+M Turbinen-Technik” for example assures that they work with the best suppliers and rely on 100% German quality.

The identified parameters for quantitative analysis are 4221, 7112, 4399, 2829, 4321, 3011, 2891, 2811, 2420, 2221, 4675, 2651.

Thirdly, **construction and real estate**, the economic activities in the EU Taxonomy are:

- installation, maintenance and repair of energy efficiency equipment;
- installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings);
- installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings; and
- installation, maintenance and repair of renewable energy technologies.

Installers and maintenance or repair service providers in this sector rely on a variety of input factors to provide their services. Besides spare parts from OEMs for replacements, these service providers need certain materials, components and tools to carry out an installation or repair. Those input factors can be metal or plastic tubes, cables and wiring, insulations, valves and gaskets and other similar basic construction materials. This industry therefore relies on

both large OEMs to supply products as well as on small and medium sized manufacturers of other essential input factors.

The identified large undertakings in the EU in this sector are *Intertek Group*, *SGS SA*, *BayWa r.e.*, *REC Group*, *ABB Ltd.*, *HOCHTIEF Aktiengesellschaft*, *SAIPEM S.P.A.*, *KONINKLIJKE BAM GROEP N.V.*, *SACYR SA.*, *DRAGADOS SOCIEDAD ANONIMA* and *ALTAREIT*.

The annual reports show that disruptions in supply chains were noticeable, mainly the semiconductor shortage and problems in global logistics had an impact but there is focus on building more resilient supply chains by diversifying supplier portfolios. The sector is growing due to increasing demands in renewable energy sources and EVs.

Especially wood and steel were subject to strong scarcity in the building sector. The annual reports also show an increasing importance of ESG criteria within the supply chain. HOCHTIEF Aktiengesellschaft for example confirms that suppliers are continuously audited for compliance with the ESG criteria after they have been commissioned.

Looking at the characteristics of the supply chain the providers of installation, maintenance and repair services for energy efficiency equipment, charging stations for EVs, energy performance instruments and renewable energy technologies are in some cases OEMs and in other cases second party service providers. Suppliers of spare parts for repairs are in many cases OEMs, the installing, repair or maintenance services however are regularly conducted by contractors or service partners. This shows that the supply chains of this sector include both the supply chains of OEMs and the supply chains of manufacturers of other input factors.

The identified parameters for quantitative analysis are 2219, 2221, 2420, 2573, 2593, 2594, 2611, 2640, 2651, 2712, 2720, 2732, 2733, 2751, 2790.

Sector	Supply Chain relevant for SMEs?	NO
Forestry	Afforestation Rehabilitation and restoration of forests, including reforestation and natural forest regeneration after an extreme event Forest management Conservation forestry	
Primary input factors for production	The forestry sector is an important supplier to other industries, for example pulp and paper industry or the furniture industry. However, economic activities in the forestry sector itself do not require many input factors for production.	

Sector	Supply Chain relevant for SMEs?	NO
Environmental protection and restoration activities	Restoration of wetlands	
Primary input factors for production	Environmental protection and restoration activities do not rely on tangible input factors. More importantly, the activities require expertise from scientists to design feasible ecosystem solutions. This may include but is not limited to site assessments, habitat quality evaluations, planting plans, and monitoring services. Due to the absence of a supply chain, this sector is excluded from further analysis.	

Sector	Supply Chain relevant for SMEs?	NO
Manufacture 2 (Materials)	Manufacture of cement Manufacture of aluminium Manufacture of iron and steel Manufacture of plastics in primary form	
Primary input factors for production	Manufacturing of materials such as cement or steel rely on input factors from the mining and quarrying sector. Cement relies on limestone, aluminium production needs bauxite, iron and steel production requires iron ore, plastics manufacturing depends on fossil fuels especially oil for ethylene production. Only 0.1% of the total amount of companies in the EU27 are SMEs in the mining and quarrying sector. Hence, the supply chain of materials manufacturing is not relevant for SMEs.	

Sector	Supply Chain relevant for SMEs?	NO
Manufacture 3 (Chemicals)	Manufacture of carbon black Manufacture of soda ash Manufacture of chlorine Manufacture of organic basic chemicals Manufacture of anhydrous ammonia Manufacture of nitric acid Manufacture of hydrogen	
Primary input factors for production	The chemical industry consumes large amounts of fossil fuels (i.e., oil, gas, coal) as raw materials. Only 0.1% of the total amount of companies in the EU27 are SMEs in the mining and quarrying sector. Hence, the supply chain of chemicals manufacturing is not relevant for SMEs.	

Sector	Supply Chain relevant for SMEs?	NO
Waste Management	Collection and transport of non-hazardous waste in source segregated fractions Anaerobic digestion of sewage sludge Anaerobic digestion of bio-waste Composting of bio-waste Material recovery from non-hazardous waste Landfill gas capture and utilisation	
Primary input factors for production	There is a wide range of different waste management methods. ¹⁰ What all methods have in common is a high energy demand, both in the collection process as well as in the actual treatment with special machinery. There are no specific primary input factors required that are supplied by SMEs, hence, this sector will be	

	excluded from further supply chain analysis. However, a large portion of the companies operating in this sector itself are SMEs.	
Sector	Supply Chain relevant for SMEs?	NO
CO2 Management	Transport of CO2 Underground permanent geological storage of CO2	
Primary input factors for production	These economic activities are mainly associated with the establishment of pipelines or permanent storage facilities, that do require specialised equipment and construction material that is accounted as assets after completion. No primary input factors during the operation could be identified that are supplied by SMEs, hence, this sector is excluded from further supply chain analysis.	
Sector	Supply Chain relevant for SMEs?	NO
Energy (Electricity and Heat/ Cold)	Generation Transmission Distribution Storage	
Primary input factors for production	<p>Generation of non-renewable energy requires fossil fuels such as gas and coal as primary input factors. Generation of renewable energy relies on solar and wind power, which is captured by solarPV and windmills respectively. While fossil fuels are considered primary material (OpEx), solarPV panels and wind turbines are accounted as fixed assets (CapEx) and are thus not considered input factors. As only 0.1% of the total amount of companies in the EU27 are SMEs in the mining and quarrying sector, the energy sector is of little relevance for upstream SMEs. Manufacturing of renewable energy equipment by SMEs is captured in the manufacturing sector.</p> <p>Transmission, distribution, and storage require large amounts of components such as pipelines or electricity transmission systems. These aspects are accounted as assets and not input factors.¹¹</p>	
Sector	Supply Chain relevant for SMEs?	NO
Transport Services	Passenger interurban rail transport Freight rail transport Urban and suburban transport, road passenger transport Operation of personal mobility devices, cycle logistics Transport by motorbikes, passenger cars and light commercial vehicles Freight transport services by road Inland passenger water transport Inland freight water transport	

Sector	Supply Chain relevant for SMEs?	NO
	<p>Sea and coastal freight water transport, vessels for port operations and auxiliary activities</p> <p>Sea and coastal passenger water transport</p>	
Primary input factors for production	<p>Transportation companies must purchase actual vehicles such as locomotives, ships, and motorised road vehicles to operate. However, these components are accounted as assets.</p> <p>Transport service companies primarily require fuel which is purchased from large oil and gas companies. Therefore, the transport service sector is excluded from further supply chain analysis. It is however important to mention that a significant share of transport service companies are SMEs.</p>	

Sector	Supply Chain relevant for SMEs?	NO
	<p>Retrofitting of inland water passenger and freight transport</p> <p>Retrofitting of sea and coastal freight and passenger water transport</p> <p>Infrastructure for personal mobility, cycle logistics</p> <p>Infrastructure for rail transport</p> <p>Infrastructure enabling low-carbon road transport and public transport</p> <p>Infrastructure enabling low carbon water transport</p> <p>Low carbon airport infrastructure</p>	
Primary input factors for production	<p>Building or retrofitting transport infrastructure falls under civil engineering. These activities and projects primarily require construction material such as concrete and steel that is not supplied by SMEs but by large companies. Additionally, after transport infrastructure projects are finished, they are accounted as assets. Therefore, this sub-sector of transportation is excluded from further supply chain analysis.</p>	

Sector	Supply Chain relevant for SMEs?	NO
Information and communication	<p>Data processing, hosting and related activities</p> <p>Data-driven solutions for GHG emissions reductions</p>	
Primary input factors for production	<p>As a service sector, information and communication does not rely on input factors. Data processing and hosting usually relies on cloud infrastructure from large corporations such as Amazon Web Service or Microsoft Azure. Other components such as IT hardware is accounted as fixed assets and therefore does not count as input materials.</p> <p>Due to the rather limited supply chain, this sector is of little relevance for upstream SMEs and therefore excluded from further analysis.</p>	

Sector	Supply Chain relevant for SMEs?	NO
Professional, scientific and technical activities	<p>Close to market research, development and innovation</p> <p>Research, development and innovation for direct air capture of CO2</p> <p>Professional services related to energy performance of buildings</p>	
<i>Primary input factors for production</i>	<p>This service sector usually does not rely on tangible input factors from upstream SMEs. It is more likely that companies in this sector require data and information to conduct research.</p> <p>Due to the limited supply chain, this sector is of little relevance for upstream SMEs and therefore excluded from further analysis.</p>	

Annex 3

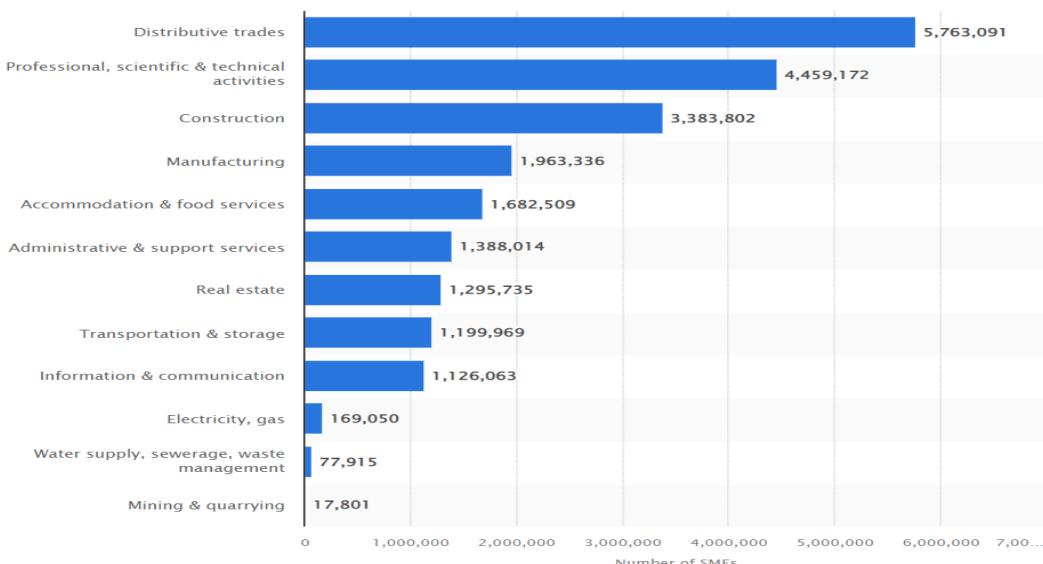
Importance of SMEs and Microenterprises in the EU

This annex emphasises the importance of small and medium-sized enterprises (SMEs) in the economic landscape of the European Union. According to the European Commission's definition SMEs are all companies that have a headcount of less than 250 and a turnover of €50 million or less, or a balance sheet total of €43 million or less⁵⁶.

The importance of SMEs in the EU can be impressively illustrated by a few key figures. There are 25 million small and medium-sized enterprises in the EU. These enterprises account for two out of three jobs and generate 50% of the EU's total GDP⁵⁷, and they account for 99% of all businesses in the EU⁵⁸. To further understand the importance of SMEs for the EU in more detail, it is important to look at the breakdown of these 25 million enterprises into their fields of activity.

Figure 24 shows the number of active SMEs for the individual sectors for the year 2020. Most SMEs are active in the distributive trades sector with around 5.8 million, followed by professional, scientific & technical activities with around 4.5 million companies and construction with around 3.4 million. The sectors manufacturing, accommodation & food services, administrative & support services, real estate, transportation & storage, and information & communication make up most of the remaining SMEs with 1-2 million companies each.

Figure 25 - Number of SMEs per sector in 2020



Source - <https://www.statista.com/statistics/1252884/smes-in-europe-by-sector/>

Error! Reference source not found. shows the distribution of the 25 million enterprises across different economic sectors, indicating that SMEs are of decisive importance in most areas of the real economy in the EU. However, this chart does not capture all sectors of the economy, for example agriculture, finance and health are missing. These sectors are often not included in conjunction with the other sectors due to their specific nature⁵⁹.

However, SMEs also play an important role in these sectors. For example, in European

56 https://ec.europa.eu/growth/smes/sme-definition_en

57 https://ec.europa.eu/commission/presscorner/detail/en/fs_20_426

58 https://ec.europa.eu/growth/smes_en

59 <https://ec.europa.eu/eurostat/web/structural-business-statistics/data>

agriculture, which provides around 4% of total EU employment⁶⁰, there are about 10.5 million farms of which about 9.9 million are family-owned farms⁶¹. In total, about 20 million people work on these farms, of whom almost 18 million are farm owners or family members of the owner. Since most of these farms are SMEs or microenterprises, SMEs are also very important in this sector.

However, SMEs are not only relevant to the EU because of their economic performance or the number of people they employ, they are also an important pillar in the transformation of the European economy towards more sustainability as drivers of innovation and digitalisation⁶². This is particularly evident in the fact that 50% of all SMEs undertake innovation activities⁶³.

These innovations in technologies and sustainability can only be implemented with sufficient financial resources. Therefore, in the next sections, the use of external financing of SMEs will be examined to be able to conclude the importance of SMEs for the financial economy in the EU.

The European Commission's Survey on the Access to Finance of Enterprises (SAFE) finds in its 2021 survey that in all EU27 Member States, 77% of SMEs used debt financing of some form. A credit line or overdraft were relevant to 48% closely followed by leasing or hire purchase with 47% and bank loans by 46% of SMEs. In total 24% of SMEs applied for a credit line or overdraft in 2021 and most of them were successful in doing so with 73% of all applications being granted in full, 6% being granted most of the amount applied for and only another 6% of applications being rejected. SMEs that did not apply for a credit line or overdraft in 2021, 46% mentioned sufficient internal funds as reason⁶⁴.

These statistics indicate that most SMEs in the EU use external means of funding and the most common reasons for loan application were investments in inventory, working capital and fixed investments.

Error! Reference source not found. shows the reasoning of SMEs that did not apply for any form of bank loans in 2021. The most common argument for not using external financing was that this type of financing was not needed by the SME with three out of four answers stating this. Only 8% of survey respondents complained that interest rates are too high and only 4% stated too much paperwork as the main reason. This convincingly shows that most SMEs that do need financial support will use external financing in the form of bank loans, with only one quarter of SMEs refusing external financing for other reasons than lack of need.

60 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Farmers_and_the_agricultural_labour_force

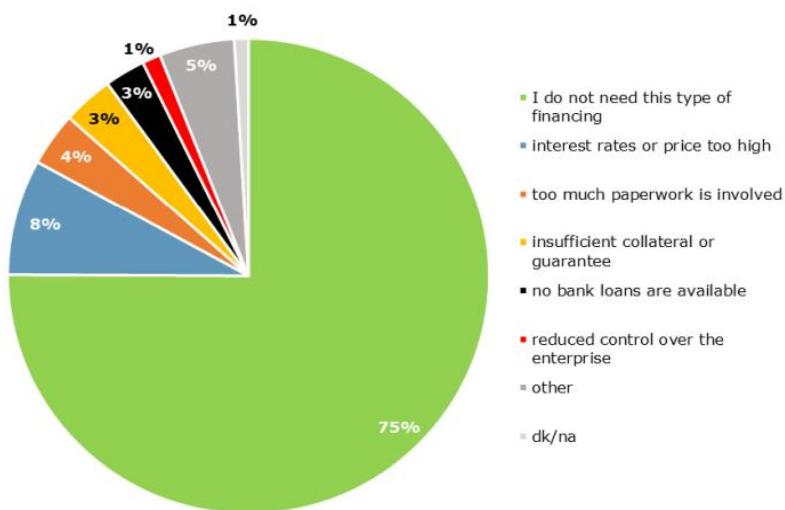
61 Table 2 - Number of farms by type of farm labour

62 https://ec.europa.eu/growth/smes_en

63 https://ec.europa.eu/commission/presscorner/detail/en/fs_20_426

64 https://ec.europa.eu/growth/access-finance/data-and-surveys-safe_en

Figure 26 - Reasons why bank loans are not relevant for SMEs in EU27 in 2021



Source - <https://ec.europa.eu/growth/system/files/2021-11/Analytical%20report%202021.pdf>, p. 16

This indicates that SMEs, as capital demanders, are very important for the financial sector as capital providers in terms of debt financing. However, other forms of financing might also be of interest for European SMEs.

Data shows that only 10% of European SMEs' external financing is from capital markets and only 11% of businesses consider equity as a viable financing option with only 1% of SMEs having used it⁶⁵. Indicating that these sources of financing are significantly less relevant and appealing for SMEs in the EU and leave debt financing as the favored source of financing.

A complete overview of the importance of SMEs in the EU can only be presented if special focus is given to the largest group of SMEs, micro-enterprises. Since microenterprises by definition are part of SMEs, they have been included in this group in the analysis above. To ensure that there are no structural differences between microenterprises and small and medium-sized enterprises, the following analysis will put focus in microenterprises only.

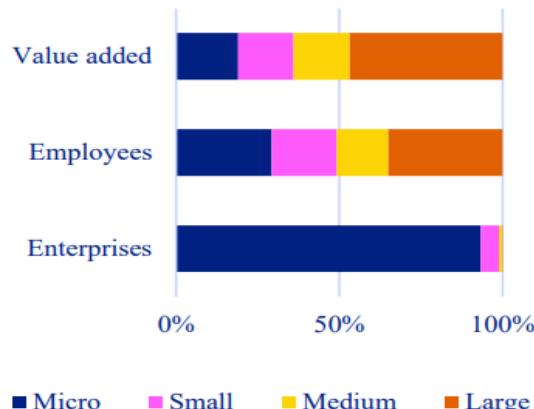
The European Commission's definition of a microenterprise states that the staff headcount has to be lower than 10 and the turnover or the balance sheet total has to be €2 million or less⁶⁶. Since according to the European Commission (2003/361/EC) an enterprise "should be considered to be any entity, regardless of its legal form, engaged in economic activities, including in particular entities engaged in a craft activity and other activities on an individual or family basis, partnerships or associations regularly engaged in economic activities"⁶⁷, all self-employed, family businesses are considered as (micro-)enterprises.

65 https://ec.europa.eu/commission/presscorner/detail/en/fs_20_426

66 https://ec.europa.eu/growth/smes/sme-definition_en

67 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32003H0361>

Figure 27 - SME employment and value-added shares in EU in 2020



Source - https://www.eif.org/news_centre/publications/eif_working_paper_2021_75.pdf, p. 3

Therefore, microenterprises make up about 90% of all enterprises in the EU and they deliver about 20% of value added and employ about 30% of all employees⁶⁸. **Error! Reference source not found.** shows these shares of enterprises, employees, and value-added by size for European enterprises in 2020.

Microenterprises produce about the same share of value-added as small and medium-sized enterprises and employ roughly the same amount of people as large companies. These numbers and figures demonstrate the importance of the group of micro companies for the European economy.

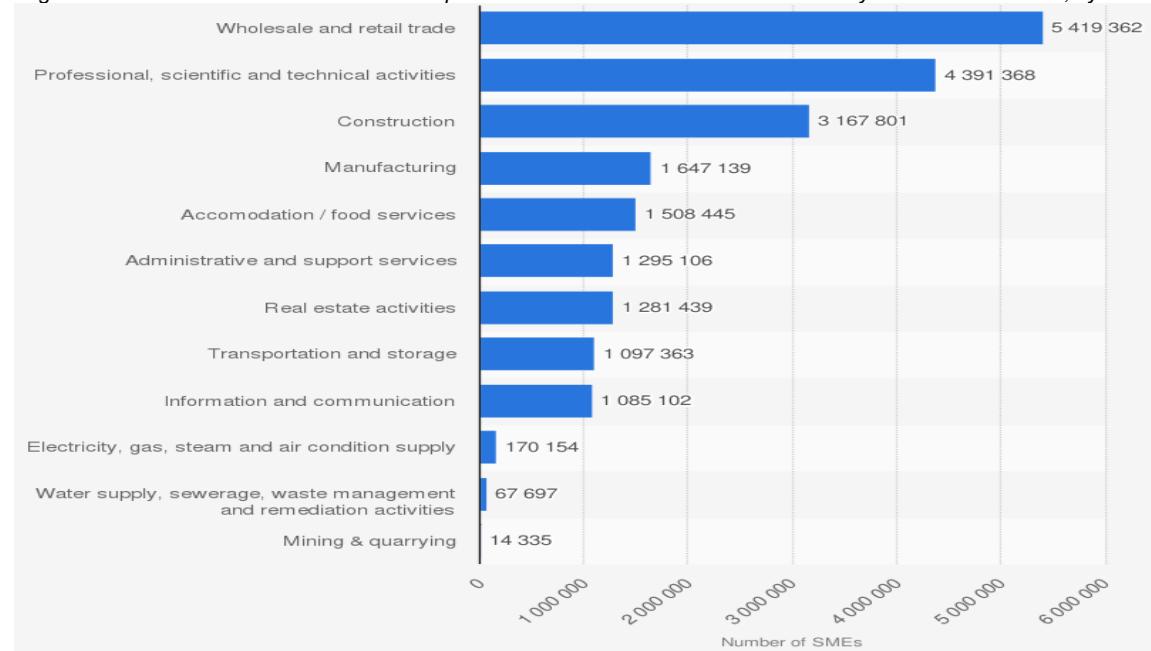
Looking at Figure 4 that similar to Figure 1 shows the number of active microenterprises in the EU in 2021, it can be seen that the sectorial distribution of micro companies is very similar to the one with all SMEs. Wholesale and retail are the largest sector of microenterprises with about 25% of all companies, followed by professional, scientific, and technical activities with 21% and 15% in construction. The remaining sectors cover between 5% and 7% each, except for electricity supply, water supply, and mining & quarrying that cover significantly less.

This distribution of microenterprises over the sectors implies that, like the case with all SMEs, about 40% of micro companies are active in fields that are not covered by the EU Taxonomy, namely Wholesale and retail trade, accommodation / food services, and administrative and support services.

Looking at the almost identical distribution of SMEs and microenterprises it would not be surprising to also find those similarities the financing of microenterprises. Data from the European Investment Fund (EIF) confirms this assumption and shows similar rates of relevance statements from microenterprises (see **Error! Reference source not found.**) compared to the numbers for SMEs stated above.

68 https://www.eif.org/news_centre/publications/EIF_Working_Paper_2021_75.htm?lang=en

Figure 28 - Forecasted number of microenterprises in the non-financial business economy of the EU27 in 2021, by sector

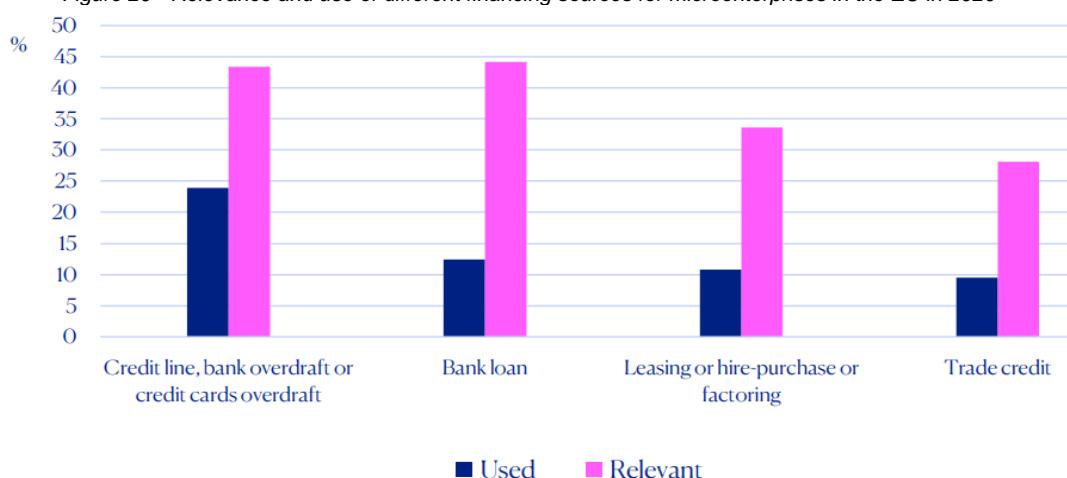


Source - <https://www.statista.com/statistics/1253114/micro-sized-enterprises-in-europe-by-sector/>

One challenge that remains for SMEs and especially microenterprises is the availability of data. In many cases microenterprises are not covered by regular annual data collection meaning that a significant number of companies are not covered by macroeconomic statistics⁶⁹. However, to fully understand and analyse the importance of SMEs and microenterprises in the European Union's economic and financial systems, valid and up-to-date data is necessary.

Overall, the outlook for SMEs in the EU27 is positive. Half of the SMEs expect an annual turnover growth over the next two to three years, 12% of SMEs expect substantial growth and 55% moderate growth during this period⁷⁰. It can also be assumed that a positive outlook for SMEs in the EU comes hand in hand with a continuing importance of small and medium-sized enterprises for the economy in the European Union.

Figure 29 - Relevance and use of different financing sources for microenterprises in the EU in 2020



Source - https://www.eif.org/news_centre/publications/eif_working_paper_2021_75.pdf, p. 111

69 <https://ec.europa.eu/eurostat/web/experimental-statistics/micro-high-growth-enterprises>

70 https://ec.europa.eu/growth/access-finance/data-and-surveys-safe_en

Annex 4

Startups and startup financing in the EU

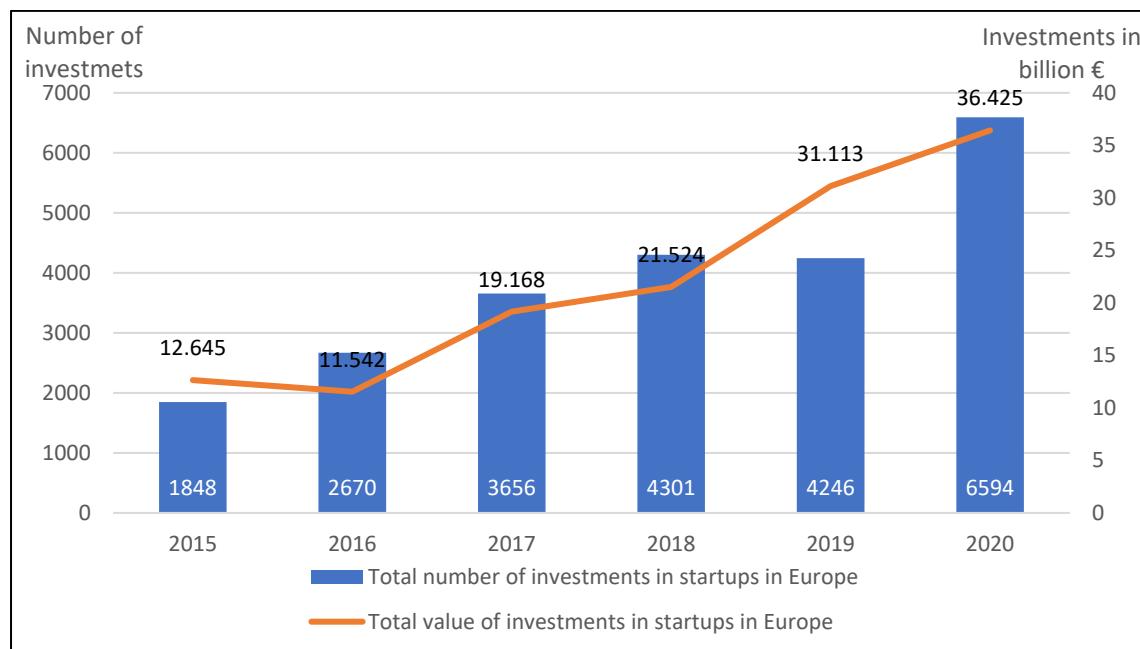
General statistics:

The contribution of startups in the EU to the economic vitalities of the respective countries is increasing substantially. Since there is no official definition for startups, here, the definition from Bormans et al. (2020)⁷¹ is used defining startups as companies:

- that are younger than ten years,
- with innovative product and/or service and/or business model, and
- that have the intention to grow (in terms of turnover, number of employees, and markets).

Recently, European startups provide substantially to economic prosperity by creating jobs, redefining the technological landscape, and creating markets for innovative products and services. The highest densities of startups within Europe can be found in London, Paris, Berlin, and Stockholm.⁷² However, the precise number of startups in Europe is hard to assess (which might be linked to the absence of an officially accepted definition of the term startup). Therefore, it is hard to classify which countries are home to most startups. The rankings are sensitive to the sources and indicators used. Generally, it can be concluded that Germany and France are the most relevant EU-Member States, while the UK is the home to most startups on the European continent.⁷³ However, the increase of European startups is reflected in the trend of investments, in numbers of investments as well as in invested amounts, as shown in Figure 30.

Figure 30 Investments in European startups



Source: Own Illustration, based on EY (2022). Startup-Barometer Europe. https://assets.ey.com/content/dam/ey-sites/ey-com/de_de/noindex/ey-startup-barometer-europa-april-2022-en.pdf

The national regulatory and legislative environments can attract founders and make the country a suitable place to create a new business. Because of its economic power and startup-

71 Bormans et al. (2020). [European Start-up Monitor](#) 2019/2020.

72 Statista Research Department (2022). [Total number of investments in start-ups in Europe from 1st half of 2015 to 2nd half of 2021](#).

73 EY (2022) [Start-up-Barometer Europe](#).

friendly culture, the USA, with the Silicon Valley, is traditionally the country with the highest number of startups. However, France is estimated to be the country with the highest number of startups in Europe, with approximately 20,000 verified startups. France is followed by Germany, with approximately 19,000 verified startups. Germany's startup culture is considered one of the friendliest globally, which is why approximately 2% of the global unicorns⁷⁴ come from Germany. Other important countries are Spain, the Netherlands, Italy, and Sweden. Sweden is particularly important because of its high success rate. Despite the relatively low number of startups, 2.1% of the global unicorns come from Sweden.⁷⁵ Table 41 displays the number of verified startups, VC (Venture Capital) investors, startup employees, and corporates for the EU and their most important⁷⁶ member states.

Table 41 Country characteristics, 2021

Country	verified startups	VC investors	startup employees (in thousands)	corporates
EU	112,000	3,799	3,400	31,000
France	20,000	395	628	5,022
Germany	19,000	841	1,000	5,223
Spain	11,000	366	291	2,594
Netherlands	10,000	439	332	2,781
Italy	9,684	213	269	3,386
Sweden	5,418	226	134	2,067
Belgium	4,057	162	103	1,511
Finland	3,660	152	66	1,196
Poland	3,300	148	81	725
Denmark	2,665	79	47	866
Austria	2,026	87	46	717
Portugal	1,835	42	25	478
Romania	1,489	23	64	315
Hungary	1,478	40	18	235
Estonia	1,390	34	18	115
Czech Republic	1,246	61	38	345
Lithuania	1,057	22	24	135

Source: Own Illustration, based on <https://app.europeanstartups.co/dashboard>

Strategies aiming at reducing global warming, such as the European Green Deal, enhance

⁷⁴ Unicorn refers to a privately held start-up company valued at over 1 billion \$ (Hirst and Kastiel, 2019)

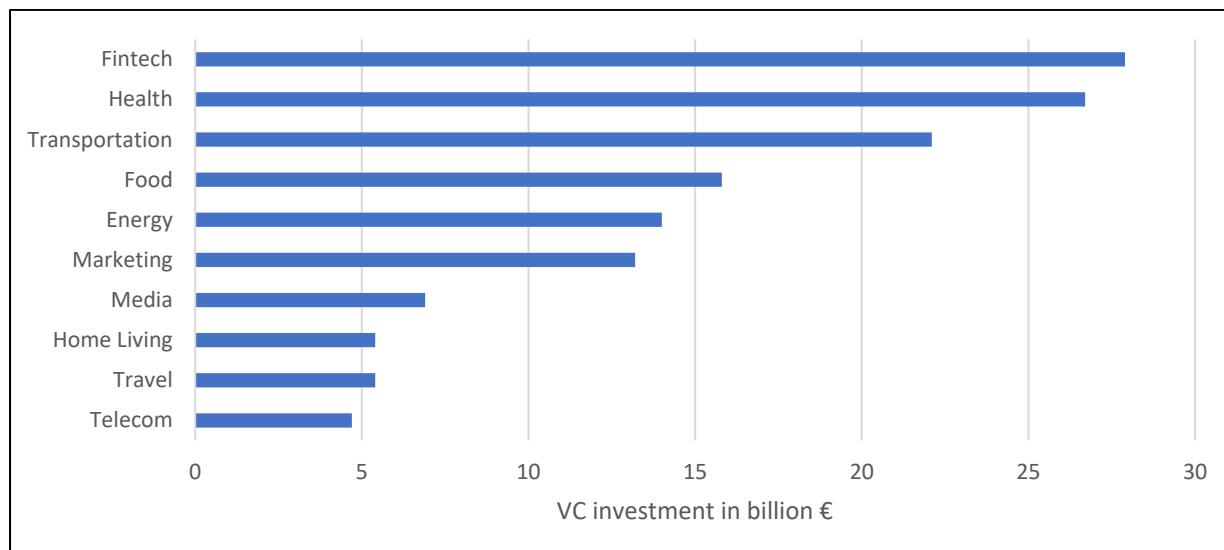
⁷⁵ RANKINGROYALS (2021). [Countries with the Most Start-ups](#).

⁷⁶ Most important is defined as member states with number of verified start-ups>1000

the demand for climate responsibility from brands. Consequently, sustainable products are often seeing higher growth rates than their non-sustainable alternatives. The increased demand requires smart and innovative solutions, which provide new business opportunities. This leads to the increasing number of startups, of which many provide their services and products sustainably to contribute to preventing climate change.

Sectors

Figure 31 VC Investments per sector, 2011 to 2021



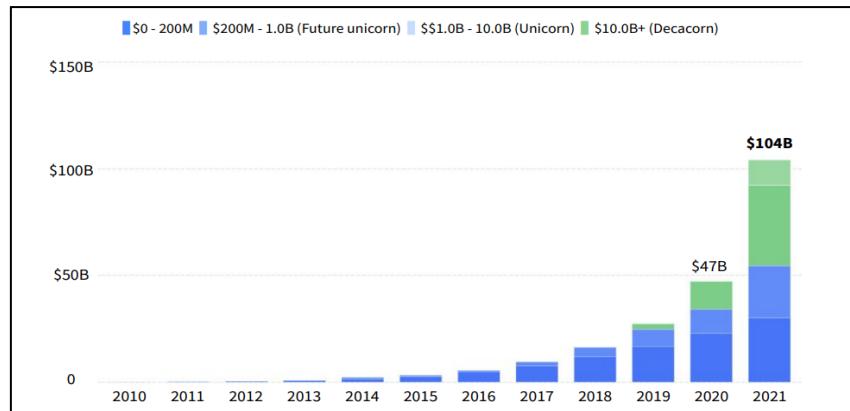
Source: Own illustration, based on <https://app.europeanstartups.co/dashboard>

Figure 31 displays the ten most important sectors according to the VC investments. Fintech and Health are the leading sectors with VC investments above EUR 25 billion. Several sectors experienced growth because of the contributions of tech companies.

Over the past few years, Europe has emerged as a strong competitor closing the gap between Silicon Valley and Europe when measured by technology startup company formation and exits. The COVID-19 pandemic changed markets in the long term, establishing new ways of communication, and changing work and education environments. These modified demands enabled tech startups to flourish. European tech startups are starting to attract larger shares of VC financing (from 2015 to 2019, the share of global VC invested in European startups rose from 11% to 16%). Additionally, the European share of global VC rounds greater than EUR 2 million has increased from 18% to 26% from 2015 to 2019. However, since Europe's startup culture is younger than the US American one, total startup funding declines as rounds get bigger. The emergence of numerous tech startups increases the demand for tech jobs and has become one of the leading job engines in Europe.⁷⁷

Figure 32 European climate tech startups enterprise value by valuation ranges

⁷⁷ Dealroom.co and sifted (2022). EUROPEAN START-UPS. [The definitive data behind the past, present and future of European tech.](#)

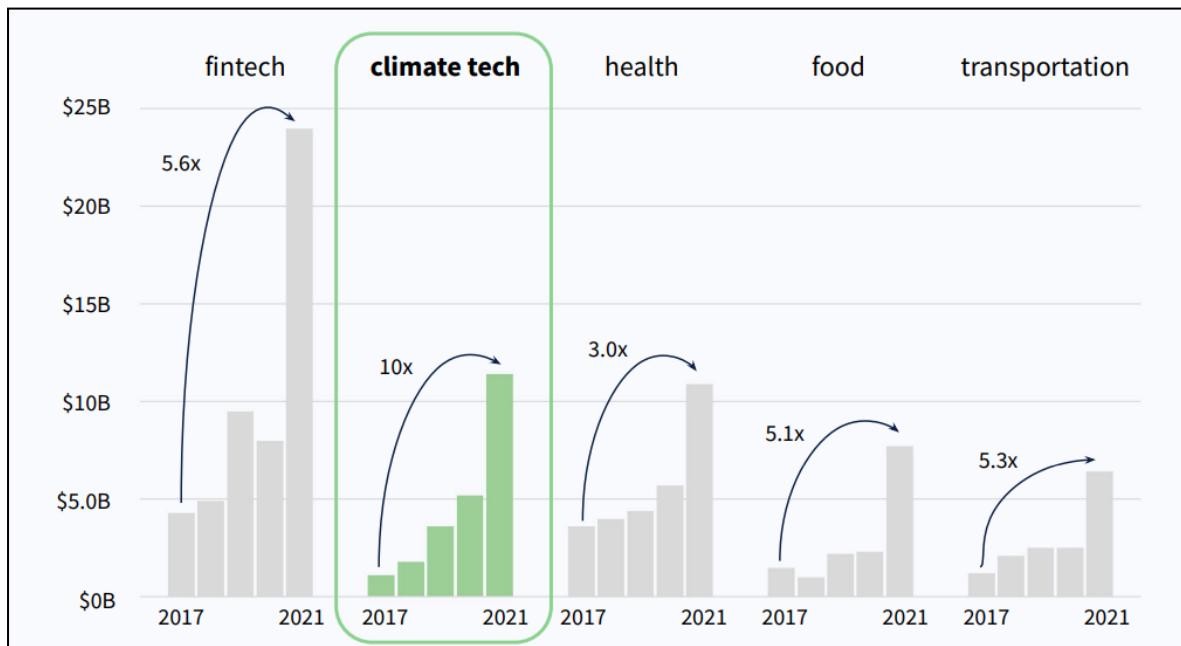


Source: dealroom.co and Talis (2022). *The rise of European climate tech.* <https://dealroom.co/reports/the-rise-of-european-climate-tech>.

The rise of European climate tech companies that transform the world's largest markets with innovative sustainable alternatives, including, among others, AI, synthetic biology, and sensors, contributes to decarbonising the global economy and creating new profitable business models with a focus on products and services related to climate mitigation and adaptation. The current European climate tech startup ecosystem is now worth over USD 100 billion doubling its value since 2020. This increase in enterprise value over the last years is well reflected in Figure 32, which shows the company values by valuation ranges.

Since 2017, climate tech is the fastest-growing investment vertical in Europe, growing by a factor of 10, as shown in Figure 33.

Figure 33 Investment into European startups per vertical

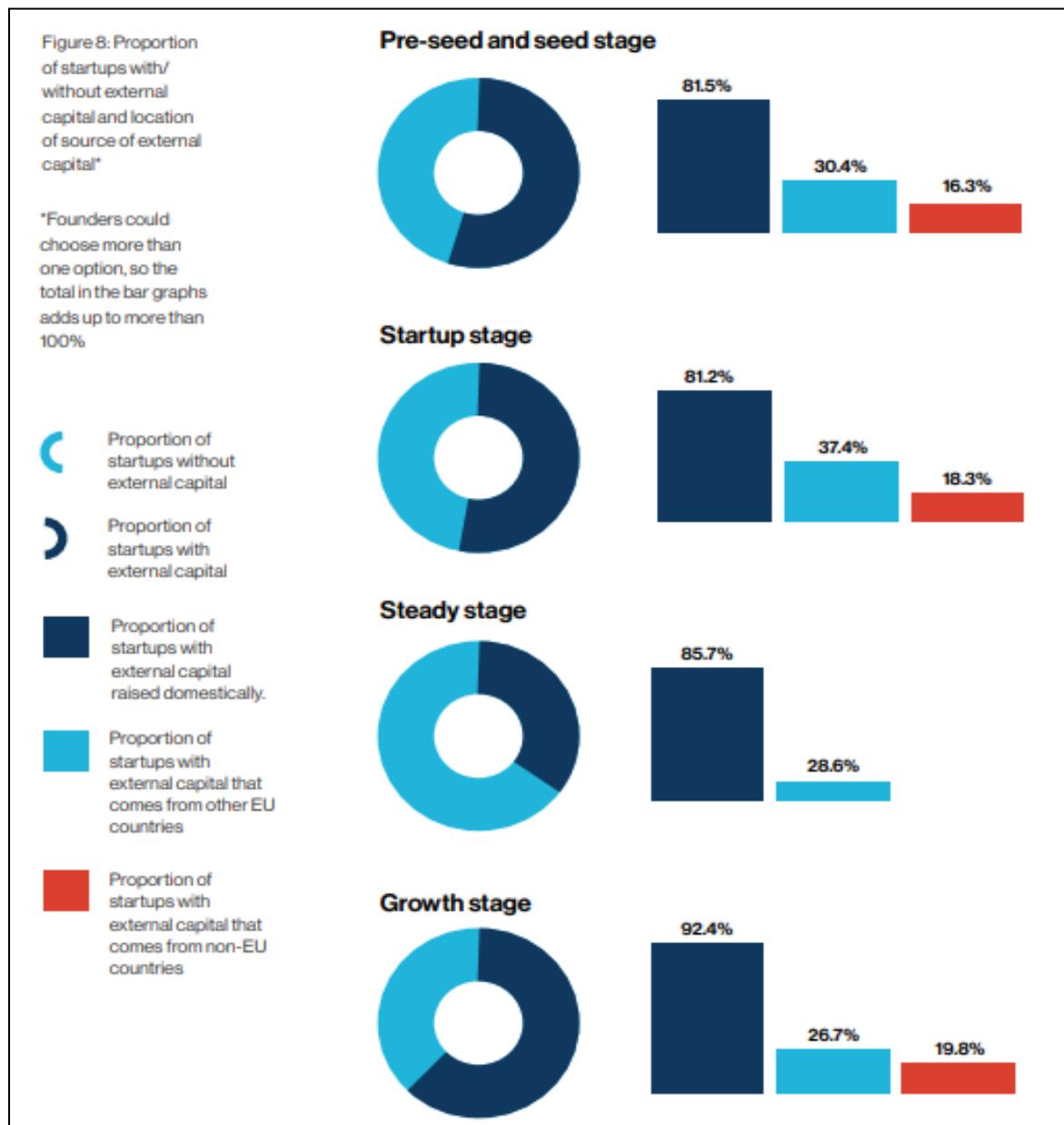


Source: dealroom.co and Talis (2022). *The rise of European climate tech.* <https://dealroom.co/reports/the-rise-of-european-climate-tech>.

Sources of finance

The sources of finance vary among the different stages of development, as displayed in Figure 34. External capital remains constant for the (pre-)seed and startup stage. At the steady stage, the share of startups with external capital is lowest, while it is highest in the growth stage.

Figure 34 Proportion of startups with/ without external capital and location of source of external capital⁷⁸



Source: europeanstartupmonitor2019.eu

External capital is mostly raised domestically throughout all stages of development, where the highest share of domestically raised external capital can be found in the growth stage. The share of external capital raised in other EU countries ranges from 25% to 35%, while the proportion of startups with external capital raised from non-EU countries is lowest at all stages.

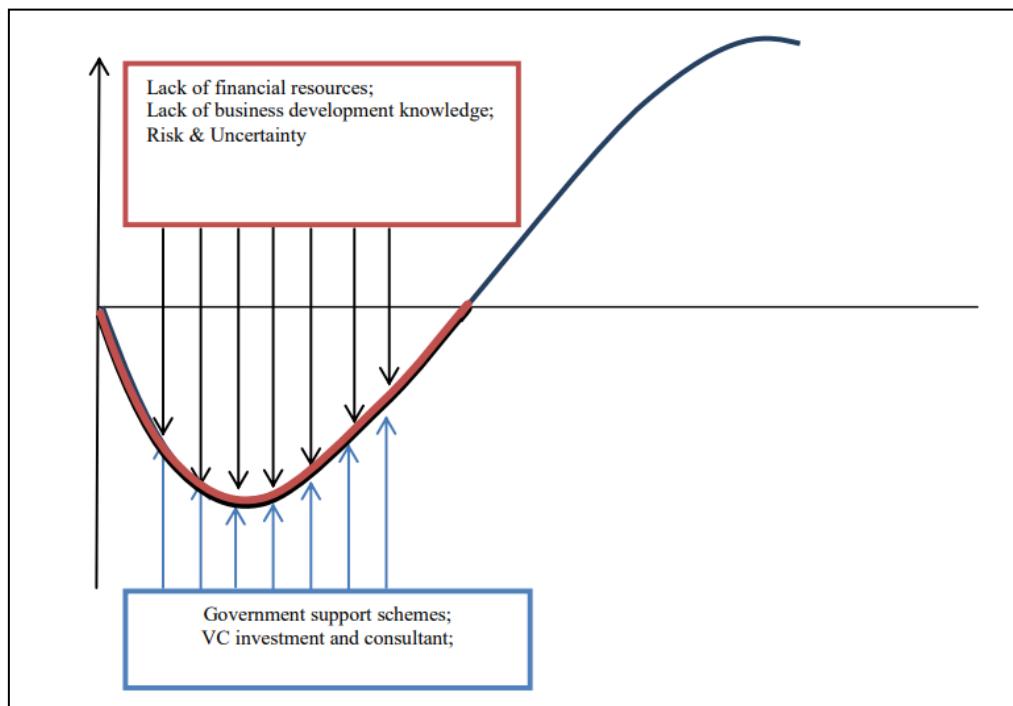
The importance of Venture Capital

The importance of VC is substantial for several reasons. First, VC is important for startups to ‘survive’ the ‘valley of death’. The ‘valley of death’ refers to the difficulty of covering the negative cash flow in the first stages of the startup development before their new product or services generate revenue.⁷⁹ Figure 35 displays the main pull and push factors during the phase of the ‘valley of death’.

78 Founders could choose more than one option, so the total in the bar graphs adds up to more than 100%

79 UNeTech (2021). [What is.... The Valley of Death?.](#)

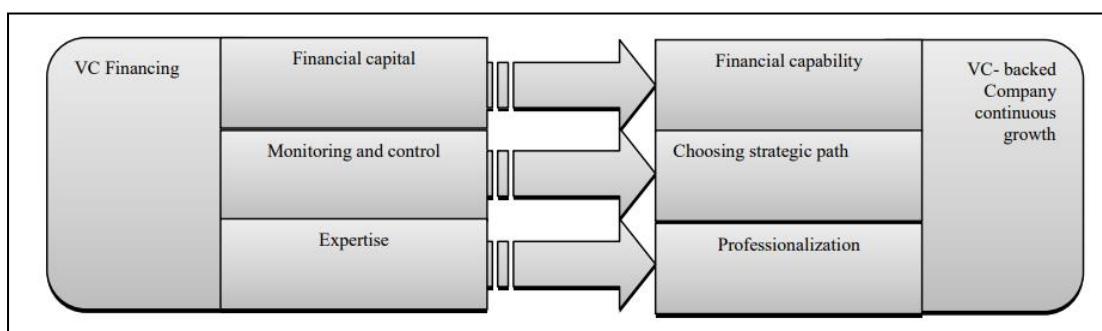
Figure 35 Valley of death – push and pull forces



Source: Savaneviciene, A., Venckuviene, V., & Girdauskiene, L. (2015). Venture capital a catalyst for startups to overcome the "Valley of death": Lithuanian case. *Procedia Economics and Finance*, 26, 1052-1059.

The key obstacles during this phase include the shortage of financial resources and business development knowledge.⁸⁰ VC targets the financial shortage through the financial investment, while the lack of knowledge is addressed via providing expertise that comes along with VC. When VC comes from a larger company, it sometimes entails innovations or technologies. This is a successful strategy, especially in the software and technology sector. How VC addresses these issues is illustrated in Figure 36.

Figure 36 How VC-backed companies grow continuously



Source: Savaneviciene, A., Venckuviene, V., & Girdauskiene, L. (2015). Venture capital a catalyst for startups to overcome the "Valley of death": Lithuanian case. *Procedia Economics and Finance*, 26, 1052-1059.

Moreover, a temporary JV (Joint Venture) means that startups can sustain brand identity and increase brand recognition.⁸¹ Lastly, VC provides a massive opportunity for job creation as there is currently only 1.8% of jobs at VC-backed companies. Considering the US, with a share of 24%, this represents a substantial opportunity⁸².

⁸⁰ Source: Savaneviciene, A., Venckuviene, V., & Girdauskiene, L. (2015). Venture capital a catalyst for start-ups to overcome the "Valley of death": Lithuanian case. *Procedia Economics and Finance*, 26, 1052-1059.

⁸¹ UNeTech (2021). [What is.... The Valley of Death?](#).

⁸² Dealroom.co and ALLOCATE. (2022). The state of VC in 2022. <https://dealroom.co/reports/the-state-of-vc-in-2022>

Data

The availability of financial data for startups can be improved substantially. Currently, there is no central (public) platform providing data such as net turnover, balance sheet, number of employees, NACE code, legal form, and country of registration. This financial data will be required at latest once the Corporate Sustainability Reporting Directive (CSRD) is updated to assess which startups are concerned. However, these data have been collected since startups are required to present financial data to attract investors. Additionally, the CSRD update might also concern some startups (at later stages) and might force them to report how sustainability risks and opportunities affect the company and vice versa (“double materiality”).⁸³ The startups concerned should start implementing structures and strengthen capacities to fulfil the upcoming requirements.

⁸³ KPMG (2022). Corporate Sustainability Reporting Directive (CSRD) – What the new CSR Directive means for companies. <https://assets.kpmg/content/dam/kpmg/de/pdf/Themen/2022/01/kpmg-corporate-sustainability-reporting-directive-en.pdf>

Annex 5

Overview of interviews

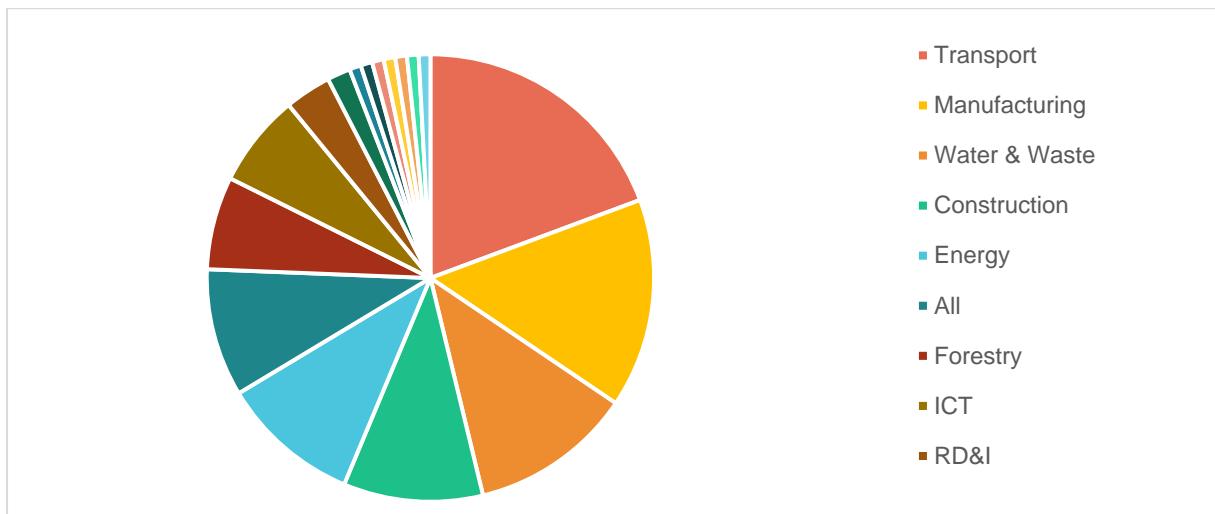
As indicated in section 4.1 of this report, interviews have been conducted to support the identification and analysis of what challenges SMEs might face with regards to the technical screening criteria and what potential solutions could be.

Interviewees include the following:

- TEG members, that participated in the process of establishing the Taxonomy framework and its criteria
- Country SME organisations (Romania, France, Germany, Italy)
- SME organisations on sectors and activities
- Ramboll technical experts
- SMEs themselves

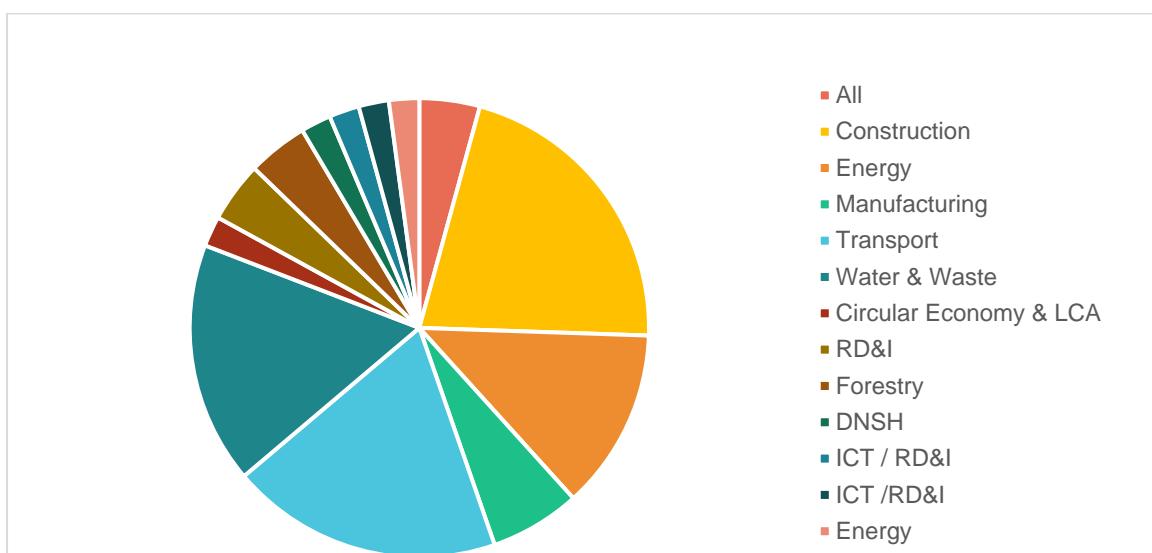
In total, 119 potential interviewees have been identified and contacted. The distribution across sectors is shown in the graph below.

Figure 37 Interviewees contacted per sector



In total, 47 interviews have been conducted. This represents a 39% response rate. The distribution across sectors can be found in the graph below.

Figure 38 Interviews conducted/scheduled per sector



The low response rate observed until around August 10th 2022 can be associated with the summer months. To address this issue, we have undertaken the following measures:

- Sent reminders to stakeholders already previously contacted, and making calls where phone numbers are available
- Identification of other associations within the sector
- Identification of other persons within the same organization
- Extension of the interview deadline to August 19th 2022

Annex 6

Desk research

BICA, 19/01/2021: "Position Paper of the Bulgarian Industrial Capital Association (BICA) on the EU Classification System for Green Investments (EU Taxonomy Regulation)": [Position Paper of the Bulgarian Industrial Capital Association \(BICA\) on the EU Classification System for Green Investments \(EU Taxonomy Regulation\) - Foundation "Institute for Sustainable Economic Development" \(InUIR\) \(ised.bg\)](#)

Bioenergy Europe, 19/02/19: "The role of forest management in the upcoming taxonomy regulation for sustainable investments": [The role of forest management in the upcoming taxonomy regulation for sustainable investments - Bioenergy Europe](#)

CEPF, 07/03/22: "European Forest Owners and Managers' considerations on the EC Proposal for a Deforestation and Forest Degradation Regulation": [Position | Forest Owners' & Managers' considerations on EC Proposal for Deforestation and Forest Degradation Regulation | CEPF \(cepf-eu.org\)](#)

Cepi, 04/03/21: "European paper industry's position on the draft delegated regulation on a climate change mitigation and adaptation taxonomy": [European paper industry's position on the delegated regulation on a climate change mitigation and adaptation taxonomy | www.cepi.org](#)

CER, EIM, ERFA, UIP, UNIFE, 02/2021: "Rail sector's joint statement on the EU Taxonomy initiative": [20201218-Taxonomy-Joint-Statement..pdf \(rbf.net.pl\)](#)

Digital Europe, 16/12/20: "The EU taxonomy: a missed opportunity to grasp the potential of the ICT sector": [The EU taxonomy: a missed opportunity to grasp the potential of the ICT sector - DIGITALEUROPE](#)

EESC, 08/12/21: "The EESC calls for coherence, certainty and clarity from the new EU Forest Strategy for 2030": [Joint Statement_The EESC calls for coherence, certainty and clarity from the new EU Forest Strategy for 2030.pdf \(european-foresters.org\)](#)

EHPA, 18/12/2020: "EHPA Response on the Consultation regarding the Draft Commission Delegated Regulation establishing the technical screening criteria for which economic activity qualifies as sustainable & Annexes on climate change mitigation and adaptation"

EPRA, 10/2019: "EU Taxonomy Technical Report"

EU Technical Expert Group on Sustainable Finance, 03/2020: "Updated methodology & Updated Technical Screening Criteria"

EU Technical Expert Group on Sustainable Finance, 03/2020: "Taxonomy: Final report of the Technical Expert Group on Sustainable Finance": https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/20309-sustainable-finance-teg-final-report-taxonomy_en.pdf

EurEau 13/7/2021: "Taxonomy Delegated Regulation on climate objectives"

EurEau 05/2021: "Drinking Water Supply and Leakage Management"

Eurelectric, 05/2020: "Moving forward with a science-based EU Taxonomy for hydropower" [Eurelectric WG Hydro views on the final recommendations of the technical Expert Group on Sustainable Finance](#)

Euromot, 17/12/2020: "DRAFT DELEGATED REGULATION ON TAXONOMY – TECHNICAL SCREENING CRITERIA FOR CLIMATE CHANGE MITIGATION AND ADAPTATION": [EUROMOT Position Paper 2017](#)

European Commission, 8/10/2013: "Forest Management Plans or equivalent instruments": https://ec.europa.eu/environment/forests/pdf/fmp_table.pdf

European Commission, "European Product Registry for Energy Labelling", [EPREL Public website \(europa.eu\)](#)

European Rivers Network, 01/2020: [Small and Micro-Hydro: A Development everywhere in Europe](#)

European Small Hydropower Association 01/2004: [State of the Art of Small Hydropower in EU – 25](#)

Eustafor, 07/03/2022: “Open letter to the European commission: European forest-based industries call on the extension of the scope of the EU timber regulation to ensure that wood-based products sold on the European market are safe from illegal logging regardless of their origin”: [Open letter to the European Commission: European forest-based industries call on the extension of the scope of the EU Timber Regulation to ensure that wood-based products sold on the European market are safe from illegal logging regardless of their origin – European State Forest Association \(eustafor.eu\)](#)

FIEC, 17/07/2020: Position Paper

Glass for Europe, 12/2020: “Sustainable finance – EU classification system for green investments”: [Sustainable finance – EU classification system for green investments - Glass for Europe](#)

Green Building Council, 12/2929: “Market feedback from testing the proposed EU Taxonomy Technical Screening Criteria for Buildings”

Lease Europe, 01/2021: “A European taxonomy for ‘green’ activities”: [A European taxonomy for ‘green’ activities | Leaseurope](#)

MDPI, 8/8/2020: “A comparative analysis of five forest certification programs”: <file:///C:/Users/ELVN/Downloads/forests-11-00863.pdf#page=17&zoom=100,101,530>

PEFC, 2018: “Sustainable forest management - requirements”: <https://cdn.pefc.org/pefc.org/media/2019-01/b296ddcb-5f6b-42d8-bc98-5db98f62203e/6c7c212a-c37c-59ee-a2ca-b8c91c8beb93.pdf>

Royal Haskoning DHV, 04/2022: “Actuele samenvatting voor de Nederlandse markt EU-Taxonomy” in assignment of BouwendNederland

SFI, 2022: “SFI 2022 standards and rules”: https://forests.org/wp-content/uploads/2022_SFI_Standards.pdf

SGI Europe, 18/12/2020: “Position Paper: Input to the EU classification system for green investments (Taxonomy Regulation)”: [Europe Response EU Taxonomy Delegated Acts 20201218.docx](#)

SolarPower Europe: “Response to draft Delegated Act of EU Taxonomy – EU classification system for green investments”: [Solar Power Europe Response to Draft Delegated Act EU Taxonomy 3a7c73ddb7.pdf \(solarpowereurope.org\)](#)

Thünen Institute, 20/12/2019: “National Forestry Accounting Plan for Germany”: https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/nfap_germany_bf.pdf

Unife, 06/2022: “Key aspects for a successful Taxonomy implementation in the rail sector”: [Key-aspects-for-a-successful-Taxonomy-implementation-in-the-rail-sector.pdf \(unife.org\)](#)

University of Copenhagen, 01/2019: “Danish National Forest Accounting Plan 2021-2030”: <https://kefm.dk/media/7111/danishnationalforestaccountingplan-2019.pdf>

Water Europe, 09/2021: “Taxonomy Report on the Technical Screening Criteria – and opportunity to foster the benefits towards a Water-Smart Society”

Wind Europe, 17/12/2021: “WindEurope feedback to the “draft Taxonomy Delegated Act””: [20201216-WindEurope-Feedback-to-the-draft-Taxonomy-Delegated-Act.pdf](#) Wind Europe, 17/12/2021: “WindEurope feedback to the “draft Taxonomy Delegated Act””: [20201216-WindEurope-Feedback-to-the-draft-Taxonomy-Delegated-Act.pdf](#)

Legislative analysis

COMMISSION STAFF WORKING DOCUMENT EVALUATION of Directive 2010/31/EU on the energy performance of buildings Accompanying the document Proposal for a Directive of the European Parliament and of the Council amending Directive 2010/31/EU on the energy performance of buildings, 30/11/2016

European Parliamentary Research Service, 09/2021: “Energy Performance of Buildings Directive 2010/31/EU: Fit for 55 revision”

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL on the implementation of the Marine Strategy Framework Directive (Directive 2008/56/EC), 25/06/2020

EC, (11/2019): Fitness Check Evaluation of the Water Framework Directive and the Floods Directive, Final evaluation report

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC), 26/02/2019

COMMISSION STAFF WORKING DOCUMENT (14/07/2021): EVALUATION OF DIRECTIVE 2012/27/EU ON ENERGY EFFICIENCY

European Parliamentary Research Service, 04/2016: "Implementation of the Energy Efficiency Directive (2012/27/EU): Energy Efficiency Obligation Schemes"

COMMISSION STAFF WORKING DOCUMENT, 23/09/202: "Evaluation of the Industrial Emissions Directive (IED)DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions (integrated pollution prevention and control)"

REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT on implementation of Directive 2010/75/EU and final reports on its predecessor legislation, 04/12/2017

Supporting the Fitness Check of the EU Ambient Air Quality Directives (2008/50/EC,2004/107/EC), 09/2019

The Centre for Strategy & Evaluation Services (CSES), 08/2016: "Evaluation of Directive 2002/49/EC Relating to the Assessment and Management of Environmental Noise"

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL On the Implementation of the Environmental Noise Directive in accordance with Article 11 of Directive 2002/49/EC, 30/03/2017

Service request supporting the Evaluation of Directive 91/271/EEC concerning urban waste water treatment: Evaluation Study, 11/2019

Study on: "Ex-post evaluation of certain waste stream Directives", 18/04/2014

Final Implementation Report for the Directive 86/278/EEC on Sewage Sludge, 10/07/2015

Technical assessment of nuclear energy with respect to the 'do no significant harm' criteria of Regulation (EU) 2020/852 ('Taxonomy Regulation'), 2021

Study Supporting The Evaluation Of Directive 2009/128/Ec On The Sustainable Use Of Pesticides And Impact Assessment Of Its Possible Revision, 10/2021

Report From The Commission To The European Parliament And The Council On Member State National Action Plans and on progress in the implementation of Directive 2009/128/EC on the sustainable use of pesticides, 10/10/2017

Study to support the assessment of impacts associated with the review of limit values in waste for POPs listed in Annexes IV and V of Regulation (EU) 2019/1021, 04/2021

Support study for the evaluation of Regulation (EC)No 1005/2009 on substances that deplete the ozone layer, 22/02/2019

Support for the Evaluation of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, 03/2021

Annex 7

Working matrix

See separate Excel file

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of the European Union

ISBN 978-92-76-62093-8
Doi: 10.2874/762220